Application for Affordable Housing Subdivision

Pursuant to Section 201H-38, Hawai'i Revised Statutes (HRS)

Wai'ale Affordable Housing Project

Located at Wai'ale Road, Wailuku, Hawai'i · Island of Maui

TMK: (2) 3-5-002:012 por

Prepared for:

Wai'ale Road 201, LLC

Prepared by:

BAGOYO
DEVELOPMENT CONSULTING GROUP

1500 Kilinoe Place · Wailuku Maui Hawai'i 96793 · (808) 357-3842 · vbagoyo-devgroup@hawaii.rr.com

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September 22, 2015

Carol Reimann - Director
Department of Housing & Human Concerns
County of Maui
2200 Main Street
One Main Plaza Building - Suite 546
Wailuku, Hawaii 96793

SUBJECT: **Letter of Authorization for the Preparation, Filing, Processing and Approval an Application for an Affordable Housing Project Pursuant to HRS §201H-38, for Subject Property Located on Waiale Road at Waikapu, Maui, Hawaii.**
Tax Map Key: (2) 3-5-002:012 (portion).

Dear Carol,

We hereby provide authorization to Mr. Vince Bagoyo of Bagoyo Development Consulting Group, LLC, or its representative, to prepare, file, process on our behalf an Application for an Affordable Housing Project Pursuant to HRS §201H-38, to be located on Tax Map Key: (2) 3-5-002:012 (portion).

If you have any questions or if you need for further information, please do not hesitate to contact me at 808-357-1954.

Sincerely,
Waiale 201-H, LLC

THERESA J COOK NOTARY PUBLIC 07-513 STATE OF HAWAII

By: WILLIAM FRAMPTON
Its: Member

CC: Vince Bagoyo - Bagoyo Development Consulting Group
Peter Horovitz - Esq.

Cc: Vince Bagoyo

STATE OF HAWAII }
}SS.
COUNTY OF MAUI

On this 24 day August 2015, before me personally appeared Mr. [illegible], to me personally known, did say that he is the President of Waiale Road 201, LLC, and that such person executed the foregoing instrument as the free act and deed of such person, and if applicable in the capacity shown, having been duly authorized to execute such instrument in such capacity.

NOTARY PUBLIC, State of Hawaii
Print Name: THERESA J COOK
My commission expires: 10.07.2015

Doc. Date: 9/22/15 # Pages: TWO
Theresa J Cook Second Circuit
Description: LETTER OF AUTHORIZATION
9/24/15
Signature Date

THERESA J COOK NOTARY 07-513 PUBLIC STATE OF HAWAII

Valley Isle Fellowship

Love God Love His Church Love His World

November 10, 2015

Director of Department of Housing & Human Concerns
County of Maui
2200 Main Street
One Main Plaza Building – Suite 546
Wailuku, Hawaii 96793

SUBJECT: Letter of Authorization for the Preparation, Filing, Processing, and Approval of an Application for an Affordable Housing Project pursuant to HRS §201H-38, for Subject Property located on Waiale Road at Waikapu, Maui, Hawaii; identified as Tax Map Key: (2) 3-5-002:012 (por.).

Dear Director,

We are the legal landowner of the above-referenced Subject Property, which is currently a single parcel, identified as Lot B and having an approximate area of 25.355 acres. We recently executed a formal Sales Contract Agreement ("Agreement") to sell and transfer a portion of Lot B to Mr. William Frampton and his Development Partnership. The Agreement will include filing and processing of a 2-Lot Subdivision with the County of Maui; which will include Subdivision of Lot B into Lot B-1 (14.990 acres) and Lot B-2 (10.35 acres). Shortly after the County grants Final Approval of the 2-Lot Subdivision, the ownership of Lot B-2 will be transferred to Mr. Frampton and his Development Partnership; and we will retain ownership of Lot B-1.

Mr. Frampton and his Development Partnership propose to file with your Department and Application for the development of an 100% Affordable Housing Project, Pursuant to HRS §201H-38, on Lot B-2. As such, to help expedite the approval process, by way of this letter, we hereby authorize Mr. Vincent Bagoyo, of Bagoyo Development Consulting Group, and Mr. William Frampton, individual and Member of Frampton & Ward, LLC to prepare, file, process and seek approval of an Application for an Affordable Housing Project Pursuant to HRS §201H-38, to be located on land which we currently own on Waiale Road in Waikapu, Maui, Hawaii; and further identified as

473 S. High Street – P.O. Box 886 – Wailuku, HI 96793 – Phone: (808)-244-0865 – Fax: (808)-249-0235
www.valleyislefellowship.com Email: vifoffice@hawaii.rr.com

Tax Map Key: (2) 3-5-002:012 (portion). Lastly, it is understood that after the sale and transfer of Lot B-2 to Mr. Frampton and his Development Entity this Letter of Authorization will no longer be necessary, and thus, it will become void at such time.

If you have any questions or if you need for further information, please do not hesitate to contact us.

Sincerely,
Valley Isle Fellowship

By: David A. Sniffen, Jr.

Its: Trustee/Director

By: Richard T. Yamasaki

Its: Trustee/Director

Subscribed and Sworn before me this 30th day of Nov. ~~2013~~ 2015

Melen Agcolicol, Notary Public, State of HI

My Commission expires: 4/19/2017

Doc. Description: Letter of Authorization

Doc. Date: 11/30/15 No. Pages: 2nd

Melen Agcolicol
Notary Printed Name

2nd
Jud. Circuit

CC: Vincent Bagoyo - Bagoyo Development Consulting Group
William Frampton - Individual and Member of Frampton & Ward, LLC
Lawrence N.C. Ing - Esq.
Bradford R. Ing - Esq.
Peter Horowitz - Esq.
Thomas D. Welch, Jr. - Esq.

AGREEMENT OF PURCHASE AND SALE AND JOINT ESCROW INSTRUCTIONS

TO: OLD REPUBLIC TITLE & ESCROW OF HAWAII
KAHULUI BRANCH
33 Lono Avenue, Suite 195
Kahului, Hawaii 96732

Escrow No.: 6820010325
Escrow Officer: Lydiamae Presbitero

THIS AGREEMENT OF PURCHASE AND SALE AND JOINT ESCROW INSTRUCTIONS (this "Agreement") is made and entered into as of the 29 day of June, 2015, the "Effective Date", and is executed by and between VALLEY ISLE FELLOWSHIP, INC., a Hawaii non-profit corporation, of P. O. Box 886, Wailuku, Hawaii 96793-0886 ("Seller"), and WILLIAM FRAMPTON of FRAMPTON & WARD, LLC, of 2035 Main Street, #1, Wailuku, Hawaii 96793, or its written nominee, ("Buyer"), with respect to real property located in the County of Maui, State of Hawaii, all as more particularly described on Exhibits "A", "B" and "C" attached hereto (collectively, the "Real Property"). This Agreement also constitutes joint escrow instructions of Buyer and Seller to Old Republic Title & Escrow of Hawaii, Kahului Branch ("Escrow").

For good and valuable consideration, the receipt and adequacy of which is hereby acknowledged, Buyer and Seller hereby agree as follows and Escrow is instructed as follows:

I. PURCHASE PRICE AND PAYMENT

1.1 Purchase and Sale - On the terms and conditions set forth in this Agreement, Seller agrees to sell to Buyer and Buyer agrees to purchase from Seller, the Real Property, and all of Seller's right, title and interest in and to easements, interests, and other rights and powers appurtenant to the Real Property (collectively herein, the "Property").

1.2 Purchase Price - The purchase price for the Property (the "Purchase Price") shall be One Million Four Hundred Thousand and No/100 Dollars ($1,400,000.00).

1.3 Payment of Purchase Price - Buyer has deposited with Escrow $100,000.00 (the "Initial Deposit") pursuant to the non-binding letter of intent between Buyer and Seller, dated April 2, 2015; and shall deposit with Escrow an additional $200,000.00 (the "Additional Deposit") within seven (7) business days after the end of the Due Diligence Period defined in Section 2.2A. The Initial Deposit and the Additional Deposit shall be collectively referred to herein as the "Deposits". The balance of the Purchase Price shall be payable by Buyer to Seller, in full, in cash, through Escrow, at the Close of Escrow (as defined below). The Deposits shall be nonrefundable unless Buyer shall elect or be deemed to have elected to terminate this Agreement pursuant to Section 2.1 or 2.2A.

1.4 Title to the Property - As of the Close of Escrow (as defined below), Seller shall convey to Buyer good, marketable and insurable title to the Property subject only to the Permitted Exceptions (as defined below) by a Warranty Deed.

1.5 Closing Date - The Close of Escrow shall occur on a mutually agreeable date (the "Closing Date") but in no event later than the end of fourteen (14) days following the parties' receipt of the "2-Lot Subdivision Approval" defined in Exhibit "B" attached hereto.

1.6 Target Date and Project Management - Buyer recognizes that the timely granting of final Approval of the 2-Lot Subdivision is very important for both the Buyer and Seller. Buyer and Seller are mindful that the approval process for land use permits and entitlements on Maui; including Subdivisions, are increasingly becoming more complicated and can be difficult to obtain final approval in a timely manner. Given that time is of the essence, Buyer is proposing a "Target Date" (i.e. not to exceed date) of July 29, 2016 to obtain Final Approval for the 2-Lot Subdivision. To make certain that we do not miss the Target Date, Buyer will assertively take on the role as the Project Manager of the Subdivision; and will persistently work in close coordination and communication with the Project Team of Professional Engineers and Consultants to obtain Final Subdivision Approval either on, or before, the Target Date. Key elements and benchmarks for successful Project Management include, but are not limited to the following items:

A. Early consultation meetings with Government Agencies, providing courtesy heads up notice of proposed 2-Lot Subdivision, seek preliminary comments.

B. Preparation of the plans and drawings by civil engineer and/or surveyor.

C. Timely filing of the required submittals for the Subdivision to the County Department of Public Works (such as Preliminary Plat, Survey, Subdivision Application forms, title documents, and landowner authorizations).

D. Pro-actively pursue questions from the reviewing County and State government agencies via scheduling meetings (i.e. do not wait for them).

E. If requested by any government agency, work with team to provide supplemental or additional project information, or provide concise and accurate responses to any questions or concerns from same agencies.

F. If required, work with Project Teams to insure timely completion and resubmittal of any required modifications or alternations to any portion of the plans and/or drawings.

G. Cooperate/collaborate with County, Title/Escrow Company, Attorneys, regards to necessary recordation of Final Plat and Descriptions with State Bureau of Conveyances.

As a courtesy, during the review and approval process, Buyer will provide Seller with occasional updates and/or status reports regarding the progress of the process. Notwithstanding the foregoing, Buyer, shall, at its option, have the right to extend the Closing Date by one (1) additional period of fourteen (14) days, upon Buyer's written notice to Seller and to Escrow.

II. CONTINGENCIES

2.1 Title - Buyer has caused Escrow to issue a current title report to Buyer (the "Title Report"). Buyer shall have until fifteen (15) days from the Effective Date in which to disapprove any aspect of the Title Report. If Buyer timely disapproves of any items in the Title Report, Seller may elect within ten (10) days after Seller's receipt of Buyer's notice of disapproval, to cause the removal of said disapproved exceptions on or before the Close of Escrow. Seller shall be deemed to have elected, and shall be obligated, to cure all monetary encumbrances with respect to the Property or any portion thereof; and in no event shall any such monetary encumbrances be deemed a Permitted Exception ("*monetary encumbrance*" means a lien to secure an obligation to pay or repay money). If Seller does not so elect by written notice to Buyer within said 10-day period to elect to cure all matters disapproved by Buyer, then Buyer shall have the right (in its sole and absolute discretion) by written notice to Seller and Escrow to (i) terminate this Agreement (in which the provisions of Section 2.2A and 2.2B shall apply - specifically, this shall occur within 30-days of Effective Date), or (ii) waive its prior disapproval of any matters that Seller did not elect to cure (or be deemed to have elected to cure) without any adjustment to the Purchase Price. All encumbrances and survey matters which are approved by Buyer (or deemed approved by Buyer's failure to object as provided above or waived by Buyer in accordance with Clause (ii) of the preceding sentence), but excluding any matters that Seller elects or is deemed to have elected to cure and excluding all monetary encumbrances, shall be deemed to be "Permitted Exceptions".

2.2 Due Diligence Period.

A. Due Diligence Period - Buyer shall have until 5:00 p.m. (HST) on the thirtieth (30th) day following the Effective Date (the "Due Diligence Period") in which to inspect, investigate, and approve or disapprove, in Buyer's sole and absolute discretion, in writing, all aspects of the Property and this purchase transaction. If by the end of the Due Diligence Period Buyer does not notify the Seller and Escrow in writing of Buyer's election to terminate this Agreement then the transaction shall proceed to Close of Escrow and the Buyer is deemed to have completed Due Diligence and accepted the Property.

B. Termination - If Buyer elects to terminate this Agreement under 2.1(i) or 2.2.A above, then (a) without requiring any instruction from Seller, Escrow shall immediately refund to Buyer the Deposits (and all interest accrued thereon) and (b) this Agreement shall be deemed terminated and cancelled and neither Seller nor Buyer shall have any further rights or obligations under this Agreement. If Buyer does not terminate this Agreement before the

expiration of Due Diligence Period, then Escrow shall release the Deposits totaling $300,000.00 to Seller within seven (7) days following the end of the Due Diligence Period.

C. Costs - Any and all such inspections, investigations, studies and due diligence shall be conducted at Buyer's sole cost and expense, including the Title Report and Survey, if needed, which shall be at Buyer's expense.

D. Documents and Access - Seller shall, immediately upon the Effective Date, deliver or cause to be delivered to Buyer or Buyer's local counsel, all existing surveys; maps; development plans; governmental approvals; existing environmental, archaeological and engineering reports; and other items that Buyer may reasonably request (if not already in Buyer's possession). Seller shall on Buyer's request permit Buyer and Buyer's authorized agents to physically access the Property for the purpose of conducting inspections and tests provided that Buyer (or its said agents) shall provide a reasonable indemnity (which indemnity shall be limited to losses caused by Buyer's or its agent's actions, but excluding any losses arising from Buyer's discovery of adverse matters with respect to the Property) and proof of commercially reasonable liability insurance coverage naming Seller as additional insured. Seller shall also provide Buyer with reasonable access to Seller's files and records relating to the Property and shall permit Buyer to make inquiries of employees and consultants who have worked on the Property, all at Buyer's cost.

If this Agreement shall be terminated prior to closing for any reason, Buyer shall promptly return to Seller all materials and documents previously delivered by Seller to Buyer. Further, Buyer agrees to keep all information regarding the Seller and the Property strictly confidential.

If Buyer elects to terminate this Agreement, Buyer shall, at Buyer's sole cost and expense, return the Property to the condition which existed prior to such physical tests, except to the extent of Seller's or its affiliates acts.

III. REMEDIES

3.1 Liquidated Damages - Seller and Buyer agree that in the event Buyer shall breach its obligations hereunder to close the purchase of the Property by the Target Date, Seller's actual damages would be impractical or extremely difficult to fix, and therefore agree that the Deposits and the Property shall be retained by Seller in such event. Seller shall have a claim for reasonable expenses incurred by Seller in connection with this Agreement.

3.2 Buyer's Remedies - Buyer agrees that in the event Seller shall materially breach any of its obligations hereunder, Buyer may terminate this Agreement and receive a full refund of the Deposits from Escrow and/or Buyer shall have a legal claim for all of Buyer's reasonable expenses incurred in connection with this Agreement and Buyer's investigations of the Property.

IV. CONDITION OF PROPERTY; SELLER'S REPRESENTATIONS AND WARRANTIES

4.1 Property Being Purchased "As Is" - If Buyer does not terminate this Agreement by the end of the Inspection Period, Buyer hereby agrees and acknowledges that in purchasing the Property, Buyer has relied and will be relying solely on the results of Buyer's own investigation as to all aspects of the Property and, except as expressly set forth in this Agreement, is acquiring the Property "as is" in its state and condition as of closing.

4.2 Seller's Representations and Warranties - The matters set forth in this Section 4.2 constitute representations and warranties by Seller which shall be true and correct as of the Effective Date and the Close of Escrow.

A. Organization - Seller is duly organized, validly existing and in good standing under the laws of the state of formation, and is qualified to do business in the state in which the Property is located, with full power to enter into this Agreement.

B. Authority - The execution and delivery of this Agreement have been duly authorized and approved by all requisite action and the consummation of the transactions contemplated have been duly authorized and approved by all requisite action of Seller, and no other authorizations or approvals will be necessary in order to enable Seller to enter into or to comply with the terms of this Agreement. The person(s) signing this Agreement and any documents and instruments in connection herewith on behalf of Seller have full power and authority to do so, and upon delivery to and execution by Buyer this Agreement shall be a valid and binding obligation of Seller.

C. No Violation - Neither the execution, delivery and performance by Seller of this Agreement and such other instruments and documents to be executed and delivered in connection herewith nor the consummation of the purchase and sale transactions contemplated hereby results or will result in any violation of or conflict with any charter document of Seller or any of its affiliates, or any federal, state or local rule or regulation.

D. Seller Not a Foreign Person - Seller is not, and will not be at the time of Close of Escrow, a "Foreign Person" as defined in section 1445 of the Internal Revenue Code of 1954, as amended, or a "Nonresident Person" as defined in Hawaii Revised Statutes Section 235-68 (Supp. 2006).

E. No Litigation - There is no litigation or arbitration, condemnation proceeding or other legal or administrative suit, action, proceeding of any kind pending or threatened against or involving the Property or Seller related to the Property.

F. Full Compliance - To the best of Seller's knowledge the Property is in full compliance with all environmental laws, and there are no hazardous substances or materials on or affecting the Real Property or any portion thereof. Seller has received no notice of any violation of law existing on the Real Property and has no knowledge of any such violation.

G. Leases - There are no persons or entities in possession of the Property except Seller and there are no written or oral leases or other occupancy agreements with respect to the Property.

4.3 Survival of Representations and Warranties - The representations and warranties of Seller set forth in this Agreement or any documents executed in connection herewith shall survive the Close of Escrow.

V. ESCROW INSTRUCTIONS

5.1 Escrow

A. Escrow Instructions - Buyer and Seller shall, promptly upon the execution of this Agreement by Buyer and Seller, deliver a signed copy of this Agreement to Escrow. Escrow is hereby authorized and instructed to act in accordance with the provisions of this Agreement which, together with Escrow's standard general provisions, shall constitute Escrow's escrow instructions. If there is a conflict between Escrow's general instructions and this Agreement, this Agreement shall control. The parties shall each deposit such other instruments and funds as are reasonably necessary to cause the Close of Escrow to occur and to consummate the transactions contemplated herein.

B. Deposit of Funds - The Deposits shall be delivered to and held by Escrow pursuant to this Agreement.

5.2 Conditions to Close of Escrow - The following conditions precedent to the Close of Escrow are solely for the benefit of Buyer and must be satisfied or waived by Buyer, in the exercise of its sole and absolute discretion:

1. The parties' performance of these obligations under, and receipt of the 2-Lot Subdivision Approval as set forth in, Exhibit "B" attached hereto.

2. The Title Company agreeing to issue an owner's extended coverage Title Insurance Policy (the "Title Policy") in the full amount of the Purchase Price, as of the Close of Escrow subject only to the Permitted Exceptions and with such endorsements as Buyer and/or its lender shall reasonably require.

3. Seller shall have performed all of Seller's obligations under this Agreement.

4. There being no orders, petitions, judgments or lawsuits filed against Seller or the Property.

5.3 Closing - The Close of Escrow shall take place on the Closing Date in the offices of Escrow. References herein to the "Close of Escrow" shall mean the date that the Deed is recorded in the Bureau of Conveyances of the State of Hawaii (the "Bureau") and all funds and other documents are disbursed out of Escrow.

5.4 Closing Costs - Buyer shall pay all of the escrow fees charged by Escrow and all of the Title Policy premiums. Buyer and Seller shall each pay its own attorney's fees. Other costs, if any, shall be allocated in a manner customary in similar transactions in Hawaii.

5.5 Prorations - Buyer shall take title subject to all non-delinquent real property taxes and assessments. Buyer shall be responsible for obtaining a new policy of casualty and/or liability insurance as of the Close of Escrow. Property taxes shall be prorated as of 11:59 P.M. on the day preceding the Close of Escrow. For purposes of calculating prorations, Buyer shall be deemed to be in title to the Property, and therefore entitled to the income and responsible for the expenses, for the entire day upon which the Close of Escrow occurs and thereafter. All prorations shall be made in accordance with customary practice in the county in which the Property is located, except as expressly provided herein. Such prorations, if and to the extent known and agreed upon as of the Close of Escrow, shall be paid by Buyer to Seller (if the prorations result in a net credit to the Seller) or by Seller to Buyer (if the prorations result in a net credit to the Buyer). Any such prorations not determined or not agreed upon or later shown to have been incorrect as of the Close of Escrow shall be paid by Buyer to Seller, or by Seller to Buyer, as the case may be, in cash, as soon as practicable following the Close of Escrow (such post-closing obligations shall survive the Close of Escrow).

5.6 Buyer's Closing Obligations - On or before the Closing Date, Buyer shall deposit into Escrow:

A. Sufficient funds to cover (i) the Purchase Price (less the Deposits); and (ii) all other costs for which Buyer is responsible pursuant to this Agreement as estimated by Escrow.

B. Such proof of Buyer's authority and authorization to enter into this Agreement and the transactions contemplated hereby, and such proof of the power and authority of the individual(s) executing and/or delivering any instruments, documents or certificates on behalf of Buyer to act for and bind Buyer as may be required by Seller or the Title Company.

C. Any other documents, instruments, or agreements called for hereunder or which are necessary, in order to cause the conveyance of the Property to Buyer in accordance with the terms and conditions of this Agreement.

5.7 Seller's Closing Obligations - At least two (2) business days before the Closing Date, Seller shall deposit into Escrow:

A. The Deed, conveying title to the Property, subject only to the Permitted Exceptions, fully executed and acknowledged by Seller.

B. Such proof of Seller's authority and authorization to enter into this Agreement and the transactions contemplated hereby, and such proof of the power and authority of the individual(s) executing and/or delivery of any instruments, documents or certificates on behalf of Seller to act for and bind Seller as reasonably may be required by the Title Company.

C. Such instruments and documents as are required by the Title Company to issue to Buyer the title insurance policy per Section 5.2.1.

D. A non-foreign certification satisfying the requirements of Section 1445 of the Internal Revenue Code of 1986, as amended, and the regulations thereunder ("FIRPTA Certificate").

E. A certificate from Seller that it is a resident person within the meaning of Section 235-68 of the Hawaii Revised Statutes ("HARPTA Certificate").

F. Any other documents, instruments or agreements called for hereunder which are necessary, to cause the conveyance of the Property to Buyer in accordance with the terms and conditions of this Agreement.

5.8 Assignment of this Agreement - At any time prior to the Close of Escrow, Buyer may in its sole and absolute discretion assign Buyer's rights under this Agreement to an entity in which Buyer or any of its members has an equity and management interest. Upon any such assignment, Buyer shall notify Escrow and Seller, at which time this Agreement and the Deposits shall be assigned to such assignee. Any Assignment shall not relieve the Assignor of any liability or responsibility unless agreed to by Seller in writing. Any Assignment shall not change the plans and any future assignee shall pursue the 100% Affordable Housing Project as described within this Agreement. In any case the assignee shall provide to Seller its resume and financial statement.

5.9 Brokers and Finders - There is no Broker acting for either party in this transaction. Buyer and Seller hereby indemnify and hold each other free and harmless from and against any and all claims including, without limitation, reasonable attorneys' fees and the costs and expenses of litigation, for causes of action or proceedings which may be instituted by any broker, agent or finder, licensed or otherwise, claiming through, under or by reason of the conduct of the indemnifying party, in connection with this transaction. The foregoing representation and indemnity shall survive the Close of Escrow and the delivery and

recordation of the Deed and/or the termination of this Agreement for any reason whatsoever. Disclosure: David Ward and Dean Frampton, principals of Frampton & Ward, LLC; are licensed real estate agents in the State of Hawaii.

5.10 Close of Escrow - Provided that the parties have performed their obligations hereunder, including, without limitation, timely making the deliveries specified in paragraphs 5.6 and 5.7 hereof, Escrow shall take the following actions in the following order on the Closing Date:

A. Deliver the Purchase Price to Seller (plus or minus Seller's share of prorations and closing costs and the commission paid to Brokers pursuant to the provisions of this Agreement) by cashier's check or wire transfer (on a priority basis) or as Seller may otherwise require;

B. Cause the recordation of the Deed and other recordable closing documents;

C. Deliver to Buyer all documents placed in escrow by Seller other than the Deed, including, without limitation, the Assignment, the original executed FIRPTA Certificate, and the original executed HARPTA Certificate;

D. Deliver to Buyer a conformed copy of the recorded Deed;

E. Pay all closing costs and prorations for which either party is responsible from funds deposited by Buyer or payable to Seller; and

F. As soon as possible after the Closing Date cause the Title Policy to be delivered to Buyer. Escrow shall be responsible for timely complying, on behalf of Buyer and Seller, with all governmental reporting requirements, including, without limitation, filing or submitting as appropriate an Internal Revenue Service Form 1099 Designation for the transaction contemplated herein. Escrow shall prepare certificates in compliance with the requirements of the Foreign Investment in Real Property Tax Act (including, without limitation, pursuant to Section 1445 of the Internal Revenue Code) in order to permit the Close of Escrow to occur without Buyer being required to withhold any portion of the Purchase Price.

VI. MISCELLANEOUS PROVISIONS

6.1 Notices - Any notices or other communications required or permitted hereunder shall be in writing and shall be deemed to have been given when received if given personally or by overnight courier service with confirmation of delivery, or by United States mail, registered or certified, return receipt requested, postage prepaid, addressed as follows:

Seller:	Valley Isle Fellowship, Inc. P. O. Box 886 Wailuku, Hawaii 96793-0886 Attention: Stephen Kaneshiro, Senior Pastor
With a Copy to:	Lawrence N. C. Inc., Esq. or Bradford R. Ing, Esq. 2145 Wells Street, Suite 204 Wailuku, Hawaii 96793
Buyer:	Frampton & Ward, LLC 2035 Main Street, #1 Wailuku, Hawaii 96793 Attention: William Frampton
With a Copy to:	Thomas D. Welch, Jr., Esq. Mancini, Welch & Geiger LLP 305 E. Wakea Avenue, Ste. 200 Kahului, Hawaii 96732

Each of the foregoing shall be entitled to specify a different address by giving notice of the aforesaid to the other.

6.2 Entire Agreement - This Agreement constitutes the entire agreement between the parties hereto pertaining to the subject matter hereof and supersedes all prior or contemporaneous agreements, understandings, negotiations and discussions, whether oral or written, of the parties in connection with the subject matter hereof. No supplements, amendments, or modifications of this Agreement shall be binding unless executed in writing by the parties hereto. No waiver or termination of this Agreement shall be binding unless executed in writing by the party who, pursuant to the terms of this Agreement, has the right to waive any rights, conditions, or obligations hereunder, or has the right to terminate this Agreement. No waiver of any provision of this Agreement shall be deemed or shall constitute a waiver of any other provision herein (whether or not similar), nor shall such waiver constitute a continuing waiver unless otherwise expressly provided.

6.3 Binding on Successors - All of the terms and provisions of this Agreement shall be binding upon and shall inure to the benefit of the parties hereto, their assigns, heirs, administrators, executors or successors.

6.4 Interpretation - The parties hereto acknowledge and agree that each has been given the opportunity to independently review this Agreement with legal counsel, and/or has the requisite experience and sophistication to understand, interpret, and agree to the particular language of the provisions hereof. In the event of an ambiguity in or dispute regarding the interpretation of same, the interpretation of this Agreement shall not be resolved by any rule of

interpretation providing for interpretation against the party who causes the uncertainty to exist or against the draftsman. The use of any term of gender or the neuter thereof shall be interpreted as applicable to the party to whom or to which it refers. This Agreement is intended to benefit only the parties hereto and no other person or entity, other than Buyer and Seller, has or shall acquire any rights hereunder.

6.5 Exhibits - The documents referred to hereinabove and Exhibits attached hereto are incorporated herein by reference as if set forth in full.

6.6 Execution of Documents - Each party agrees to execute and deliver such other documents and instruments and to take such further actions as may be reasonably necessary to fully carry out the intent and purposes of this Agreement.

6.7 Headings - The headings contained in this Agreement have been inserted for convenience only and in no way define or limit the scope or interpretation of this Agreement.

6.8 Counterparts - This Agreement may be executed in any number of counterparts, each of which shall be deemed an original, but all of which taken together shall constitute one and the same Agreement.

6.9 Facsimile Signatures - Facsimile signatures to this Agreement shall be deemed and given full force and effect as an original executed copy.

6.10 Attorneys' Fees - In the event either party hereto shall commence legal proceedings against the other to enforce the terms hereof, or to declare rights hereunder, the prevailing party in any such proceeding shall be entitled to recover from the losing party its costs of suit, including reasonable attorneys' fees, as may be fixed by the court.

6.11 - Governing Law - This Agreement has been entered into and executed in the State of Hawaii and shall be interpreted in accordance with the laws of said State. The parties hereto agree that all disputes or controversies arising out of this Agreement, and any claim for relief or other legal proceeding filed to interpret or enforce the respective rights of the parties hereunder, shall be filed either in the United States District Court for the State of Hawaii or the Second Circuit Court of the State of Hawaii. The parties to this Agreement, and each of them, hereby consent and submit to the in personam jurisdiction of the courts of Hawaii for purposes of litigating any action arising from this Agreement.

6.12 Time is of the Essence - Time is of the essence with respect to each and every provision herein in which time is a factor.

6.13 Reasonable Approvals - Any approval or consent required hereunder shall not be unreasonably withheld, conditioned, or delayed unless specifically provided to the contrary herein.

6.14 Severability - Should any provision of this Agreement be declared or determined by any court to be illegal or invalid, the validity of the remaining provisions of this Agreement shall not be affected thereby.

6.15 Confidentiality - Prior to Close of Escrow, both parties shall keep confidential this transaction and agreement (except from a party's lenders, consultants and others with a reasonable "need to know") and shall not issue any public statements or press releases except with the express consent of the other party. Notwithstanding the foregoing, Buyer acknowledges and agrees that Seller is allowed to provide information of the transaction and its status to its Congregation.

6.16 Exhibit "B" - All of the terms and conditions of Exhibit "B" are incorporated by reference in, and are part of, this Agreement.

IN WITNESS WHEREOF, the parties have caused this Agreement to be entered into as of the date first written above.

VALLEY ISLE FELLOWSHIP, INC.

By _____
ANDY SNIFFEN
Its Trustee
Seller

VALLEY ISLE FELLOWSHIP, INC.

By _____
RICHARD YAMASAKI
Its Trustee
Seller

FRAMPTON & WARD, LLC

By _____
WILLIAM FRAMPTON
Its MEMBER
Buyer

EXHIBIT "A"

Description of Property

The Property is a parcel of land, to be established by a "2-Lot Subdivision" to be approved by the County of Maui. The Property is a portion of TMK (2) 3-5-2:12, and shall be located and configured approximately as Lot B-2, 10.365 acres, as shown on the plan attached hereto as Schedule 1 to Exhibit "B". The process of establishing said Lot B-2 as a separate parcel of land that may be sold and conveyed to Buyer under this Agreement is described on Exhibit "B" to this Agreement and is referred to as the "2-Lot Subdivision". The Property will be conveyed together with all appurtenant rights, easements and benefits pertaining thereto that now exist or that may be established during the 2-Lot Subdivision process.

EXHIBIT "B"

Development and Governmental Approval Process, Requirements and Closing Conditions

Buyer and Seller agree as follows:

1. Seller's Cooperation and Authorizations - Promptly upon Buyer's request, Seller shall execute such forms of authorizations, consents and undertakings as Buyer may request, as needed from time to time, to enable Buyer to file applications for Final Approval (defined below).

2. The 2-Lot Subdivision Approval - The "2-Lot Subdivision Approval" means that the parties have obtained all approval from governmental agencies of the 2-Lot Subdivision in the approximate configuration shown on Schedule 1 attached hereto.

3. Buyer's Project Described - Buyer acknowledges and agrees that the sale of the Property to Buyer is contingent upon Buyer's commitment to Seller that the Project on the Property shall include the development, construction and sale of a one hundred percent (100%) affordable housing project, containing fifty-five (55) to seventy-five (75) single family residential units (house and lot) as a housing project (the "Affordable Project") exempt from statutes, ordinances and other rules as provided for by Hawaii Revised Statutes Section 201H-38 and approved by the Maui County Council (the "201H Approval"), with all permits and entitlements needed for development including but not limited to water, waste water and utility services so that construction and sales may commence.

4. Management and Costs of the 2-Lot Subdivision and 201H Approval - Buyer shall manage the 2-Lot Subdivision and 201H Approval process at no cost to Seller and Buyer shall pay all costs of professionals, filing fees and construction of infrastructure improvements that may be required as conditions of the 2-Lot Subdivision and 201H Approval. Further, Buyer acknowledges that time is of the essence and will expeditiously pursue the timely filing, processing of the 2-Lot Subdivision.

5. Easements and Access - The design and construction of the 2-Lot Subdivision and the Affordable Project shall be configured and managed so that Seller's remaining property shall have necessary vehicular and pedestrian ingress and egress, all necessary utility easements, as set forth on the Schedule of Access and Easements attached to this Exhibit "B" as Schedule 2. The Buyer's activities and the Affordable Project shall be managed so as not to prevent or cause delay in the County granting to Seller the necessary certificate of occupancy as it relates to the development of its own church facilities. Buyer will continue to discuss possible design alternatives regarding the 2-Lot Subdivision including possible "flag lot".

6. Buyer's Contingency - The closing of Buyer's purchase of the Property is contingent upon Buyer's obtaining the 2-Lot Subdivision Approval. As noted earlier in this Agreement, Buyer intends to proceed diligently to pursue said approval within the shortest

reasonable time and at Buyer's expenses. But the parties acknowledge that subdivision approval in Maui may encounter some risks and uncertainties. Therefore, the parties agree that Buyer shall have the right, by written notice to Seller, to terminate this Agreement if the Buyer, notwithstanding its diligent efforts, shall have been unable to obtain the 2-Lot Subdivision Approval by the Target Date of July 29, 2016.

The foregoing contingencies are for Buyer's benefit only and said termination right may be exercised by Buyer only.

7. Seller's Contingency - The parties acknowledge that Seller's commitment of the Property should not extend beyond a reasonable time period if Buyer is unduly delayed in obtaining Final Approval. Therefore, if by the Target Date of July 29, 2016 Buyer have been unable to obtain the 2-Lot Subdivision Approval, then the Seller may terminate this Agreement by written notice to Buyer in which event the parties shall be released from all further obligations to each other; provided, however, that Buyer shall be entitled to reasonable extensions if Buyer can show that the delays have occurred notwithstanding Buyer's diligent efforts and that such approval will occur within a reasonable time.

EXHIBIT "C"

PRELIMINARY 2-LOT SUBDIVISION SITE PLAN

PLEASE NOTE: This is a Preliminary Plan and is Subject to Change as result of Government Land Use Approval Process for the 2-Lot Subdivision and/or 201-H Affordable Housing Project;
However, in all cases the Proposed Project Use Shall Remain as a 100% Affordable Housing Project.

EXHIBIT "D"

PRELIMINARY PLAN FOR

201-H AFFORDABLE HOUSING PROJECT

PLEASE NOTE: This is a Preliminary Plan and is Subject to Change as result of Government Land Use Approval Process for the 2-Lot Subdivision and/or 201-H Affordable Housing Project; However, in all cases the Proposed Project Use Shall Remain as a 100% Affordable Housing Project.

EXHIBIT "E"

[Schedule of Access and Easements]

LOT B OF WAIKAPU EAST (LARGE LOT) SUBDIVISION
SUBDIVISION NO.3 (L.U.C.A 3.2069)
BEING A PORTION OF GRANT 3152 TO H. CORNWELL

SITUATED ON THE EASTERLY SIDE OF WAIALE ROAD
AND ON THE NORTHERLY SIDE OF FILE PLAN 2468
WAIKAPU, MAUI, HAWAII
TMK: (2) 3-5-002:012
TOTAL AREA = 25.355 ACRES

PLEASE NOTE: This is a Preliminary Plan and is Subject to Change, especially during Government Land Use Approval Process for the 2-Lot Subdivision & 201-H Affordable Housing Project; However, in all cases the Proposed Project Use Shall Remain as a 100% Affordable Housing Project.

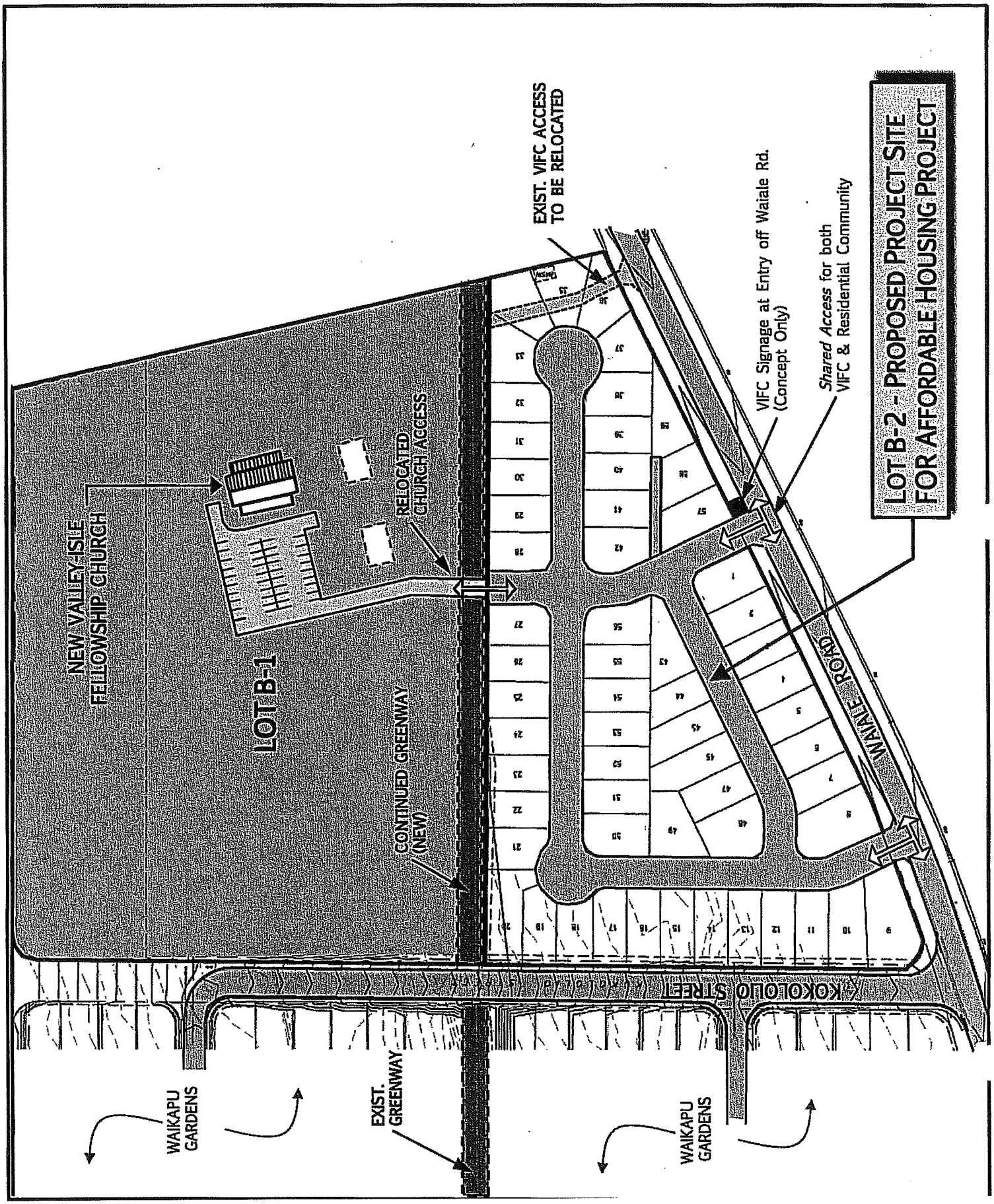
EXHIBIT "C"
PRELIMINARY PLAN ONLY
PROPOSED 2-LOT SUBDIVISION

PLEASE NOTE: This is a Preliminary Plan and is Subject to Change, Especially During Government Land Use Approval Process for the 2-Lot Subdivision & 201-H Affordable Housing Project; However, in all cases the Proposed Project Use Shall Remain as a 100% Affordable Housing Project.

EXHIBIT "D"

PRELIMINARY PLAN ONLY

201-H AFFORDABLE HOUSING PROJECT
100% AFFORDABLE HOUSING



THE ORIGINAL OF THE DOCUMENT
RECORDED AS FOLLOWS:
STATE OF HAWAII
OFFICE OF
BUREAU OF CONVEYANCES

Received for record this 27th
day of January, A.D., 20 05
at 8:01 o'clock a M. and
recorded as Regular System and/or Land Court
Document No. 2005-015822

LAND COURT SYSTEM | REGULAR SYSTEM

Return by Mail (✓) Pickup ( ) To:

VALLEY ISLE FELLOWSHIP
P O BOX 396
WAILUKU, HI 96793

TG: 200467157

TGE: A42010340
DORIE SCHOEPPNER

Tax Key: (2) 3-5-002-001 Total No. of Pages: 10

LIMITED WARRANTY DEED

KNOW ALL MEN BY THESE PRESENTS:

That WAILUKU AGRIBUSINESS CO., INC., a Hawaii corporation, whose address is 255 East Waiko Road, Wailuku, Hawaii 96793, hereinafter called the "Grantor," in consideration of the sum of Ten Dollars ($10.00) and other good and valuable consideration to Grantor paid by VALLEY ISLE FELLOWSHIP, INC. a Hawaii non-profit corporation, whose address is P. O. Box 396, Wailuku, Maui, Hawaii 96793, hereinafter called the "Grantee," the receipt whereof is hereby acknowledged, does hereby grant and convey unto the Grantee as a tenant in severalty, all of

Grantor's right, title and interest in and to the real property described in Exhibit "A" attached hereto and by this reference incorporated herein; subject, however, to all encumbrances noted on said Exhibit "A".

TO HAVE AND TO HOLD the same, together with any improvements thereon and the rights, easements, privileges, and appurtenances thereunto belonging or appertaining unto the Grantee, the heirs, representatives, administrators, successors and assigns of the Grantee, forever.

AND the Grantor covenants with the Grantee that the former is now seised in fee simple of the property granted; that the latter shall enjoy the same without any lawful disturbance; that the same is free from all encumbrances made by persons claiming by, through or under the Grantor, except the liens and encumbrances hereinbefore mentioned, and except also the liens and encumbrances created or permitted by the Grantee after the date hereof; and that the Grantor will WARRANT and DEFEND the Grantee against the lawful claims and demands of all persons claiming by, through or under the Grantor, except as aforesaid.

The terms "Grantor" and "Grantee", as and when used herein, or any pronouns used in place thereof, shall mean and include the masculine or feminine, or neuter, the singular or plural number, individuals or corporations, and their and each of their respective successors, heirs, personal representatives,

and permitted assigns, according to the context hereof. If these presents shall be signed by two or more Grantors or by two or more Grantees, all covenants of such parties shall for all purposes be joint and several.

The parties hereto agree that this instrument may be executed in counterparts, each of which shall be deemed an original, and said counterparts shall together constitute one and the same agreement, binding all of the parties hereto, notwithstanding all of the parties are not signatory to the original or the same counterparts. For all purposes, including, without limitation, recordation, filing and delivery of this instrument, duplicate unexecuted and unacknowledged pages of the counterparts may be discarded and the remaining pages assembled as one document.

IN WITNESS WHEREOF, the Grantor and the Grantee have executed these presents on this 11th day of Jan, 20 05.

APPROVED AS TO FORM:
MANCINI, WELCH & GEIGER

By Peter A. Horovitz

WAILUKU AGRIBUSINESS CO., INC.

By _____
AVERY B. CHUMBLEY
Its President

By _____
BEVERLY Y. CRUDELE
Its Secretary

Grantor

VALLEY ISLE FELLOWSHIP, INC.

By Manuel Saguitan
Manuel Saguitan
Its Secretary/Treasurer

By Richard C. Smith
Richard C. Smith
Its President

Grantee

STATE OF HAWAII)
) SS.
COUNTY OF MAUI)

On this 11th day of Jan, 2005, before me personally appeared Manuel Saguitan and Richard C. Smith, to me personally known, who, being by me duly sworn or affirmed, did say that such person(s) executed the foregoing instrument as the free act and deed of such person(s), and if applicable, in the capacities shown, having been duly authorized to execute such instrument in such capacities.

DORIE A. SCHOEPPNER NOTARY PUBLIC STATE OF HAWAII

Print Name: _____
Notary Public, State of Hawaii.

My commission expires: _____

Dorie A. Schoeppner
Expiration Date: September 28, 2007

STATE OF HAWAII)
) SS.
COUNTY OF ~~MAUI~~ HAWAII)

On this 27th day of December, 20 04, before me personally appeared AVERY B. CHUMBLEY and BEVERLY Y. CRUDELE, to me personally known, who, being by me duly sworn or affirmed, did say that such person(s) executed the foregoing instrument as the free act and deed of such person(s), and if applicable, in the capacities shown, having been duly authorized to execute such instrument in such capacities.

Nora Rosario L. S.

Print Name: Nora Rosario
Notary Public, State of Hawaii.

My commission expires: 12-13-2006

EXHIBIT "A"

All of that certain parcel of land (being portion(s) of the land(s) described in and covered by Grant 3152 to Henry Cornwell and Grant 3343 to Claus Spreckels) situate, lying and being on the easterly side of Honoapiilani Highway (F.A.P. No. 13-G) at Waikapu, Island and County of Maui, State of Hawaii, being LOT B of the "WAIKAPU EAST (LARGE-LOT) SUBDIVISION NO. 3" and thus bounded and described:

Beginning at a point at the northwesterly corner of this lot, being also the southwesterly corner of Lot A of Waikapu East (Large-Lot) Subdivision No. 3, the coordinates of said point of beginning referred to Government Survey Triangulation Station "LUKE" being 5,563.76 feet south and 2,085.73 feet west and running by azimuths measured clockwise from true South:

1. 262° 00' 904.67 feet along the remainder of Grant 3152 to Henry Cornwell, being also along Lot A of Waikapu East (Large-Lot) Subdivision No. 3 to a point;

2. 339° 07' 810.49 feet along the remainder of Grant 3152 to Henry Cornwell, being also along Lot L of Waikapu East (Large-Lot) Subdivision No. 3 to a point;

3. Thence along same on a curve to the right, with the point of curvature azimuth from the radial point being: 249° 07' and the point of tangency azimuth from the radial point being: 256° 16' 35", having a radius of 2,410.00 feet, the chord azimuth and distance being: 342° 41' 47.5" 300.96 feet to a point;

4. Thence along the remainder of Grant 3152 to Henry Cornwell, being also along Lot M of Waikapu East (Large-Lot) Subdivision No. 3 on a curve

to the right, with the point of curvature azimuth from the radial point being: 256° 16' 35" and the point of tangency azimuth from the radial point being: 5° 32', having a radius of 40.00 feet, the chord azimuth and distance being: 40° 54' 17.5" 65.23 feet to a point;

5. 95° 32' 1273.48 feet along same to a point;

6. Thence along same on a curve to the right, having a radius of 40.00 feet, the chord azimuth and distance being:

140° 32' 05.5" 56.57 feet to a point;

7. 185° 32' 11" 622.30 feet along the easterly side of Honoapiilani Highway (F.A.P. No. 13-G) to a point;

8. Thence along same on a curve to the left, with the point of curvature azimuth from the radial point being: 275° 32' 11" and the point of tangency azimuth from the radial point being: 271° 55' 48", having a radius of 2,899.93 feet, the chord azimuth and distance being: 183° 43' 59.5" 182.50 feet to the point of beginning and containing an area of 25.355 acres, more or less.

TOGETHER WITH an easement for roadway purposes over Roadway Lots L and M of "WAIKAPU EAST (LARGE-LOT) SUBDIVISION NO. 3" and the KUIKAHI DRIVE EXTENSION; provided, however, that if and when any of said roadway lots shall be conveyed to or acquired by any governmental authority as a public highway, then all private easement rights granted hereby in said roadway lots shall automatically terminate.

SUBJECT, HOWEVER, to the following:

1. Reservation in favor of the State of Hawaii of all mineral and metallic mines.

2. The terms and provisions, including the failure to comply with any covenants, conditions and reservations, contained in Agreement dated June 2, 1986, and recorded in the Bureau of Conveyances of the State of Hawaii in Liber 19563 on Page 104, by and between Wailuku Agribusiness Co., Inc. and County of Maui, by its Department of Water Supply, re: private fire protection system

3. The terms and provisions, including the failure to comply with any covenants, conditions and reservations, contained in Agreement dated March 14, 1990, and recorded in the said Bureau of Conveyances as Document No. 90-069334, by and between Wailuku Agribusiness Co., Inc. and Department of Water Supply of the County of Maui, re: private water system.

Above agreement was amended by instrument dated August 24, 1990, and recorded as Document No. 90-164426.

4. The terms and provisions, including the failure to comply with any covenants, conditions and reservations, contained in Agreement dated March 14, 1990, and recorded in the said Bureau of Conveyances as Document No. 90-069335, by and between Wailuku Agribusiness Co., Inc. and Department of Water Supply of the County of Maui, re: private fire protection system.

5. Existing sewerline Easement "S-1" (15 feet wide), as shown on survey map prepared by Warren S. Unemori, Land Surveyor, with Warren S. Unemori - Engineering, Inc., dated June 27, 1994, revised January 11, 1995 and February 17, 1995.

6. Grant to County of Maui dated March 30, 1994, and recorded in the said Bureau of Conveyances as Document No. 95-079773, granting an easement for sewerline purposes over Easement "S-1", being more particularly described therein.

Lack of joinder by C. Brewer Homes, Inc., now known as Hawaii Land & Farming Company, Inc., a Delaware corporation.

7. The terms and provisions, including the failure to comply with any covenants, conditions and reservations,

contained in Memorandum Concerning Grant of Various Property Rights dated --- (acknowledged August 19, 1999 and August 18, 1999), and recorded in the said Bureau of Conveyances as Document No. 99-189645.

8. Grant to Hawaii Land & Farming Company, Inc., a Delaware corporation, dated August 3, 1999, and recorded in the said Bureau of Conveyances as Document No. 99-189647, granting a perpetual Offsite Drainage Easement "D-1" in favor of Tax Key (2) 3-5-001-001 and (2) 3-4-007-002.

9. The terms and provisions, including the failure to comply with any covenants, conditions and reservations, contained in Unilateral Agreement and Declaration for Conditional Zoning dated April 6, 2000, and recorded in the said Bureau of Conveyances as Document No. 2000-049836.

10. The terms and provisions, including the failure to comply with any covenants, conditions and reservations, contained in Subdivision Agreement dated June 21, 2001, and recorded in the said Bureau of Conveyances as Document No. 2001-104990, by and between Wailuku Agribusiness Co., Inc., a Hawaii corporation, and the County of Maui, through its Department of Public Works and Waste Management.

11. The terms and provisions, including the failure to comply with any covenants, conditions and reservations, contained in Agreement to Grant Easement dated June 25, 2001, and recorded in the said Bureau of Conveyances as Document No. 2001-097114, by and between Wailuku Agribusiness Co., Inc., a Hawaii corporation, and Waiko Baseyard, LLC, a Hawaii limited liability company.

12. Grant to Waiko Baseyard, LLC, a Hawaii limited liability company, dated June 25, 2001, and recorded in the said Bureau of Conveyances as Document No. 2001-097115, granting a non-exclusive easement over and across a portion of the "existing cane haul" road, being more particularly described therein.

13. The terms and provisions, including the failure to comply with any covenants, conditions and reservations, contained in Private Fire Protection System Agreement dated March 21, 1997, and recorded in the said Bureau of Conveyances as Document No. 2002-046402, by and between Brewer Environmental Industries, Inc., a Hawaii corporation, and Wailuku Agribusiness Co., Inc., a Hawaii corporation.

14. Grant to Waikapu 28 Investment, LLC, a Hawaii limited liability company, dated January 30, 2003, and recorded in the said Bureau of Conveyances as Document No. 2003-058167, granting easements for utility purposes being more particularly described therein.

15. The terms and provisions, including the failure to comply with any covenants, conditions and reservations, contained in Agreement for Allocation of Future Subdivision Potential dated November 3, 2004, and recorded in the said Bureau of Conveyances as Document No. 2004-227693, by and between Wailuku Agribusiness Company, Inc. and Hawaii Land & Farming Company, Inc.

16. Designation of Easement "E-2" for electrical purpose shown on survey map prepared by Reed M. Ariyoshi, Registered Professional Land Surveyor, with Warren S. Unemori-Engineering Inc., dated September 21, 2004.

17. Designation of Easement "3" for waterline purpose as shown on survey map prepared by Reed M. Ariyoshi, Registered Professional Land Surveyor, with Warren S. Unemori-Engineering Inc., dated September 21, 2004.

18. Grant to Maui Electric Company, Limited, a Hawaii corporation, and Verizon Hawaii Inc., a Hawaii corporation, dated Nov 23, 2004, and recorded in the said Bureau of Conveyances as Document No. 2004-264049, granting easements for utility purposes being more particularly described therein.

19. The terms and provisions, including the failure to comply with any covenants, conditions and reservations, contained in Declaration of Covenants, Conditions, Easements, Reservations and Restrictions dated _____, and recorded in the said Bureau of Conveyances as Document No. _____.

END OF EXHIBIT "A"

Tax Key: (2) 3-5-002-001

Waikapu East (Large-Lot) Subdivision No. 3
Description of Lot B

Land situated on the easterly side of Honoapiilani Highway (F.A.P. No. 13-G) at Waikapu, Maui, Hawaii

Being a portion of Grant 3152 to Henry Cornwell

Beginning at a point at the northwesterly corner of this lot, being also the southwesterly corner of Lot A of Waikapu East (Large-Lot) Subdivision No. 3, the coordinates of said point of beginning referred to Government Survey Triangulation Station "LUKE" being 5,563.76 feet South and 2,085.73 feet West and running by azimuths measured clockwise from True South:

1. 262° 00' 904.67 feet along the remainder of Grant 3152 to Henry Cornwell, being also along Lot A of Waikapu East (Large-Lot) Subdivision No. 3 to a point;

2. 339° 07' 810.49 feet along the remainder of Grant 3152 to Henry Cornwell, being also along Lot L of Waikapu East (Large-Lot) Subdivision No. 3 to a point;

3. Thence along same on a curve to the right, with the point of curvature azimuth from the radial point being: 249° 07' and the point of tangency azimuth from the radial point being: 256° 16' 35", having a radius of 2,410.00 feet, the chord azimuth and distance being: 342° 41' 47.5" 300.96 feet to a point;

4. Thence along the remainder of Grant 3152 to Henry Cornwell, being also along Lot M of Waikapu East (Large-Lot) Subdivision No. 3 on a curve to the right, with the point of curvature azimuth from the radial point being: 256° 16' 35" and the point of tangency azimuth from the radial point being: 5° 32', having a radius of 40.00 feet, the chord azimuth and distance being: 40° 54' 17.5" 65.23 feet to a point;

5. 95° 32' 1,273.48 feet along same to a point;

6. Thence along same on a curve to the right, having a radius of 40.00 feet, the chord azimuth and distance being: 140° 32' 05.5" 56.57 feet to a point;

7. 185° 32' 11" 622.30 feet along the easterly side of Honoapiilani Highway (F.A.P. No. 13-G) to a point;

8. Thence along same on a curve to the left, with the point of curvature azimuth from the radial point being: 275° 32' 11" and the point of tangency azimuth from the radial point being: 271° 55' 48", having a radius of 2,899.93 feet, the chord azimuth and distance being: 183° 43' 59.5" 182.50 feet to the point of beginning and containing an Area of 25.355 Acres.

SUBJECT, HOWEVER, to the following:

1. An existing Sewerline Easement "S-1" in favor of the County of Maui.

NOTE: This description of Lot B has been prepared solely for use by the Owners and shall not be construed as a description of a parcel of land separate from Lot 1-A-1 of Waikapu East (Large-Lot) Subdivision No. 2. Only after all required approvals from the governmental agencies have been granted, can it be considered as a parcel of land separate from Lot 1-A-1 of Waikapu East (Large-Lot) Subdivision No. 2.

V:\PROJDATA\02proj\02067\Survey\Desc. of Lot B.wpd

Preface and Executive Summary

Preface

Waiale Road 201, LLC ("Applicant") is proposing to develop 70 affordable single-family residential housing units and a neighborhood park pursuant to 201H-38, Hawaii Revised Statutes (HRS). The proposed development is located at Waiale Road, Wailuku, Maui, Hawaii further identified as TMK: (2) 3-5-002:012 por. The subject property consists of approximately 10.365 acres. The project will be developed under the 210H, HRS and the housing units will be affordably-priced to families making 80 percent to 140 percent of Maui County's median family income. The Applicant, in coordination with the County of Maui Department of Housing and Human Concerns, will seek exemptions from certain statutes, ordinances, charter provisions, and rules relating to planning, zoning, construction standards for subdivisions, development and improvement of land, and the construction of dwelling units thereon as provided by Section 201H-38, Hawaii Revised Statutes. These exemptions request by the Applicant will be processed through the County of Maui with approval to be granted by the Maui County Council. The proposed subdivided single-family residential lots will have a minimum lot size of 3,900 square feet.

The proposed project does not involve the use of State and County lands or funds, it is not within a shoreline area or conservation district and it is not within any historic site designated in the National Register or Hawaii Register; and there are no other triggers for an environmental assessment pursuant Chapter 343, HRS. As noted, the project will be developed pursuant to 201H-38, HRS.

This document provides a basis for review and analysis of the proposed affordable residential housing project.

Executive Summary

Project Name:	Waiale Affordable Housing Project
Type of Document:	201H, Hawaii Revised Statutes Affordable Housing Application
Accepting Authority:	Department of Housing and Human Concerns County of Maui 2200 Main Street, Suite 546 Wailuku, Hawaii 96793 Contact: Ms. Carol Reimann, Director Phone: (808) 270-2805
Approving Authority:	Maui County Council
Location:	TMK: (2) 3-5-002:012 por Waiale Road, Wailuku Island of Maui, Hawaii
Applicant:	Waiale Road 201, LLC 305 E. Waikea Street Kahului, Maui, Hawaii 96732 Contact: Mr. William Frampton (Managing Partner) Phone: (808) 357-1954
Consultant:	V. Bagoyo Development Consulting Group, LLC. 1500 Kilinoe Place Wailuku, Hawaii 96793 Contact: Vince G Bagoyo, Jr. Phone: (808) 357-3842
Project Summary:	The applicant ("Waiale Road 201, LLC") is proposing to develop 70 affordable single-family residential housing subdivision and a neighborhood park on approximately 10.365 acres of land located at Waiale Road, Wailuku, Maui, Hawaii and further identified as TMK: (2) 3-5-002:012 por. The proposed single-family residential housing dwelling units will be 100 percent affordable to qualified individuals earning within the 80 percent to 140 percent of Maui median income as set forth by the

County of Maui, Department of Housing and Human Concerns' Affordable Sales Price Guidelines. The basic parameters of the allocation for affordability are as follows:

a) 30% of the project total units will be priced to families earning 80% to 100% of Maui's median income;
b) 30% of the project total units will be priced to families earning 101% to 120% of Maui's median income;
c) 40% of the project total units will be priced to families earning 121% to 140% of Maui's median income.

Related improvements include grading, the construction of drainage system, construction of internal roadway, utilities, and construction of residential dwelling units. The proposed project will be filed pursuant to 201H, Hawaii Revised Statutes (HRS). This 201H, HRS application has been prepared consistent with Chapter 15-307-26 HAR. It provides a basis for review and analysis of the proposed affordable single-family residential housing project.

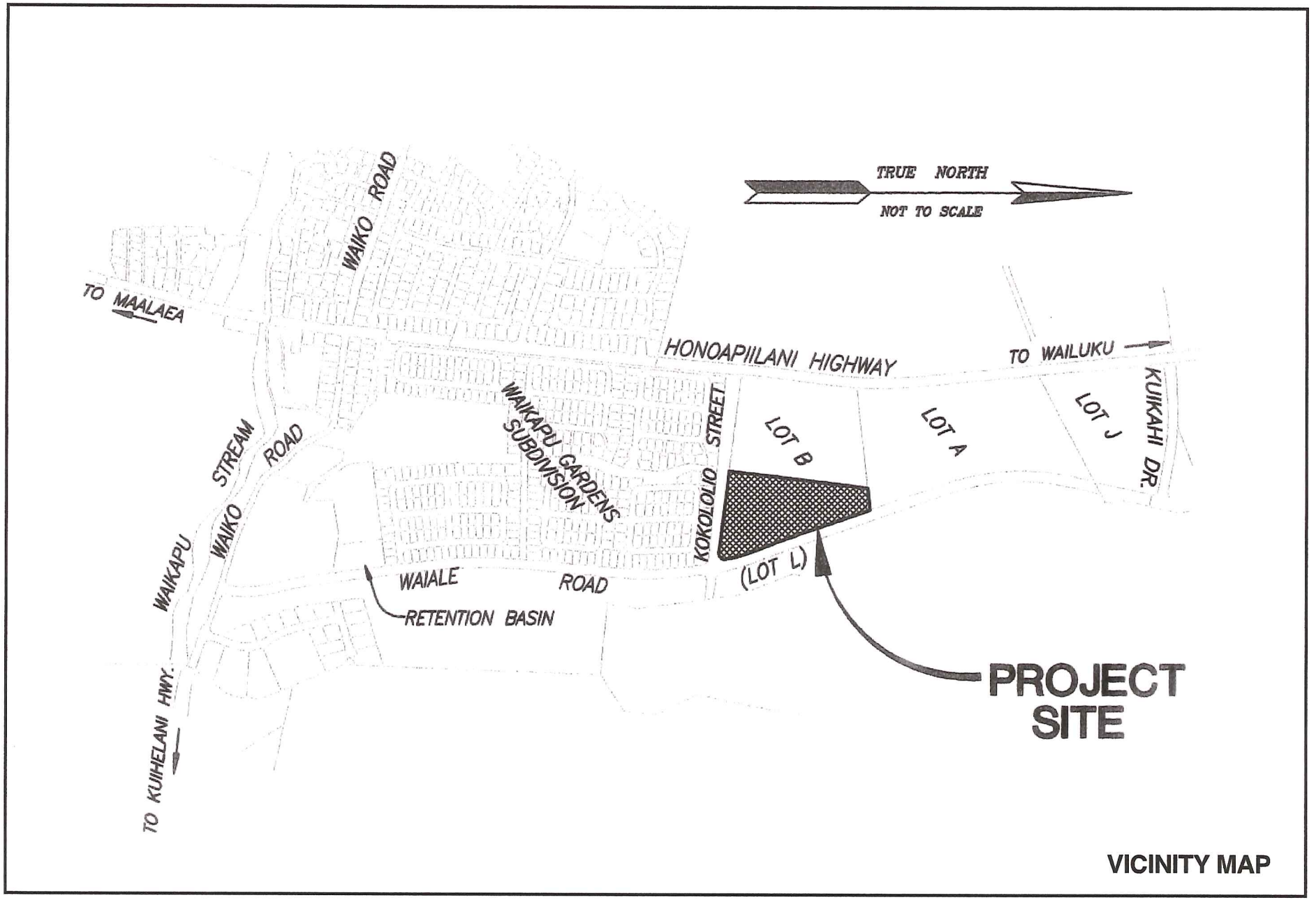
I. Project Overview

I. PROJECT OVERVIEW

A. PROPERTY LOCATION, EXISTING USE AND LAND OWNERSHIP

The applicant for the proposed project is Waiale Road 201, LLC ("Applicant") and whose mailing address is 305 E. Wakea Avenue, Suite 100, Kahului, Maui, Hawaii 96732. The applicant is buying a portion of TMK: (2) 3-5-002:012, approximately 10.365 acres from Valley Isle Fellowship (VIF), owner of the project site. The applicant entered into a purchase agreement with VIF to buy the approximately 10.365 acres for the proposed project (see attached executed purchase agreement). The subject parcel is identified as TMK: (2) 3-5-002.012. It is also known as Lot B of the Waikapu East (Large Lot) Subdivision. The remaining western portion of the property is owned and utilized by Valley Isle Fellowship. The property is bordered by the undeveloped Lot A of the Waikapu East (Large Lot) Subdivision to the north, Waiale Road to the east; Honoapiilani Highway to the west, and Kokololio Street and the Waikapu Gardens subdivision to the south. The proposed project will encompass the eastern 10.365 acres of the 25.355 acre parcel.

The applicant is proposing the development of 70 affordable single-family residences, neighborhood park and related improvements, with lot sizes ranging from approximately 3,900 square feet to 7,000 square feet. The mauka portion of the subject parcel is within the State Land Use Urban District for the Valley Isle Fellowship worship center facility and County zoned P1 Public/Quasi Public district (conditional zoning). The makai portion of the subject parcel for the proposed affordable housing project is within the State Land Use Agricultural District and County zoned Ag.



VICINITY MAP

Proposed Wai'ale Affordable Housing Project

BAGOYO DEVELOPMENT CONSULTING GROUP

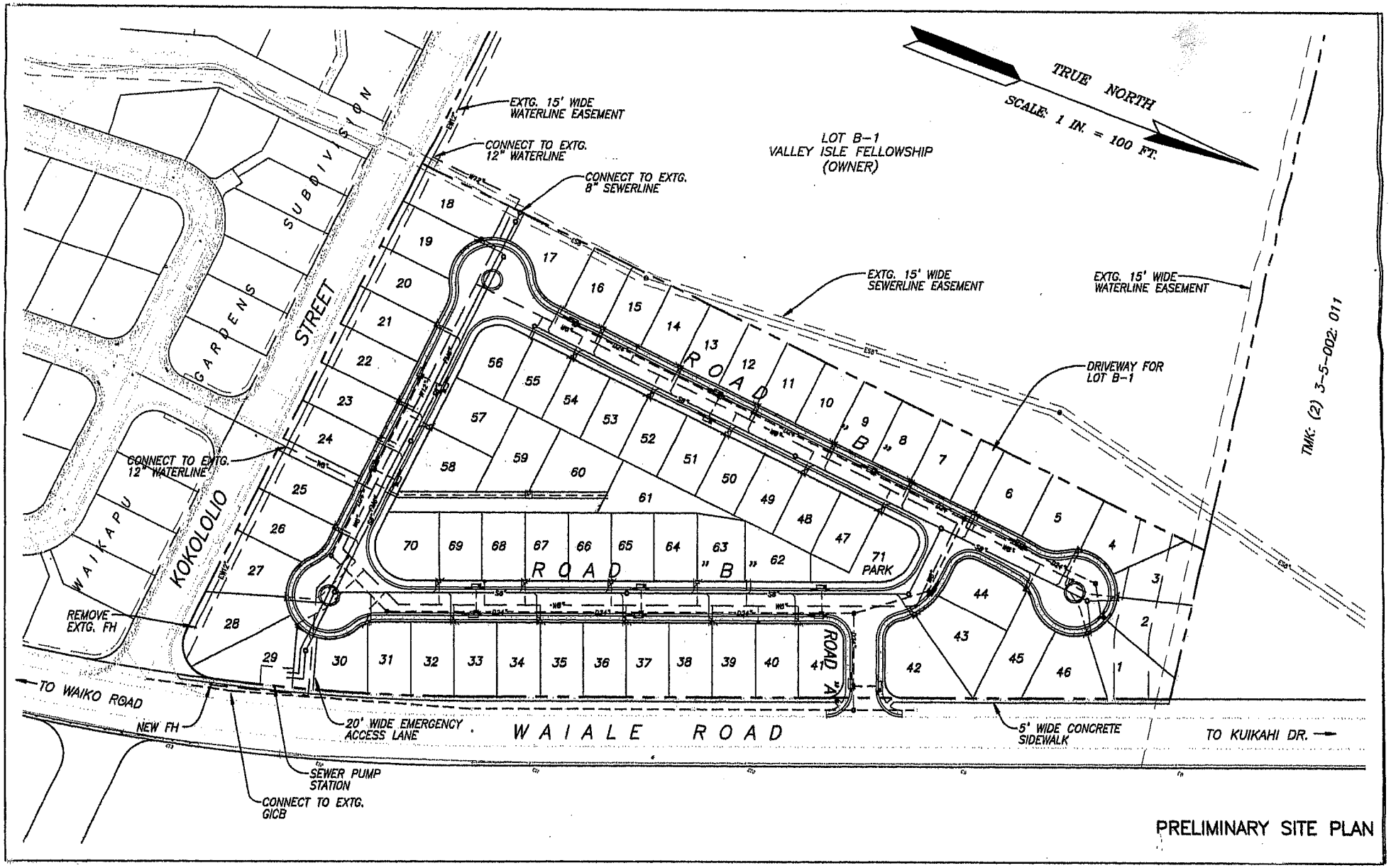
The subject property is adjacent to existing recently-developed 411 affordable housing subdivision known as Waikapu Gardens Phase I Subdivision and recently-completed 56 Waikapu Gardens Phase II affordable housing project developed by Spencer Homes Development. The proposed Waiale affordable housing project is an ideal extension of the existing Waikapu Gardens subdivisions affordably-priced for Maui's working families.

The subject site is currently vacant and the mauka portion of the property is the site of Valley Isle Fellowship's proposed worship center facility which is currently under construction.

The proposed project site that is under a purchase agreement with VIF consists of approximately 10.365 acres which will be conveyed to the applicant upon completion of the subdivision of the subject parcel.

B. PROPOSED ACTION

The applicant (Waiale Road 201, LLC) is requesting approval of its proposed project pursuant to 201H-38, Hawaii Revised Statutes, for the use of the subject property for affordable housing subdivision. Upon receipt of applicant's 201H-38, HRS application approval, the applicant proposes to develop 70 improved lots ranging in size from approximately 3,900 square feet to 7,000 square feet and single-family dwelling units and will be sold in fee simple. The proposed single-family residential housing project will be 100 percent affordable to qualified individuals earning within the 80 percent to 140 percent of the Maui median income as set forth by the County of Maui, Department of Housing and Human Concerns Affordable Sales Price Guidelines. The lots will have a minimum lot size of approximately 3,900 square feet (see Appendix C referred to as Preliminary Site Plan). Also planned is a neighborhood park and related infrastructure improvements required for the proposed project, such as grading, the construction of internal roadways, drainage systems, utilities, and construction



PRELIMINARY SITE PLAN

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of residential dwelling units. The sales price for the proposed affordable house-lot package will be based on the Maui Department of Housing and Human Concerns' Affordable Sales Guidelines for qualified families earning 80 percent to 140 percent of Maui's median income. The proposed project will be sold as house and lot package in fee simple.

A market demand study for the proposed project was conducted by ACM Consultants, Inc. (See attached Appendix J referred to as Market Demand Analysis Report). The main objectives of the market demand study were as follows: (1) to define and delineate the market area; (2) to identify and analyze the current supply and demand conditions specific to the subject's market; and (3) identify, measure and forecast the effect of anticipated developments or other factors on future supply. According to the market demand study by ACM Consultants, Inc., the proposed Waiale affordable housing project can expect to see heightened demand, due to its central Maui location and affordable price points. The market study further opined that statistical evidence has clearly shown that under all market conditions, this segment has the most demand. The proposed 70 single-family residences will be targeted towards residents earning 80 to 140 percent of Maui County's median income in accordance with the county of Maui Department of Housing and Human Concerns affordable.Sales Price Guidelines. This proposed affordable housing project will give Maui's working families an opportunity for home ownership. These are the working families that this proposed affordable housing project will serve.

There's a great demand for affordably-priced single-family residential housing project on Maui. According to the Hawaii Housing Planning Study, 2011 prepared by SMS Research and Marketing Services, Inc. for the County of Maui, among Maui's 53,621 households in 2011, about 56 percent were homeowners. The study further reports that a "significant number of Maui households live in overcrowded conditions or are double-up with other families". In the past four years, crowding has begun to increase and is presently over 11 percent, according

to Hawaii Housing Planning Study, 2011. According to SMA Research, Housing Demand Survey measures demand as interest in moving to a new housing unit. In 2006, Maui County demand led the State. Nearly 45 percent of all Maui County households expressed a desire to move to a new home in the near future, the study notes. Based on these conclusive findings by SMS Research's Hawaii Housing Planning Study, 2011, the applicant's proposed affordable housing project will undoubtedly help meet the housing demand on the island of Maui, especially families earning between 80 to 140 percent of Maui's median income.

The proposed single-family dwelling unit sizes will range from approximately 1,400 square feet to 1,900 square feet, 3-bedroom/2-bath home to 4-bedroom/2-bath home with 2-car garage. Refer to Appendix K that shows the preliminary house floor plans for the proposed project.

The applicant's market demand Consultant, ACM Consultants, Inc., has researched the current prevailing sales prices for similar affordable housing project in the Central Maui area, more specifically, the 411 affordable housing project in Waikapu and 56 Waikapu Gardens Phase II project that were recently developed within close proximity of the proposed project. The price range being proposed by the applicant will meet those earning 80 percent to 140 percent of Maui's median income families and affordably-priced for Maui's working families.

The estimated cost of the subdivision improvements is approximately $4.5 million and the estimated cost for the construction of the dwelling units is approximately $14 million. Construction of the subdivision improvements and the dwelling units and related infrastructure improvements is anticipated to begin as soon as all permitting approvals of applicant's 201H application have been received. The applicant anticipates that the completion of the project is expected to take 36 months to complete baring no unanticipated delays.

C. REASONS FOR JUSTIFYING THE REQUEST

The proposed project will provide affordable single-family dwelling units for sale to those earning 80 percent to 140 percent of Maui's median income families with sales price according to Maui Department of Human Concerns' Affordable Sales Guidelines. The entire proposed project will be 100 percent affordable. The project is adjacent to Waikapu Gardens Phases I and II affordable housing projects. The proposed site is located in very close proximity of old Waikapu residential village town and Waiolani residential subdivision. The proposed project is designed to be compatible with existing residential subdivision within Waikapu town village and neighboring subdivision.

According to ACM Consultants, Inc., owner-occupied housing on Maui accounts for 58 percent of all occupied housing units. The total housing stock grew at a rate of about 1,000 units a year in the 1980's. The total accelerated to 1,500 – 2,000 new units in the 1990's, well short of demand. Housing inventory growth remained at about this level prior to the recession. The population on Maui has expanded tremendously for the past 10 to 12 years, but as the economy recovers from the recession, housing supply has expanded at a slower pace than historic trends. As a result, demand for housing has outpaced supply and home process and rents continue to rise.

Prices in the Maui residential real estate market peaked in 2006, when the median sales price for a single-family home was $706,640. Prices declined year over year from 2007 through 2011, with the highest percent decrease of 13.9 percent occurring in 2009. The median sales price for a single-family home bottomed out in 2011 at $435,000. Since then, prices increased, with year over year increases to $567,750 in 2014. According to Realtors Association of Maui, the current median price of single-family home on Maui rose 9 percent to $630,000. With the increase of median price of single-family units and lack of housing supply, many Maui working families earning 80 percent to 140 percent of the median income

are unable and have difficulty purchasing a house and lot package at the current median sales price. With this proposed affordable housing project, it will allow families the opportunity and entry to home ownership.

As noted earlier in this report, based on the project market demand study prepared by ACM Consultants, Inc. (see Appendix J) there is a great need for affordable housing dwelling units within the price range as proposed by the applicant those families earning 80 percent to 160 percent of Maui's median income. According to the Wailuku-Kahului Community Plan District it encourages the development of affordable housing within the region. Under the community plan, its housing policy goal specifically states that *"a sufficient supply and choice of attractive, sanitary and affordable housing accommodations for the broad section of residents, including the elderly"*. Similarly, the Maui Countywide Policy Plan adopted by Ordinance No. 3732 and took effect on March 24, 2010, states in its goals, objectives, policies, and action to *"expand housing opportunities for residents"* in order to *"reduce the affordable housing deficit for residents"*. With the applicant's proposed affordable housing project at the proposed site will meet a significant community need as noted within the Wailuku-Kahului Community Plan District and in the Maui Countywide Policy Plan.

D. ENTITLEMENTS APPROVALS REQUIRED

The proposed 70 single-family lots Waiale residential housing project will be developed 100 percent affordable housing project targeting families earning 80 percent to 140 percent of Maui's median income as set forth by Maui County Department of Housing and Human Concerns' Affordable Sales Guidelines. This application is filed and processed and approved by Maui County pursuant to 201H-38, HRS. Under Section 201H-38, Hawaii Revised Statutes promotes the development of affordable housing project by providing exemptions from *"all statutes, ordinances, charter provisions, and rules of any government agency relating to planning, zoning, construction standards for subdivisions,*

development and improvement of land, and the construction of dwelling units thereon" provided that the proposed housing project is consistent with the purpose and intent of 201H-38, HRS, and meets minimum requirements of health and safety. This proposed project will be consistent and in compliance with the requirements pursuant to 201H, HRS.

Pursuant to 201H-38, Hawaii Revised Statutes, the applicant is requesting exemptions from Community Plan Amendment (CPA) and Change-In Zoning (CIZ) processes, exemptions from Chapter 19.68, MCC, Chapter 205, HRS, as well as other County requirements to expedite the implementation and delivery of the proposed affordable housing units to Maui's residents without compromising health and safety considerations. This project meets the intent of Maui Countywide Policy Plan and the Wailuku-Kahului Community Plan District goals and objectives relating to providing and expanding affordable housing opportunities for Maui's residents.

The proposed action does not involve the use of any State and County funds or lands, it is not within the shoreline area or conservation district, and is not within any historic site designated in the National Register or Hawaii Register; hence, there are no other triggers for an environmental assessment pursuant to Chapter 343, Hawaii Revised Statutes.

The proposed project site is in the urban growth boundary designation within the approved Maui Island Plan (MIP) and outside of protected areas.

II. Description of the Existing Environment

II. DESCRIPTION OF THE EXISTING ENVIRONMENT

A. PHYSICAL SETTING

1. Project Site History

The subject site is presently vacant and the mauka portion of the subject site is the proposed site for the Valley Isle Fellowship's worship center facility which is currently under construction. According to the former owner of the site, Wailuku Agribusiness Company, small portion of the site was used for pineapple cultivation until the late 1970's.

The subject property was formerly owned by Wailuku Agribusiness Company, Inc. and was later purchased by Valley Isle Fellowship in 2006.

2. Surrounding Land Uses

The Waikapu village town community is located about half a mile south of the subject property. Waikapu town is an old plantation community originally developed as a sugar plantation village. Today, Waikapu is primarily a residential community with limited lands allocated for commercial use along Honoapiilani Highway. Immediate south of the subject property is 411-units Waikapu Gardens Phase I and 56-units Waikapu Gardens Phase II affordable housing projects developed by Spencer Homes, Inc. There are newer residential subdivisions that have been developed immediately west or mauka of the subject property. Such residential projects are: Waiolani subdivision and Waiolani Elua residential projects. Kehalani subdivision located approximately half a mile north west of the subject property; and Wailuku Heights subdivision located about 1.0 mile west of the subject property. The Maui Tropical

Plantation is located at the southern extent of Waikapu, approximately less than a mile south west of the subject property. The eastern boundary of the property is along Waiale Road and the southern boundary is along Waiko Road. Approximately half a mile east of the subject property is A&B properties, Inc.'s proposed 545-acre Waiale community master planned project consisting of approximately 2,500 residential units and commercial complex. Also located approximately a mile east of the project site is the proposed 65-acre sports complex currently under construction by the State of Hawaii.

Kuihelani Highway, a State of Hawaii two-way, four-lane divided highway, is located east of the subject property. Kuihelani Highway provides transportation access to West Maui by connecting Kahului with Honoapiilani Highway. Kuihelani Highway also provides access to Central, East and South Maui communities. Honoapiilani Highway located west or mauka of the subject property provides access to Wailuku town, Waiehu and Waihee communities and West Maui.

3. Climate

Maui's climate is relatively consistent throughout the year. The island's climate varies from terrain. Characteristic of most of Maui's climate, the proposed project site experiences mild and uniform temperatures year-round, moderate humidity and consistent northeasterly trade winds. Average temperatures at the project site (based on temperatures recorded at Kahului Airport) range from low 60 to high 80 degrees Fahrenheit. August is historically the warmest month, while January and February are the coolest. Based on rainfall data from the Maui County Data Book 2010, annual precipitation rainfall averages 25 to 30 inches per year with winter maximums. Winds blow predominantly out of the north-northeasterly direction.

4. Topography and Soils Characteristics

The existing ground slopes in a west to east direction from elevation 355 feet above mean sea level at mauka portion of the property (western boundary) to elevation 324 feet at the Waiale Road (eastern boundary), with an average slope of approximately 4.8%. The project site is currently vacant and was previously used for pineapple cultivation.

According to the "Soil Survey Geographic Database of Islands of Maui, State of Hawaii (September, 2014)", prepared by the United States Department of Agriculture Natural Conservation Service, the soils within the project site are classified as Puuone sand (PZUE) and Iao silty clay (IaA). Puuone sand is characterized as having rapid permeability near the surface, slow runoff, and a moderate to severe wind erosion hazard. Iao silty clay is characterized as having slow runoff and an erosion hazard of no more than slight.

The State Department of Agriculture has established three categories of Agricultural Lands of Importance to the State of Hawaii (ALISH). These are: "Prime" agricultural lands which have soil quality, growing season, and moisture supply needed to produce sustained high yield of crops economically when treated and managed according to farming methods; "Unique" agricultural lands which have the special combination of soil quality, location, growing season, moisture supply, and is used to produce sustained high quality and of high yields of specific crop when treated and managed according to modern farming methods; and, "Other" important agricultural lands are lands other than Prime or Unique agricultural lands that are also of statewide or local importance for agricultural use.

As indicated by the ALISH map (refer to Appendix O), the project site falls within the "prime" agricultural category. The project site was

previously used for pineapple cultivation and ceased agricultural cultivation in the late 1970s' and early 1980s. The land underlying the project site is classified as Zone A under the U.S. Department of Agriculture Soil conservation Service, Vegetation Zones of Hawaii. As noted earlier in this report, the subject property is undeveloped and is not presently used in any agricultural cultivation.

5. Flood and Tsunami Hazard

The proposed project site is located near the base of the West Maui Mountains. According to Panel Numbers 150003 0393E of the Flood Insurance Rate Map (FIRM), dated September 29, 2009, prepared by the United States Federal Emergency Management Agency (FEMA), the project site is situated in Flood Zone X. Flood Zone X represents areas outside of the 0.2% annual chance floodplain. The classification of the subject property as Flood Zone X is further confirmed by the Maui County Planning Department's Zoning and Flood Confirmation Form (refer to Appendix M) and no flood development permit is required.

6. Flora and Fauna

As noted earlier in this report, the project site was formerly used by its former owner, Wailuku Sugar Company, for sugar cane and pineapple cultivations and the site has been vacant and remained fallow since it ceased agricultural operation in the late 1970s and early 1980s.

A biological resources survey was conducted at the project site by Robert W. Hobdy (Environmental Consultant) on July 2015 (refer to Appendix G). Flora and fauna survey field work of the project site was performed by the Consultant. The primary purpose of the field survey was to determine if there were any federally listed endangered, threatened,

proposed, or candidate flora and fauna species within the proposed project site. According to the flora and fauna field survey by Mr. Robert Hobdy, the vegetation throughout the proposed project area is dominated by non-native species that are of no particular environmental interest of concern. Just two common indigenous plant, uhaloa and ilima were found growing in a recently disturbed area. Also, vegetation found within the project area was Guinea grass, koa hoale, castor bean, and glycine. As noted in the report by Mr. Hobdy, "no federally listed Endangered or Threatened plant species (USFWS, 2015) were found, nor do any plants that are candidates for such status occur on the project area". No special plant habitats occur on or near the project and no potential wetlands occur in this dry upland site. The report further affirms that the proposed project is not expected to have any significant impacts on the botanical resources in this part of Maui.

With respect to fauna survey, a walk-through survey method was conducted by Mr. Hobdy in conjunction with the botanical survey. According to the consultant, all parts of the project site were covered. Field observations were made with the aid of binoculars and by listening to vocalizations. In addition, an evening visit was made to the area to record crepuscular activities and vocalizations and to see if there was any evidence of occurrence of the Hawaii hoary bat. According to Mr. Hobdy, just one non-native mammal the mongoose was observed during two site visits. A special effort was made to look for the native Hawaiian Hoary bat by making an evening survey of the area. No evidence of such activity was observed though visibility was excellent. In addition, a bat detecting device was used by consultant at two locations, set to the frequency of 27,000 to 28,000 hertz which is the typical range within which these bats are known to echolocate for flying insect prey. No activity was detected using this devise. According to the consultant, birdlife was somewhat sparse around the project area due to the lack of habitat diversity. Just

eight species of non-native birds were recorded during the two site visits by the consultant (see Appendix G). Three species were common, house finch, zebra dove and the common myna. No native bird species were seen.

As noted in Mr. Hobdy's report, the wildlife within the project area is composed entirely of non-native species. As a result of the fauna inventory field survey by Mr. Robert Hobdy (Biological Survey Consultant), he has confirmed that *"no Endangered or Threatened native animals were found during the survey, nor were any found that are candidates for such status. No special wildlife habitats were found".* Because of the above described environmental conditions, it is determined by the consultant, Mr. Hobdy, he has determined that there is little of environmental concern with regard to animal life within the proposed project. The development of this project is not expected to have a significant negative impact on the native wildlife resources in this part of Maui.

It is recommended by Mr. Hobdy that any significant outdoor lighting such as street lights or flood lights that are incorporated into the project design be shielded to direct the light downward so that it is not visible from above.

7. Streams and Reservoirs

Waikapu stream is located approximately 0.5 mile to the south of project site. Waikapu stream is perennial stream which originates in the upper reaches of Waikapu Valley, ultimately discharging into Kealia Pond, in the Ma`alaea flats. According to the Hawaii Stream Assessment, the Waikapu Stream has no listed tributaries and flows to the sea year-round. The said assessment also found that the Waikapu Stream was important

for taro cultivation in the past and that Waikapu Valley may contain valuable cultural and historical sites (Hawaii Cooperative Park Service, 1990). It is important to note that some families at Waikapu Village (located about half a mile upstream or mauka of the proposed project site) began to rehabilitate old taro patches and began cultivating taro at new rehabilitated taro patches.

There is a plantation reservoir located south boundary of the project site and more specifically located at Waikapu Gardens Phase I project developed as affordable housing project by Spencer Homes. This reservoir was formerly used and maintained by Wailuku Agribusiness. It has since abandoned by Wailuku Agribusiness and is not presently in use for sugar irrigation. Another irrigation reservoir is located at the Maui Tropical Plantation (an agricultural visitor destination) located less than a mile southwest of the project site. This reservoir is presently maintained and used by and for the Maui Tropical Plantation agricultural irrigation at its property.

There are no identified wetlands on the project site. Nothing remotely approaching the three essential criteria that define a federally- recognized wetland, namely: hydrophytic vegetation; hydric soils; and, wetland hydrology occur within this dry project site.

8. Air Quality

There are no point sources of airborne emissions within close proximity of the project site. Air quality in the vicinity of the project site may be affected by a variety of sources, including dust from sugar cane cultivation operations to the east, and south of the project site, as well as smoke from sugar cane harvesting operation in Central Maui. On some occasions,

smoke emission from the HC&S' smokestack from its sugar factory located approximately over 4 miles east of the subject property. However, these sources are intermittent and prevailing winds quickly disperse the particulates generated by these temporary sources. According to recent announcement by HC&S, sugar operation on Maui will cease by end of 2016.

Overall, air quality in the Waikapu-Wailuku-Kahului regions is considered excellent.

9. Noise

Traffic noise from Waiale Road located east of the subject project and Honoapiilani Highway located west (mauka) of the subject property are the predominant sources of noise in the vicinity of the project site. However, this activity is temporary in nature. Also, on intermittent basis, noise from construction activities by Rojac Construction and housing construction at Waikapu Gardens Phase II project located south of the subject property is a secondary source of background noise. Other background noise levels attributed to sugar cane operations to the south of the project site on an intermittent basis, as well as natural conditions such as wind and rain. HC&S sugar operation will cease by end of 2016 per recent announcement by the company.

10. Scenic and Open Space Resources

Waikapu Valley and the West Maui Mountains, including Haleakala Mountain to the east define the scenic resources of the project site. Immediately east of the project site is former Waikapu landfill. The northern boundary of the subject property is owned by Maui Emmanuel

Lutheran Church which plans to develop its privately-operated school and church facilities.

The subject property has an unobstructed view of the East Maui Mountain and Haleakala Mountain with the exception HC&S sugar factory smoke stack. The project site is not part of a scenic corridor.

11. Hazardous Materials

An Environmental Site Assessment – Phase I Investigation was conducted for the subject property by Vuich Environmental Consultants, Inc. Both site reconnaissance and records review for the subject property, as well as the surrounding areas, were completed. The Phase I Environmental Site Assessment (ESA) was conducted to determine if the site may be contaminated with hazardous or toxic substances or wastes resulting from current or past site activities, unauthorized dumping or disposal, or migration of contaminants from adjacent or nearby properties. The goal of the environmental site assessment is to identify *recognized environmental conditions* on the property that indicate an existing release, a past release, or a material threat of release of any hazardous substances or petroleum products. These release conditions apply to structures on the property as well as the soil, groundwater, or surface water of the property. The study objectives are to characterize the environmental setting of the subject property, to identify any obvious activity of environmental concern that may have occurred at or near the site, and to evaluate potential migration pathways for any identified contaminants. It may also address any activities that affect future considerations for potential environmental impairment to the property.

As noted above, Vuich Environmental Consultants, Inc. has performed the Phase I Environmental Site Assessment in conformance with the scope

and limitations of the ASTM Standard 1527-00 for the subject property. According to the ESA report prepared by Vuich Environmental Consultants, Inc., the subject site is not listed in any federal or state database hazardous site. The assessment revealed no evidence of recognized environmental conditions in connection with the property. The report finds no evidence of any historic *misuse* of hazardous or regulated substances on the subject property. Further, the report finds no evidence of any historic or current significant misuse of hazardous or regulated substances on the subject property (see Appendix N for more detailed information).

12. Archaeological Resources

An archaeological inventory survey was conducted on the subject property by Archaeological Services Hawaii, LLC ("Consultant"). The archaeological inventory survey was conducted by the Consultant on May 2004 and July 2004, and updated in 2016 in response to SHPD request. The purpose of the archaeological survey was to determine the presence/absence, nature, and extent and significant of any cultural and archaeological resources in the proposed project area. A total of 25 backhoe trenches were strategically placed by Consultant's personnel in various areas of the subject property. Subsurface testing included the excavation of a series of 25 mechanical backhoe test trench excavations across accessible areas throughout the subject property.

Initial result of the test by the Consultant showed no subsurface cultural remains were recovered in any of the trenches conducted. No surface or subsurface cultural remains were identified during the archaeological inventory survey. According to the consultant, given the results of the archaeological survey, no further archaeological work beyond the inventory level is recommended for the subject area.

Further discussions and details on the result of the archaeological inventory survey can be found in Consultant's attached report identified as Appendix D.

Also, an archaeological monitoring plan (AMP) was prepared by Archaeological Services Hawaii, LLC for the proposed project site and submitted to the State Historic Preservation Division (SHPD) (see Appendix Q). Per AMP, monitoring will be performed for all disturbing activities associated with the proposed subdivision.

B. SOCIO-ECONOMIC ENVIRONMENT

1. Population

The population of the Island of Maui has increased dramatically over the last two (2) decades. The 2000 population was estimated at 117,644, an increase from 1990 of 91,361 (County of Maui 2030 General Plan - Countywide Policy Plan). According to the Maui Countywide Policy Plan, Maui's resident population is expected to grow from 129,471 in 2005 to 176,686 in 2030. This is a 1.46% annual growth rate which equates to a 36.5% increase in population over the 25 year period. These projections, according to the Maui Island Plan indicate a population increase of 16% between 2010 and 2020, and an increase of 12% between 2020 and 2030.

According to the *Socio-Economic Forecast* as noted in the Maui Island Plan, the total population is not expected to increase equally throughout the island, rather, there are specific regions where population growth in more likely to occur. To further illustrate the population growth that will likely occur, there are four community plan regions that are in close proximity of the proposed project site, namely: Kihei-Makena, Wailuku-Kahului, Makawao-Pukalani-Kula, and Paia-Haiku regions. The combined population growth within these regions is: population in 2005 is 107,621; in 2010 is 112,716, and in 2020 is expected to grow at 130, 774, and in 2030 the combined population in these regions will reach at a staggering 146,777 (according to Maui Countywide Policy Plan).

Because of the proposed project unique central location between Wailuku-Kahului Community Plan District and Kihei-Makena Community Plan District, and its close proximity with Paia and Upcountry Community Plan

regions, the proposed project will help meet the demand for affordable housing units in these Maui community plan districts.

2. Housing

According to the SMS Hawaii Housing Planning Study, 2011 prepared for the County of Maui, among Maui's 53,621 households in 2011, about 56 percent were homeowners and 93 percent of them owned their property fee simple. The report further stated that a significant number of Maui households live in overcrowded conditions or are 'doubled-up" with other families. According to the SMS report, in the past four years, crowding has begun to increase and is presently over 11 percent. Since 2003, doubling up has increased to 10 percent in 2006 and 13 percent in 2011.

In the County of Maui 2030 General Plan – Countywide Policy Plan rightfully notes that *"shelter is among the most basic of human needs."* The affordability, quality, and location of housing – including the degree of crowding within the home and within the neighborhood – play an enormous role in the quality of life of Maui County's residents.

The SMS Socio-Economic Forecast for Maui County notes that the island of Maui's housing supply in the year 2000 is estimated at 40,041 units of which 32 percent or 12,852 were located in the Wailuku-Kahului Community Plan District. This region accounts for the largest percentage of housing units on the island. Demand for housing in this community plan region in the year 2000 was estimated at 13,528 units. Housing demand in the Wailuku-Kahului district is projected to grow to 16,826 units in the year 2010 while the expected number of households is estimated at 15,985 units. By the year 2020, the projected housing demand will reach 20,054 units compared to household count of 19,051, according to SMS findings.

A Market Demand Study of the proposed 70-lots Waiale affordable housing project was prepared for the project by ACM Consultants, Inc. in August 2015. The market demand study is to analyze the residential real estate market as it relates to the proposed project. In particular, the report studied economic trends and demographics, and supply and demand factors for residential property. The study also gathered as much information as possible on real estate sales on Maui while focusing on the Central Maui market. The objectives of the market analysis were: (1) to define and delineate the market area; (2) to identify and analyze the current supply and demand conditions specific to the proposed project's market; (3) identify, measure and forecast the effect of anticipated developments or other factors on future supply. According to the Market Demand Study by ACM Consultants, Inc. the demand for housing still exist and many who are willing to buy in today's market are finding it easier to obtain financing, as compared to the late 2000. The report further notes that it is safe to assume that as economic conditions continue to improve, housing units within the affordable and workforce segments will be the most sought after. As the market conditions improve, the proposed project can expect to see heightened demand, due to its Central Maui location and affordable price points. This proposed affordable housing project will give entry-level market participants an opportunity for home ownership. The market study further opined that statistical evidence has clearly shown that under all market conditions, this segment of affordable housing project has the most demand. The Housing Demand Survey prepared for Maui County by SMS (2011) shows nearly 47 percent of all Maui County households expressed a desire to move to a new home in the near future.

According to the Realtors Association of Maui, median prices for sales of Maui single-family homes and condominiums surge almost 30 percent in August 2012 and these median prices gains were broadly spread over the

island. As noted in the market demand study that the monthly median price for single family property in Central Maui averaged $445,000 in 2014, which is 7.71 percent higher than 2013. The average median price for January through July 2015 is about $510,000, or 19 percent higher than the same period last year, according to market demand study. It is important to note according to the study by ACM, Consultants, Inc., Maui's median prices has increased, with year over year increases to $567,750 in 2014. According to a recent report by Realtors Association of Maui, the current median price of single-family home on Maui rose to 9 percent from 2015 to now $630,000. With the increase in median price for single-family units and lack of housing supply, many Maui working families earning 80 percent to 140 percent of the median income are unable and have difficulty purchasing a house and lot package at the current median sales prices. The proposed affordable housing project is well positioned to meet the housing demand in Central Maui region.

The Census Bureau reported Maui's median household income in 2009 at $58,167. The SMS Hawaii Housing Planning Study, 2011 found similar medians. U.S. Department of Housing and Urban Development (HUD) income guidelines express income in terms of the median household income for each County in Hawaii. , adjusted for household size. According to HUD, median income for the County of Maui rose from $65,700 in 2006 to $76,000 in 2011.

3. Economy

The Wailuku region is the island's center of governmental activities, as well as a focal point for professional and business services. Combined with neighboring Kahului, the region's economic character include a wide range of commercial, service, and governmental activities. Another important economic engine in Kahului region is the harbor and airport

transportation systems critical to Maui's economy. Also, within the Kahului region is the University of Hawaii Maui College and the Maui Center for Cultural Arts that contributes significantly to our economy in the region.

In the Kihei-Makena Community Plan region is one of the island's well-planned visitors resort destination, the primary economic engine for the island of Maui. In the same region, is the home of the research and technology park which contributes significantly to the island's economy.

In addition, the region is surrounded by significant agricultural acreages which are currently being cultivated in sugar cane. This vast expanse of agricultural lands, managed by Hawaiian Commercial and Sugar Company (HC&S), is considered a key component of the local economy. Supporting the sugar cane operation is the HC&S factory located approximately 4 miles east of the proposed project. According to recent announcement by HC&S, it will cease operation by the end of 2016. Also, another important agricultural activity that contributes to Maui's economy is Monsanto Seed Farm located approximately 6 miles south east of the project area.

Another important economic engine within the region are tourism-related activities such as the popular Maui Ocean Center located at Maalaea (located south of the project area) and the Maui Tropical Plantation located at the base of Waikapu Valley at West Maui Mountain. These two tourism-related activities are located within 1 to 2 miles south and southwest of the proposed project site.

Another important key economic driver that fuels the economy within the region and the island of Maui are healthcare-related businesses such as the Maui Medical Group, Keiser Permanente, and the 200+ beds Maui

Medical Center Hospital. There are also elderly long-term residential facilities in the region that substantially contribute to region's economy such as Hale Makua, Hale Mahaolu and Roselani residential complexes. These facilities are located within a mile to 2 miles north of the subject project site. It is estimated that these health-care related facilities have a combined number of direct employees of approximately over 2,000.

4. Employment

In the year 2004 and 2008, the unemployment rate for Maui County and the Island of Maui stood at 3.1 percent and 4.5 percent, respectively. (Hawaii Department of Labor and Industrial Relations and Maui County Data Book, 2010). In May 2005, the unemployment rate for Maui County and the Island of Maui (seasonably adjusted) 2.3 percent and 2.1 percent, respectively (Hawaii Department of Labor and Industrial Relations). In the recent Maui County Data Book, 2011, the unemployment rate in the island of Maui in 2009 and 2010 are 8.6 percent and 8.2 percent, respectively. The unemployment in 2011 is 7.2 percent, a decline of one percentage point from the same time last year. According to the State Department of Labor and Industrial Relations, the unemployment rate for Maui County for May 2015 is reported to be at 4.1%. According to the economic forecast for 2010 – 2011 by Dr. Leroy Laney, Economic Advisor to First Hawaiian Bank and Professor of Economics and Finance, Hawaii Pacific University – Maui County's economic picture is marked by impressive tourism industry rebound, which is the major key economic drivers for Maui's economy. The report by Dr. Laney further confirmed that what distinguishes the Maui economy in 2010 is the impressive rebound in tourism. It leads all other counties in this regard. Maui's residential real estate sales are another area of impressive growth, according to Dr. Laney's report. In same report, an economic recovery is now underway or at least imminent for the Maui economy. A University

of Hawaii business economist, Mr. Jack Suyderhoud delivered an "optimistic" outlook for 2015 for Maui's economy, with expected growth in tourism, labor, and construction, during the First Hawaiian Bank's 41st annual Economic Outlook Forum. He further noted that 2015 is probably going to be one of the best year for Maui County since the recession and 2016 economy is probably going to be relatively close to 2015. According to a recent report by the Department of Labor and Industrial Relations, Maui County's unemployment rate dropped nearly a full percentage point in August 2015, compared to 2014, to 3.4 percent. The jobless rate for Maui island was even lower, at 3.2 percent, which was 0.8 percentage point less than August 2014.

According to the Maui County Data Book, in 2004, total wage and salary jobs in Maui County is approximately 67,000 and most of the jobs are in accommodations and food services; trade; government; agriculture; and other services. In the year 2000, there were a total of 32,851 civilian jobs in Wailuku-Kahului region, representing 48 percent of the island-wide civilian jobs. Of those jobs, 25,688 were wage and salary positions while 7,163 were self-employed (SMS, 2002). In recent report from Maui County Data Book, 2011, the total civilian labor force in the island of Maui in 2005 is 70,850 and in 2009 are 71,850, respectively. In 2010, the total civilian labor force is 71,050, a slight decline from 2009. In terms of job employment distribution, the Wailuku-Kahului region generally follows the county-wide trends for the labor force characteristics as shown in the following table:

Occupational Category	**Maui County**	**Wailuku-Kahului**
Agriculture	3%	4%
Manufacturing	2%	5%
Construction	4%	1%
Transportation, Communication, & Utilities	6%	10%

Trade	21%	22%
Banking & Finance	4%	4%
Hotel	14%	1%
Other Services	16%	18%
Government	9%	14%
Self-Employed	21%	22%

(Source: SMS, 2002)

C. PUBLIC SERVICES

1. Police and Fire Protection

Police protection for the Wailuku-Kahului region is provided by the Maui Police Department (MPD) located at Wailuku Station headquartered at its main station at Kaahumanu Avenue in Wailuku located approximately 2 miles north of the project area. In addition, a satellite sub-station is located at Market Street, Wailuku, approximately 1.5 miles north of the subject property. The Maui Police Department provides investigative services, uniform patrol services, technical support, and traffic services as stated in its mission to protect the residents on Maui County. Both main and sub-stations are located in very close proximity of the project site.

Fire prevention, protection, rescue, and emergency services for the Wailuku-Kahului region are provided by the Maui County Department of Fire and Public Safety. The department has 2 stations to service the Wailuku-Kahului region that is in close proximity of the project site. The Wailuku station is located in Wailuku town approximately 2 miles north of the project site and the Kahului station is located at Dairy Road, Kahului located approximately 3 miles east of the project site.

2. Medical Facilities

State-owned Maui Memorial Medical Center (MMMC), the only major medical facility on the island, services the Wailuku-Kahului region. Acute, general, and emergency care services are provided by the 200+ beds MMMC facility located in Mahalani Street, Wailuku, about 2 miles north of the subject property. According to recent report, MMMC will be managed by Keiser starting July 1, 2016. Also, state owned Kula Hospital located approximately 20 miles east of the subject property provides emergency and long-term care services.

In addition, Keiser, Maui Medical Group, Maui Medical Clinic, and Liberty Dialysis Clinic serve health care needs for the Island of Maui, all located in Wailuku and Kahului, about 2 miles north of the subject property. Dental and other medical offices are also located within Wailuku-Kahului region to serve its residents and visitors, and are within 2 miles or less from the proposed project site.

3. Schools

The State Department of Education (DOE) operates 8 schools in the Wailuku-Kahului region, as well as several privately-operated schools serving elementary, intermediate, and high school students. Public school facilities within the Wailuku-Kahului District area include: H. Perrine Baldwin High (grades 9-12), Iao Intermediate (grades 6-8), Wailuku Elementary (K-5), Waihee Elementary (K-5), Maui High (9-12), Pomaikai Elementary (K-5), Kahului Elementary (K-5), Lihikai Elementary (K-5), and Maui Waena Intermediate (6-8). Puu Kukui Elementary School (K-5). All the schools noted above are in close proximity of the project site. Privately-operated schools serving Wailuku-Kahului region include

St. Anthony School (grades K-12), Kaahumanu Hou Christian School (grades K-12), Emmanuel Lutheran School (K-6), and Maui Adventist School (grades 1-8).

University of Hawaii Maui College (part of University of Hawaii system) located in Kaahumanu Avenue, Kahului serves the college needs of Maui residents. The college has recently become a full pledge four-year university.

According to the Maui County Data Book, 2010, the following public and privately-operated schools 2010 enrollment within the Wailuku-Kahului region is shown in the following table:

Schools	**Enrollment**	**Grades**
Baldwin High School	1,592	9-12
Maui High School	1,771	9-12
Iao Intermediate	884	6-8
Wailuku Elementary	871	K-5
Puu Kukui Elementary	540	K-5
Waihee Elementary	746	K-5
Kahului Elementary	965	K-5
Lihikai Elementary	1003	K-5
Maui Waena Intermediate	1068	6-8
Pomaikai Elementary	588	K-5
St. Anthony School	354	K-12
Kaahumanu Hou Christian	165	K-12
Emmanuel Lutheran	197	K-6
Maui Adventist	38	1-8
Christ the King	131	K-8

Source: Maui County Data Book, 2010 and Hawaii State Department of Education Records

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Emmanuel Lutheran	197	K-6
Maui Adventist	38	1-8
Christ the King	131	K-8

Source: Maui County Data Book, 2010 and Hawaii State Department of Education Records

4. Recreational Facilities (Parks)

Within the Wailuku-Kahului Community Plan District, there are many recreational activities opportunities as well, including shoreline and boating activities at the Kahului Harbor and adjoining beach parks, organized recreational activities provided/offered at County Parks. Within close proximity of the project site is the Waikapu Community Center located about half a mile west of the project area. Other Maui County owned parks within the Wailuku-Kahului region are the Papohaku Park and Wailuku Community Center, War Memorial Athletic complex, Wailuku Little League baseball fields, Sakamoto Swimming Pool and Keopuolani Regional Park. All these county owned recreational facilities are all located within approximately 2 to 3 miles north of the project site. A nearby park adjacent to the Hale Makana O Waiale Affordable Housing complex contains a baseball field, basketball court, and playground equipment. This park is located about 1 mile north of the project site. Other recreational facilities in the Wailuku area include Iao Park, Wells Park, Wailuku Pool, Wailuku Gym, and Wailuku Elementary School Park. In addition, there are several golf courses in the Wailuku-Kahului region located within close proximity of the project site, namely: Kahili and Kamehameha golf courses, The Dunes at Maui Lani Golf Course, and Maui County-owned Waiehu Golf course. These golf courses are within 1 to 3 miles of the project site. According to a recent report during a meeting with the Waikapu Community Association, it was reported that the County of Maui has purchased approximately 242-acre parcel (see Appendix P) for a proposed Central Maui Regional Park. Also, a 65-acre regional sports complex located approximately 1.5 miles east of the project site is currently under construction by the State of Hawaii.

5. Solid Waste Disposal

Solid waste collection services for single-family residential are provided by Maui County Department of Environmental Management. It is collected once-a-week basis and disposed at the Maui County's 55-acre Central Maui Landfill, located approximately 3 to 4 miles east of the subject property. This county-owned landfill is managed and operated by Maui County Department of Environmental Management.

D. EXISTING INFRASTRUCTURE

1. Roadways

Honoapiilani Highway is under the jurisdiction of the State of Hawaii Department of Transportation and is the main artery linking Waikapu to Central, South, and West Maui. Honoapiilani Highway is located west of the project site. It is a two-lane undivided State Highway which runs in the north-south direction into Wailuku town. The speed limit is 35 miles per hour (mph) in the vicinity of Waikapu. The Waiko Road intersection is signalized with existing left turn pockets.

Kuihelani Highway is located approximately half a mile east of the project site. The highway is under the jurisdiction of the State of Hawaii Department of Transportation. It is a two-way, four-lane divided State arterial highway which also runs in a north-south direction. The posted speed limit on Kuihelani Highway varies at 35 to 55 miles per hour (mph). There is an existing traffic signal at the Kuihelani Highway-Waiko Road intersection. The southern terminus of Kuihelani Highway is its intersection with Honoapiilani Highway. The northern terminus is at its

intersection with Puunene Avenue, where it turns to Dairy Road in Kahului.

Waiko Road is a two-lane County collector roadway that connects to Kuihelani Highway is owned by the County. The posted speed limit on Waiko Road is 20 miles per hour (mph). Immediately east of Honoapiilani Highway, Waiko road provides access to residential community. Further east, Waiko Road provides access to industrial subdivision located east of the project site. There is also a heavy vehicle restriction on Waiko Road near its intersection with Honoapiilani Highway that prohibits vehicles weighing over 10,000 pounds from entering and exiting Waiko Road via its intersection with Honoapiilani Highway.

Waiale Road is a two-lane collector road with its southern terminus at Waiko Road. It turns into Lower Main Street near Kaahumanu Avenue. The section of Waiale Road from Waiko Road to Kuikahi Drive is currently a privately-owned road, but it is planned to be conveyed to the County of Maui, Department of Public Works. The section of Waiale Road from Waiko Road to Kuikahi Drive was improved with 36' of pavement as part of the Waikapu Gardens Subdivision (Subdivision File No. 3.2129). Waiale Road is proposed to be extended from the intersection with Waiko Road southward to intersect with Honoapiilani Highway in the vicinity of the Maui Tropical Plantation. There is an existing driveway along Waiale Road near the northern boundary of the parcel used by Valley Isle Fellowship providing access to their portion of property.

2. Drainage

A Preliminary Engineering Report (PER) together with drainage report was prepared by Otomo Engineering, Inc. for the proposed project (refer

to attached Appendix E). The project site is currently vacant and was previously used for pineapple cultivation. According to the PER, the existing ground slopes in a west to east direction from elevation 355 feet above mean sea level at mauka portion of the property (western boundary) to elevation 324 feet at the Waiale Road (eastern boundary), with an average slope of approximately 4.8%.

According to "Soil Survey Geographic Database for Island of Maui, State of Hawaii (September 2014) prepared by the United States Department of Agriculture Natural Conservation Service, the soils within the project site are classified as Puuone sand (PZUE) and Iao silty clay (IaA). Puuone sand is characterized as having rapid permeability near the surface, slow runoff, and a moderate to severe wind erosion hazard. Iao silty clay is characterized as having slow runoff and an erosion hazard of no more than slight.

According to Panel Number 150003 0393E of the Flood Insurance Rate Map (FIRM), dated September 29, 2009, prepared by the United States Federal Emergency Management Agency (FEMA), the project site is situated in Flood Zone "X" which represents areas outside of the 0.2% annual chance floodplain.

There are no drainage improvements within the project site. The onsite runoff presently sheet flows across the project site in a west to east direction towards Waiale Road. It is estimated that the present onsite runoff for a 50-year, 1-hour runoff from the entire project site is 11.1cfs and approximately 12,610 cubic feet of runoff volume (refer to Appendix E, "Preliminary Engineering Report"). As part of the drainage improvements for the Waikapu Gardens subdivision (Subdivision File No. 3.2129), a retention basin was constructed on Lot 195 to the south of the subject property. The retention basin was constructed to accommodate the

post development surface runoff from the contributory area of the Waikapu Gardens subdivision Phase 1 and 2 which is approximately 301,725 cf of runoff volume from a 50-year, 1-hour design storm. According to the PER the retention basin has a total storage volume of approximately 719,000 cf. The existing drainage improvements in the vicinity also include grated inlets to capture and convey runoff from the Waiale Road shoulder fronting the subdivision to the retention basin. The retention basin for the proposed project drainage system will utilize the existing retention basin that was constructed by Spencer Homes for the Waikapu Gardens Subdivision and said retention basin is more than adequate to provide drainage storage retention basin for the proposed project. .

3. Water

According to project's PER, domestic water and fire flow for the Waikapu area are serviced from the 300,000 gallon Waikapu tank and 1.5 million gallon Kehalani mid-level storage tank. A series of 8-inch and 12-inch waterlines traverse along West Waiko Road from the Waikapu tank to Honoapiilani Highway. As part of the existing Waikapu Gardens Subdivision, a 12-inch waterline was installed from Waiko Road, through the center of the subdivision and reduced to 8-inch waterlines to provide distribution throughout the subdivision. A new 12-inch waterline was connected to the existing waterlines in the Waikapu Gardens Subdivision and installed along the southern boundary line of the property to provide water service and fire protection to the subject property.

The source for this water system is the Mokuhau wells in Happy Valley. For more detailed information and discussion regarding the water system, refer to attached Preliminary Engineering Report identified as Appendix E.

4. Wastewater

According to project's Preliminary Engineering Report (refer to Appendix E), there are existing 8-inch and 12-inch gravity sewer lines traversing along the mauka boundary of the project site and continues north towards Kuikahi Drive. The 8-inch sewerline begins on Waiko Road and heads in a northerly direction along the eastern side of the existing reservoir. It continues in a northerly direction until it connects to the existing sewer system on Waiale Road. Wastewater collected from the Waikapu area is transported to the Kahului Wastewater Treatment Plant in Naska. As part of the Waikapu Gardens Subdivision, two sewer pump stations were installed along Waiale Road to convey wastewater collected from the eastern portion of the subdivision to the existing gravity sewer lines previously mentioned.

5. Electric, Telephone and Cable TV

There is an existing electrical transmission system traversing along Waiale Road fronting the proposed project site. The existing system currently provides service to the adjacent Waikapu Gardens Subdivision.

Maui Electric Company, Ltd., Verizon Hawaii, and Time Warner Oceanic Cable provide electrical, telephone, and cable television services, respectively.

E. ANTICIPATED INFRASTRUCTURE IMPROVEMENTS

1. Roadways

The subdivision roadway will access onto Waiale Road near the northerly end of the property. There will be no direct access from the individual lots

onto Waiale Road or Kokololio Road. From Waiale Road, vehicles can continue north to access Kuikahi Drive and eventually exit onto Lower Main Street. Vehicles can turn south to the Waiko Road intersection and head west to access Honoapiilani Highway or east to access Kuhelani Highway. An emergency access lane will be constructed near the southerly end of the property to provide access from the subdivision road to Waiale Road.

The interior subdivision streets will have 48-foot right-of-ways and will be improved to Maui County standards. The cul-de-sacs will have an edge of pavement radius of 40 feet and a right-of-way radius of 50 feet. The larger traffic lanes and cul-de-sac pavement radius are to accommodate the larger fire trucks in Central Maui district. Concrete wheel chair ramps will be constructed at appropriate locations to comply with ADA standards. Appropriate striping and signage will be installed in accordance with the Department of Public Works standards. Per earlier discussion with Department of Public Works, concrete sidewalks and grass swales will be constructed along Waiale Road fronting the project site (see Appendix S, typical section for Waiale Road sidewalk improvements).

A Traffic Impact Assessment Report (TIAR) (refer to attached Appendix F for more detailed information), was prepared for the proposed project by Austin Tsutsumi and Associates (February 1, 2016). Based on discussion with Maui County Department of Public Works, there were eight intersections that were studied as part of the TIAR. The report analyzed these intersections for the potential impacts due to the proposed project. According to the TIAR, all study intersections are forecast to operate at Level-of-Service (LOS) D or better during both peak periods with the project generated traffic. The TIAR also confirms that due to minimal

impacts generated by the proposed project, no roadway improvements are required as a result of the project.

2. Drainage

According to the PER (see Appendix E), it is estimated that the post development runoff from the project site will be 35.6 cfs generating 35,220 cf of runoff volume, which equates to a net increase of 24.5cfs of runoff and 22,610 cf of runoff volume. Onsite runoff from the project site will be collected by curb-inlet catch basins located at appropriate intervals along the subdivision roadways and convey the runoff to the retention basin which it was constructed for the Waikapu Gardens Subdivision on Lot 195 to the south of the project site. As noted earlier in this report, the existing retention basin has a total capacity of approximately 719,400 cf. The Waikapu Gardens Subdivision contributes approximately 301,725 cf of runoff volume to the basin, therefore the remaining capacity will accommodate the entire post development runoff volume of the design storm from the project site. There will be no increase in runoff sheet flowing from the project site after construction of the development. This is in accordance with Chapter 4, Rules for the Design of Storm Drainage Facilities in the County of Maui. The design intent of the project will be to limit the need for extensive grading as much as possible.

In addition, development of the proposed project will also include the implementation of site specific best management practices (BMPs) during construction to provide erosion control and minimize impacts to downstream properties. BMPs which may be implemented would include, but is not limited to the following:

1. Prevention of cement products, oil, fuel, and other toxic substances from falling or leaching into the water.

2. Prompt and proper disposal of all loosened and excavated soil and debris material from drainage structure work.
3. Retention of ground cover until the last possible date.
4. Stabilization of denuded areas by sodding or planting as soon as possible.
5. Early construction of drainage features.
6. Minimize time of construction.

Incorporating BMPs such as these during construction along with post construction measures to be installed will meet the requirements of Rules for the Design of Stormwater Treatment Best Management Practices.

3. Wastewater

It is estimated that the proposed project will generate approximately 24,850 gallons per day of wastewater. Wastewater from the project will be collected by an onsite gravity sewer system and conveyed to an onsite sewer pump station. The pump station will be constructed at the lowpoint of the gravity system along Waiale Road. A sewerline force main will convey wastewater from the pump station and connect to the existing sewer system along the western boundary of the project site. The existing system will continue to convey wastewater to the County's Kahului Wastewater Treatment Plant.

4. Water

Based on the preliminary site plan for the project, the domestic water demand, as determined by the Domestic Consumption Guidelines set forth by the Department of Water Supply (DWS), the average daily water domestic demand for the project is anticipated to be approximately 42,600 gallons per day. Waterlines will be extended from the existing 12-inch waterline along southern boundary of the property to provide domestic and

fire protection for the project site. In accordance with DWS standards, the fire flow demand for the residential development is 1,000 gallons per minute for a 2-hour duration. Fire hydrants will be installed at the appropriate spaced intervals along the subdivision roadways in accordance with County standards.

5. Electric, Telephone and Cable TV

The proposed electrical, telephone and cable TV distribution systems for the subject subdivision will be serviced from the existing facilities along Waiale Road. Within the subdivision, all distributions systems will be installed underground. Street lights will be installed along the subdivision streets in intervals to be determined by the electrical engineer and in accordance with existing County standards.

III. Potential Impacts and Mitigative Measures

III. POTENTIAL IMPACTS AND MITIGATIVE MEASURES

A. Impacts to the Physical Environment

1. Surrounding Land Uses

The project site is located in close proximity of Waikapu Town and it is bordered by the 411-units and 56-units Waikapu Gardens Phases I&II affordable housing subdivisions immediately to the south of the proposed project. The eastern boundary of the project site is Waiale Road. About half a mile east of the project site are fully-developed light industrial subdivision such as the Consolidated Baseyard Subdivision, a light industrial development developed a few years ago and Rojac Trucking Baseyard industrial subdivision and Brewer Environmental Warehouse and a 41-lots Waiko Baseyard light industrial subdivision. About a mile east of the proposed project is A&B Properties Hawaii, Inc.'s proposed 540-acre Waiale Master Planned Residential Project. A & B's planned project will be a village concept with mixed uses including single-family and multi-family uses are being proposed.

Waikapu Town village located south of the project site and contains primarily single-family residential uses, although there are neighborhood commercial uses along Honoapiilani Highway. To the north of the project site are Wailuku Town Center located approximately less than two miles, and Kehalani Town Center and Maui Lani Town Center, both located about half a mile from the project site. In Wailuku town, many professional offices are also located and some commercial centers, mom and pop stores, medical health offices, financial (banks) institutions, State Judiciary offices, and county government offices. The northern boundary of the property is owned by the Maui Emmanuel Lutheran Church which

plans to develop a privately-operated school (K-6 grades) and its church facilities.

The State of Hawaii's Honoapiilani Highway forms the western boundary of the subject property. The Waiolan I Mauka and Waiolani Elua subdivisions are located mauka of the Honoapiilani Highway to the west across from the project site.

The proposed project consists of 70-lot single-family affordable residential housing subdivision and a neighborhood park. The proposed action will result in a subdivision compatible with surrounding residential uses. The proposed project site is an ideal extension of the existing Waikapu Gardens Phases 1&2 affordable housing projects and will undoubtedly meet and consistent with the affordable housing policy as stated in the County of Maui 2030 General Plan-Countywide Policy Plan. The proposed affordable housing subdivision is consistent and compatible with its neighboring residential subdivisions and Waikapu Town village. The project site is within the Maui Island Plan urban growth boundary designation and outside of protected areas.

2. Topography and Landform

The approximately10.365-acre project site existing ground slopes in the west to east direction from elevation 355 feet above mean sea level at mauka portion of the property (western boundary) to elevation 324 feet above mean sea level at the Waiale Road (eastern boundary), with an average slope of approximately 4.8%.

Minimum grading will be undertaken within the project site to provide the desired grade for the subdivision roadways and house sites construction. As noted earlier in this report, the onsite runoff presently sheet flows

across the project site in a west to east direction towards Waiale Road. Also noted earlier, the retention basin as part of the existing Waikapu Gardens Subdivision located adjacent south of the project site will be used to accommodate the post development surface runoff from the proposed project. The retention basin has a total storage volume of approximately 719,400 cf, which is more than adequate to accommodate the proposed project.

The project's drainage system will be designed to accommodate the increase in runoff generated by the proposed development of the entire project site (refer to Appendix E, "Preliminary Engineering Report", for detailed information of drainage plans). Drainage patterns of proposed improvements will be maintained to ensure impacts to downstream properties are minimized. With the proposed drainage improvements, adverse impacts to topography and landforms resulting from minimum grading activities are not expected. The downstream properties will not have any additional increase of runoff due to this proposed development. Development of the project site will also include best management practices (BMPs) during construction to provide erosion control and minimize any potential impacts to downstream properties. There are no anticipated adverse impacts to topography and landforms from grading activities of the project site.

3. Wetlands and Streams

There are no wetlands on the subject property or in the immediate vicinity of the property. Waikapu Stream on the south will not be affected by the proposed project. Drainage generated from the subject property will not be discharged directly into Waikapu Stream. According to the Preliminary Engineering Report prepared by Otomo Engineering, Inc. for the proposed project, the drainage runoff from the project site will be contained at the

retention basin located at Waikapu Gardens subdivision and south of the project site. The said retention basin has adequate capacity to store the anticipated drainage runoff from the proposed project.

4. Flood and Tsunami Hazard

As previously stated in this report, the subject site is located in Flood Zone "X" according to Flood Insurance Rate Map (FIRM), September 29, 2009. Flood Zone "X" represents areas outside of the 0.2% annual chance flood plain. Best Management Practices (BMPs) will be implemented to mitigate any future or potential flooding on the site. Furthermore, the subject site is not located within the tsunami inundation zone.

5. Flora and Fauna

There are no known significant habitats or rare, endangered, or threatened species of flora and fauna located or in the vicinity of the project site. The proposed improvements on the property are not anticipated to impact wetland areas and wildlife habitats. No federally listed Endangered or Threatened flora or fauna found nor do any candidates for such status occur on the project site. It has been determined through project's flora and fauna survey prepared by Mr. Robert Hobdy, July 2015, removal of vegetation from the project site is not considered an adverse impact on these components of the natural environs. According to Mr. Hobdy, the proposed project is not expected to have any significant negative impacts on the biological resources in this part of West Maui. For more detailed information, refer to Appendix G, Biological Resources Survey by Mr. Robert Hobdy, dated July 2015.

6. Air Quality

Emissions from construction equipment and vehicles used during construction activities may temporarily affect the ambient air quality within the immediate vicinity of the project site. However, these temporary air quality affects can be minimized by instituting Best Management Practices (BMPs) during project construction. Dust control will be instituted such as dust barriers, watering graded areas, and/or water sprinklers to control dust during construction of the project.

On a long term basis, upon completion of the proposed single-family affordable residential subdivision, it is not anticipated to generate adverse impact on air quality on or in close proximity of the project site.

7. Noise

Ambient noise conditions may be temporarily affected during construction activities at project site. Construction equipment machinery will likely be the dominant noise-generating source during construction period. Best Management Practices (BMPs) will be instituted, including equipment maintenance and vehicle maintenance, are anticipated to reduce noise levels. Construction activities will be limited to daytime working hours. In addition, heavy trucks, dump trucks, and material transport vehicles will be advised not to use upper Waiko Road to minimize noise in the residential area of Waikapu town village.

Construction-period noise will be mitigated in accordance and strict adherence with Title 11, Administrative Rules, Chapter 46, Community Noise Control of the State Department of Health. All construction equipment and onsite vehicles will be equipped with mufflers as required

in Section 11-46 (b)(1)(A). Required permit conditions for construction activities may include, where appropriate:

> "No permit shall allow construction activities creating excessive noise before 7:00 A.M. and after 6:00 P.M. of the same day"
>
> "No permit shall allow construction activities which emits noise in excess of ninety-five dB(A) except between 9:00 A.M. and 5:30 P.M. of the same day"

Once project is completed, the proposed single-family affordable residential project is not anticipated to generate significant long term adverse noise conditions. These conclusions were drawn based on the existing and surrounding residential uses in the area.

8. Scenic and Open Space Resources

As previously noted in this report, Haleakala is visible to the east of the project site with the Waikapu Valley and West Maui Mountains to the west define the scenic resources of the project site. The project is not part of a scenic corridor and will not affect views from inland vantage points. As such, the proposed project is not anticipated to have an adverse impact upon the visual character of the surrounding areas.

9. Hazardous Materials

As noted earlier in this report, the subject project site was not listed on any hazardous database listings. There was no evidence of any historic misuse or significant spills of hazardous or regulated substances on the subject property. A Phase I Environmental Site Assessment Investigation was conducted on the property by Vuich Environmental Consultants, Inc.,

Based on its findings as a result of the Phase I environmental site investigation, there are no hazardous or regulated substances found on the property site. BMPs will be instituted during the construction of the subject project. No adverse impacts are anticipated per environmental consultant's findings. As noted earlier in this report, the subject property is not in any state or federal database hazardous site listings. Further, the environmental assessment report finds no evidence of any historic or current significant misuse of hazardous or regulated substances on the subject property (see Appendix N for more detailed information).

10. Archaeological Resources

As noted earlier in this report, an archaeological inventory survey was conducted by Archaeological Services Hawaii, LLC of the subject property and updated in 2016 in response to SHPD request (See appendix D). The Archaeological Inventory Survey (AIS) report for the project site was prepared in compliance with the Department of Land and Natural Resources (DLNR), State Historic Preservation Division (SHPD) Hawaii Administrative Rules (HAR 13-275-276-5); in compliance with Maui County guidelines, rules and regulations. Per SHPD, the AIS for the project site was resubmitted to SHPD for its review. A subsurface backhoe testing was conducted in the proposed project area. As noted earlier in this report, a total of 25 backhoe trenches were excavated during the course of the archaeological assessment survey. No surface cultural remains were discovered or recovered in any of the subsurface testing.

Given the results of the archaeological assessment survey by the archaeological consultant, no further archaeological work beyond the inventory level is recommended for the subject area.

Per SHPD, an archaeological monitoring plan (AMP) was prepared for the project and submitted to SHPD (see Appendix Q, archaeological monitoring plan). Monitoring will be performed for all ground-disturbing activities associated with the proposed subdivision.

B. Impacts to the Socio-Economic Environment

1. Population and Local Economy

The proposed project, on the short-term, should not have a significant impact on the population parameters. On the other hand, the proposed project will create immediate construction employment during the development of the project. Estimated total construction costs for the subdivision site work and vertical construction of the dwelling units will be approximately $18 million. As noted above, the proposed project will create construction jobs for local residents during the development of the project. This projected employment will have a multiplier effect on local material suppliers and retail businesses that can be expected to benefit from the proposed project. Also, in the long-term, residential homeowners will require services related to home improvements and maintenance which will further support local businesses, thereby creating more employment opportunities.

Both long and short-term basis, the proposed action should not have a significant effect on population parameters. The proposed project is anticipated to meet existing demand for affordable housing by current residents that are waiting for affordably-priced housing project. This project does not significantly (if any) affect/increase population parameters within the Kahului-Wailuku Community Plan District.

No mitigative measures are necessary in response to the anticipated increased short-term as well as long-term employment and no additional

mitigative measures are required regarding population since the proposed project is not a major population generator.

2. Agriculture

The approximately 10.365-acre project site is situated in a region of existing and ongoing urban development. As noted earlier in this report, immediately south and west boundary of the project site are existing residential developments. The proposed project will be compatible with its residential developments neighbors.

According to the former landowner, the project site was formerly used for pineapple cultivation over three decades ago. The pineapple operation and any agricultural activity on the project site have ceased operation and the subject property has been vacant and remained fallow. Mauka portion of the property will be the site of Valley Isle Fellowship's worship center facility.

Use of the property for the proposed single-family affordable housing project is not anticipated to adversely impact agricultural productivity on the island. Since proposed action will not affect agricultural production on the island, no mitigative measures are expected to be required.

3. Police, Fire, and Medical Services

The proposed action is not anticipated to impact the service capacity and capability of police, fire, and emergency medical operations. The project will not expand nor extend the existing service area limit for emergency medical services. There are existing police, fire, and medical facilities in very close proximity of the project site. Additionally, internal roadways within the proposed single-family residential subdivision will be

constructed in accordance with Maui Fire Department standards. No further mitigative measures are expected to be required.

4. Recreational and Educational Resources

As noted earlier in this report, the proposed action is not a major population generator that will increase population parameters within the Kahului-Wailuku Community Plan district, hence, the proposed project is not expected to generate the need for recreational facilities or services. Park facilities are currently available at neighboring Waikapu Community Center and at the Waikapu Gardens Subdivision adjacent to the proposed project site. The County is proposing to develop approximately 242-acre parcel for its proposed central Maui regional park located less than half a mile east of the project site (see Appendix P location of proposed park site). Also, a 65-acre regional sports complex located about .5 miles east of the project site is currently under construction. In addition, the applicant is proposing to develop a neighborhood park and greenways within the proposed subdivision (see Appendix R, conceptual landscape plan).

According to the project's market demand study, the proposed project's potential buyers are anticipated to be current Maui residents and working families, thus, the project is not expected to be a population generator. With respect to schools for the project's anticipated residents, the applicant acknowledges that the project is located in the Central Maui Impact Fee District and further acknowledges that decisions on which schools will serve new residential areas are determined at the local level by the complex area superintendent who is responsible for all schools on Maui. The proposed affordable housing project is not expected to have anticipated impacts to existing educational facilities or resources. Since the project will be developed as 100 percent affordable and processed

pursuant to 201H, HRS, the applicant will seek exemption from Chapter 302A, HRS (school impact fees).

5. Hydrology

There will be no anticipated short-term impact to groundwater as a result of construction activities on the project site. Therefore, no mitigation measure is expected to be required.

As a precautionary measure, Best Management Practices (BMPs) will be strictly enforced during the project construction.

6. Solid Waste Disposal

A solid waste management plan will be developed for the disposal of any construction materials during the subdivision and development of the proposed project. Once construction is completed, it is anticipated that the project solid waste collection and disposal will be provided by the County of Maui's Department of Environmental Management.

After subdivision is completed, residents will be encouraged to implement waste recycling programs to reduce the amount of waste to the County's Central Maui Landfill site.

C. Impacts to Infrastructure

1. Roadways

A detailed Traffic Impact Assessment Report (TIAR) was completed on February 1, 2016 for the proposed project by Austin Tsutsumi and Associates. Refer to Appendix F for detailed traffic assessment for the

proposed project. All applicable intersections analysis were performed by project's traffic consultant using the traffic analysis software Synchro, which prepares Highway Capacity Manual (HCM) reports. The reports contain quantitative delay results, as based on intersection lane geometry, signal timing and hourly traffic volume.

Based on discussion with Maui Department of Public Works, intersection analysis within the study area was performed on the following intersections due to their proximity to the Project:

- Honoapiilani Highway/Waiko Road
- Honoapiilani Highway/Kuikahi Drive
- Honoapiilani Highway/Kehalani Parkway
- Waiale Road/Kuikahi Drive
- Waiale Road/Waiko Road
- Waiale Road/Nokekula Loop
- Waiale Road/Haawi Street
- Waiale Road/Kokololio Street

According to the TIAR prepared by Austin Tsutsumi and Associates (refer to Appendix F), the proposed project is anticipated to generate approximately 59 AM peak hour trips and 77 PM peak hour trips. According to the TIAR, due to minimal impacts generated by the project, all study intersection is forecast to operate similar to Base Year 2018 conditions with only slight increases in movement delays at each study intersection. The project's TIAR further confirms that due to minimal impacts generated by the proposed project, no roadway improvements are required as a result of the project.

2. Water

The proposed project will be served by the Maui County Department of Water Supply (DWS) system. The domestic water demand, as determined by the Domestic Consumption Guidelines set forth by the Department of Water Supply, for the project is anticipated to be approximately 42,210 gallons per day (gpd). Waterlines will be extended from the existing 12-inch waterline along the southern boundary of the property to provide domestic and fire protection for the project site. In accordance with DWS standards, the fire flow demand for a residential development is 1,000 gallons per minute for 2-hour duration. Fire hydrants will be installed at the appropriate spaced intervals along the subdivision roadways in conformance with the County's applicable standards.

3. Wastewater

The proposed project will generate approximately 24,500 gallons per day of wastewater. Wastewater from the project will be collected by an onsite gravity sewer system and conveyed to an onsite sewer pump station. The pump station will be constructed at the lowpoint of the gravity system along Waiale Road. A force main will convey wastewater from the pump station and connect to the existing sewer system along the western boundary of the project site. The existing system will continue to convey wastewater to the County's Kahului Wastewater Treatment Plant facility.

See Preliminary Engineering Report by Otomo Engineering, Inc., dated September 2015, identified as Appendix E for more detailed information.

4. Drainage

According to the Preliminary Engineering Report (PER) by Otomo Engineering, Inc. prepared for this project (refer to Appendix E) it is estimated that the post development runoff from the project site will be 35.6 cfs generating 35,220 cf of runoff volume. The project's drainage system will be designed to accommodate the increase in runoff generated by the development of the entire project site. Onsite runoff from the project site will be collected by curb-inlet catch basins located at appropriate intervals along the subdivision roadways and convey the runoff to the retention basin which was constructed for the Waikapu Gardens Subdivision on Lot 195 located south of the project site. As noted earlier in this report, the existing retention basin has a total capacity of approximately 719,400 cf. The Waikapu Gardens Subdivision contributes 301,725 cf of runoff volume to the basin; therefore the remaining capacity is more than adequate to accommodate the entire post development runoff volume of the design storm from the project site.

There will be increase in runoff sheet flowing from the project site after construction of the development. The design intent of the project, according to the PER will be to limit the need for extensive grading. In addition and equally important, development of the project will also include implementation of site specific best management practices (BMPs) during construction to provide erosion control and minimize potential impacts to downstream properties.

5. Electric, Cable and Telephone System

The proposed electrical, telephone, and cable TV distribution systems to the subject subdivision will be serviced from the existing facilities along Waiale Road. Within the subdivision, all distribution systems will be

installed underground. Street lights will be installed along the subdivision streets at intervals to be determined by the electrical engineer in strict adherence to rules and regulations.

D. Potential Cumulative Impacts

Cumulative impacts are defined as the potential impact on the environment which results from the incremental impact of action when added to other past, present, and near or long-term foreseeable future actions.

This potential cumulative impact analysis evaluates present and reasonably foreseeable future projects in the area that have the potential to contribute to cumulative effects of such actions. The analysis uses the best available information and data to assess these projects and their potential impacts.

The following criteria were considered in identifying the past, present and reasonable foreseeable future projects that could result in potential cumulative impacts to the region's resources:

- Projects that are of a similar nature could affect similar resources or are located in close proximity to the proposed project.

- Projects that have the potential to generate environmental impacts and when addressed collectively with the proposed project, could result in potential cumulative impacts to the environment.

To fully assess the potential cumulative impacts, the proposed Waiale affordable housing project was grouped with the following housing projects in the vicinity having similar scope and scale:

- **Waikapu Gardens Phase I Subdivision:** This fully developed affordable housing project encompasses approximately 95 acres located immediately south of the proposed project site. This affordable residential subdivision consists of 411 single-family residences, as well as park. This housing project is a fee simple project was developed by Spencer Homes and completed about ten years ago.
- **Waikapu Gardens Phase II Subdivision:** This affordable housing project encompasses approximately 10 acres located south of the project site. This affordable residential subdivision consists of 56 single-family residences. This project is being developed by Spencer Homes and expected to be completed by December 2015.
- **Waiolani Mauka Subdivision:** This single-family housing subdivision consists of approximately 28-acre parcel located mauka side of the Honoapiilani Highway in Waikapu. This residential development consisting of 108 residential lots was completed a few years ago.
- **Waiolani Pikake Subdivision:** This single-family housing subdivision consists of approximately 7-acre parcel and is located mauka of Honoapiilani Highway in the Waikapu area across the project site. This residential development consists of approximately 35 residential lots and completed a few years ago.
- **Waiko Baseyard Light Industrial Subdivision (Rojac):** This light industrial subdivision encompasses approximately 14.9 acres that contains 19 lots, ranging in lot size from 13,000+ square feet to 2.8 acres. This LI subdivision is completed and fully developed. This subdivision is located on the makai or east of the proposed project site.

In considering the potential impacts of the proposed Waiale affordable residential subdivision, together with the projects that are listed above, the following parameters were examined: (a) topography; (b) flora and fauna; (c) noise and air quality; (d) visual resources; (e) cultural resources; (f) water quality; (g) public services; and (h) infrastructure. In assessing the potential cumulative impacts of

these projects that are listed above, a qualitative approach was used. It is worth noting that cumulative impact considerations may change as new projects are presented or proposed projects are modified in scope and scale. Accordingly, the assessment presented in this report is intended to identify potential issues, concerns and mitigative measures based upon available information. Potential cumulative impact concerns relating to each of these resource parameters are herein presented below.

a. Topography

With the exception of Waikapu Gardens Phase II affordable housing subdivision which is scheduled to be completed by December 2015, the above noted projects were completed and fully developed. Minimum alterations to topographic features were applied due to their respect to existing landforms to ensure that visual impacts are minimized, drainage patterns are maintained and all infrastructure design and construction criteria were met. Because of these projects' sensitivity to the existing landform, the cumulative impacts of these projects were not adverse to the regional topography.

b. Flora and Fauna (Plant and Animal Life)

Prior to the development of the above subject projects, each of the projects has prepared and reviewed the flora and fauna resources affected by their respective actions. The above noted lands were formerly used for sugar and pineapple cultivation or ranching activities and there were no adverse impacts on the flora and fauna parameters that were encountered during the development and construction of these projects.

c. Noise and Air Quality

Short term construction related noises were experienced for each during the construction of the above noted projects. All projects complied with Department of Health noise regulations and BMPs were implemented during the construction and resulted in minimum construction-related noises. There were no significant point sources of noise encountered during the construction of the above projects and no adverse impacts to surrounding communities.

As with noise and air quality was temporarily affected during the construction of the above noted projects. BMPs were instituted during the construction of the above projects and were all in compliance with the Department of Health and County of Maui grading requirements. There were no new point sources of air emissions associated with any of the above mentioned projects. From a cumulative stand point, the projects had no adverse impact upon regional conditions.

d. Visual Resources

The visual landscape of Waikapu Town has changed minimally since the above noted projects were completed. The Waikapu Gardens affordable housing project site, formerly used as agricultural land has been replaced by residential use. Consolidated Baseyard Subdivision and Waiko Light Industrial Subdivision, both completed projects, are situated in areas where light and heavy industrial uses have previously operated under special uses and/or conditional permits.

These above completed projects, residential and light industrial projects, collectively reflect a visual character more urban in scale, that have replaced lands formerly used for agricultural purposes. The landscaping buffers and

architectural designs used in the subdivision of these projects have provided visual relief from surrounding properties.

e. Cultural Resources

Based on archaeological assessment studies conducted for each project that are noted above, appropriate mitigative measures were utilized to address potential archaeological concerns/issues. Approved monitoring plans were prepared for these above noted projects and archaeologists monitored the project during the development to ensure that no cultural resources are affected during projects construction. Collectively, these above noted projects have no adverse affect on archaeological resources and practices in the Waikapu region.

f. Water Quality

Surface runoff and other non-point source pollutants can affect water quality if unmitigated. All the above noted projects were subjected to the NPDES permitting process and BMPs to control erosion and sediment loss were implemented during construction activities for each of the project. Additionally, all the projects have complied and will comply with Maui County drainage regulations to provide required mitigation, including drainage storage basins to ensure that runoff velocities are controlled and water quality effects minimized. From a regional water quality standpoint, projects' compliance with federal, state, and local regulatory requirements helped to mitigate potential adverse impacts to water quality.

g. Public Services

With regards to public services, the Waikapu Gardens affordable housing project that was completed a few years ago and has an effect on parks and

recreation and schools due to the residential nature of the project. The impact on public services of this affordable housing project was met by the developer as part of its entitlement process.
The proposed project will seek exemption from park requirement since the proposed project is 100% affordable pursuant to Department of Housing and Human Concerns Affordable Sales Guidelines.

The applicant acknowledges that the project is located in the Central Maui Impact Fee District and further acknowledges that decisions on which schools will serve new residential areas are determined at the local level by the complex area superintendent who is responsible for all schools on Maui. The applicant will seek exemption from Chapter 302A, HRS (school impact fees) for this proposed affordable housing project. It is important to note that the a new Puu Kukui Elementary School located in Wailuku was completed.

Due to the nature of the other projects such as Waiko Baseyard (Rojac), and the proposed Waiko Light industrial project, in reviewing the cumulative impact on public services, it was concluded that their effects would be minimal since these industrial projects do not generate the need for parks and recreation and schools. Other services, such as police, fire and emergency medical services, are currently servicing the Waikapu region and would not extend the current limits of service.

h. <u>Housing and Land Use</u>

The availability of affordably-priced housing projects is an island-wide concern for working families and policy makers. As noted in the County of Maui 2030 General Plan – Countywide Policy Plan – shelter is among the most basic of human needs. The affordability, quality, and location – plan an enormous role in the quality of life of Maui County's residents.
Cumulatively, the Waikapu Gardens Phases I and II affordable housing

projects and the proposed Waiale affordable housing project have and will undoubtedly increased the availability of affordably-priced housing units for the island of Maui.

i. Infrastructure

Infrastructure requirements for the completed projects as noted above were met by respective developers/applicants. Water and wastewater requirements for Waikapu Gardens affordable residential project, Waiolani mauka and Pikake residential subdivisions and Waiko baseyard industrial project are serviced by the County systems. Waterline improvements including storage tank were completed to serve these projects and meet all applicable rules and regulations of the County and state agencies. Wastewater transmission and treatment services for Waikapu Gardens, Waiolani Mauka and Pikake residential subdivisions and Waiko Baseyard subdivision are provided by the County of Maui Environmental Management. Applicable wastewater assessment fees were required of each applicant. Likewise, the proposed Waiale affordable housing subdivision will be served by the County systems. The proposed project will be designed and constructed to ensure compliance with all county's rules and regulation and guidelines. There are no anticipated adverse impacts to the county's systems.

Each project noted above including the proposed residential subdivision in this application was and is responsible for addressing and mitigating drainage impacts. Collectively, through these measures, it is anticipated that there will be no adverse impacts to downstream or adjacent properties.

The infrastructure component that were examined for these subject projects are roadway systems. These above noted completed projects were each required to prepare traffic impact analysis reports and made appropriate

improvements on roadway systems as recommended in their respective TIAR and each project traffic impacts were mitigated by each respective applicant/developer. For the proposed Waiale affordable housing subdivision, the TIAR prepared for this project reviewed the cumulative conditions for the Waikapu area including the existing completed projects noted above. See Appendix F (Traffic Impact Analysis Report, dated November 2015, prepared by Austin Tsutsumi and Associates). The traffic analysis confirms that all study intersections are forecast to operate with LOS similar to existing conditions, with all movements operating at LOS D or better during the AM and PM peak hours traffic. Due to minimal impacts generated by the proposed project, no roadway improvements are required as a result of the project.

E. SECONDARY IMPACTS

Secondary impacts are impacts that have the potential to occur later in time in the future but are still reasonably foreseeable. They can be seen as actions by others that are taken because of the presence of the project. Related to the proposed Waiale affordable housing subdivision, secondary impacts include the creation of a larger residential population center which may lead to new additional regional demands for public services in the Wailuku-Kahului community plan district. It is anticipated that public service needs as a result from the proposed project will be met through additional revenues from the developed house lots through property tax assessments and other related fees and impact assessments.

IV. Consistency and Relationship To Land Use, Plans, Policies, and Controls

IV. CONSISTENCY AND RELATIONSHIP TO LAND USE PLANS, POLICIES, AND CONTROLS

A. STATE LAND USE DISTRICTS

Pursuant to Chapter 205, Hawaii Revised Statutes. all lands in the State of Hawaii have been placed into one (1) of four (4) land use districts category by the State Land Use Commission. These land use districts have been designated "Urban", "Rural", "Agricultural", and "Conservation". The proposed project site is classified "Agricultural". The proposed project will be processed pursuant to 201H-38, HRS, the applicant will seek exemption from Chapter 205, HRS in order to develop the 100 percent affordable to meet the housing needs of Maui's working families. The Maui County Council will be the approving body as part of the project's 201H-38, HRS project application.

B. LAND USE COMMISSION RULES, CHAPTER 15-15, HAWAII ADMINISTRATIVE RULES

The proposed project is in conformance with the following standards of the Urban District set forth in Chapter 15-15(18). Hawaii Administrative Rules:

Chapter 15-15(18)

(1) It shall include lands characterized by "city-like" concentrations of people, structures, streets, urban level services and other related land uses.

Discussion and Response:

The proposed project is located adjacent to the recently completed Waikapu Gardens Phases I and II affordable housing subdivisions and in very close proximity of Waikapu Town village Kehalani and Maui Lani commercial centers

proximity of Waikapu Town village Kehalani and Maui Lani commercial centers which contains some commercial, recreational, and single-family residential and the existing Waiolani subdivisions located mauka of the proposed project site. The proposed project also located in close proximity to Waiko Baseyard (Rojac) industrial subdivision and Consolidated Light industrial subdivision located makai of the project site.

(2) It shall take into consideration the following specific factors:

(a) Proximity to centers of trading and employment except where development would generate new centers of trading and employment.

(b) Availability of basic services such as schools, parks, wastewater systems, solid waste disposal, drainage, water, transportation systems, public utilities, and police and fire protection.

Discussion and Response:

There is a small area of commercial uses in Waikapu town, mainly consist of "moms and pops" commercial uses. There are also some light industrial uses in close proximity of the proposed project site. Waikapu town is traditionally been a residential plantation village. It is located approximately 1.2 miles from Wailuku Town which is the County seat of government and a center of trading and employment. Also, the project site is located approximately .5 miles from Kehalani and Maui Lani Town Commercial Town Center. Also, the project site is located approximately 1.5 miles from Kahului Town which is a major center of commercial activities, employment, and a major harbor and air transportation activities. The subject property is in very close proximity of the State of Hawaii's Honoapiilani and Kuihelani Highways which serve as a major transportation route.

Basic infrastructural services such as transportation systems are available in close proximity to the project site. Both public and private schools, and public parks are in very close proximity of the project site. Drainage improvements will

comply with County of Maui standards. Police and fire services also presently serve Waikapu Town and they are located in very close proximity to the project site. Medical services are also in close proximity to the project site.

(3) It shall include lands with satisfactory topography, drainage, and reasonably free from the danger of any flood, tsunami, unstable soil condition, and other adverse environmental effects.

Discussion and Response:

The existing ground slopes in a west to east direction from elevation 355 feet above mean sea level at mauka portion of the property (western boundary) to elevation 324 feet at the Waiale Road (eastern boundary), with an average slop of approximately 4.8%. Drainage improvements will be constructed in accordance to County standards

The project site is located in Flood Zone "X" which represents areas outside of the 0.2% annual chance flood plain. The project site is not subject to tsunami inundation and unstable soil conditions.

(4) Land contiguous with existing urban areas shall be given more consideration than non-contiguous land, and particularly when indicated for future urban use on state or county general plans.

Discussion and Response:

Lands pertaining to the subject project are in very close proximity to areas already in the Urban District, immediately adjacent to existing single-family residential developments, as well as other light industrial uses in the area.

(5) It shall include lands in appropriate locations for new urban concentration to areas of urban growth as shown on the state and county general plans.

Discussion and Response:

The subject property is an appropriate location for an Urban District classification as it is immediately adjacent to developed lands already in the urban district classification. In addition, the project site is within the Maui Island Plan urban growth boundary designation and outside of protected areas. The subject project is an ideal extension of the recently-developed single-family affordable residential subdivision. While the subject property is not designated for single-family residential use in the Wailuku-Kahului Community Plan District, the property's location considered appropriate for affordable residential housing development being bordered by housing development, immediately adjacent to recently-developed single-family affordable housing project and its close proximity to existing urban residential developments, infrastructure and public services.

(6) It shall not include lands, the urbanization of which will contribute towards scattered spot urban development, necessitating unreasonable investment in the public infrastructure or support services.

Discussion and Response:

The proposed affordable housing subdivision pursuant to 201H-38, HRS approval does not contribute to scattered spot urban development. The project site is adjacent to Waikapu Town residential village and the recently-developed single-family affordable housing subdivisions located immediately south of the project site. The project site is also in very close proximity to Waiolani Mauka and Pikake residential subdivisions.

The proposed development will not necessitate unreasonable public investment in infrastructural facilities or public services. The applicant will comply with all applicable provisions regarding rules and regulations pertaining to infrastructural facilities.

(7) It may include lands with a general slope of twenty percent or more if the commission finds that those lands are desirable and suitable for urban purposes and that the design and construction controls, as adopted by any federal, state or county agency, are adequate to protect the public health, welfare and safety, and the public's interest in the aesthetic quality of the landscape.

Discussion and Response:

The subject property is characterized as lands having an average slope of 4.8%, and is suitable for urban uses.

C. HAWAII STATE PLAN, CHAPTER 226, HAWAII REVISED STATUTES

Chapter 226, HRS, also known as the Hawaii State Plan, is a long-range comprehensive plan which serves as a guide for the future long-range development of the State by identifying goals, objectives, policies, priorities, as well as implementation mechanisms. The proposed project is consistent with the following State goals, objectives, and policies of the Hawaii State Plan:

Chapter 226-4, HRS, State Goals

(1) A strong, viable economy, characterized by stability, diversity, and growth, that enables the fulfillment of the needs and expectations of Hawaii's present and future generations.

(2) A desired physical environment, characterized by beauty, cleanliness, quiet, stable natural systems, and uniqueness, that enhances the mental and physical well-being of the people.

(3) Physical, social, and economic well-being, for individuals and families in Hawaii, that nourishes a sense of community responsibility, of caring and of participation in community life.

Objectives and Policies of the Hawaii State Plan

The proposed reclassification and project's affordable housing application pursuant to 201H-38, Hawaii Revised Statutes is consistent and in conformance with the following objectives and policies of the Hawaii State Plan:

Chapter 226-5, HRS, Objectives and Policies for Population

(a) It shall be the objective in planning for the State's population growth to be consistent with the achievement of physical, economic, and social objectives contained in this chapter.

(b)(1) Manage population growth statewide in a manner that provides increase opportunities for Hawaii's people to pursue their physical, social, and economic aspirations while recognizing the unique needs of each County.

(b)(2) Encourage an increase in economic activities and employment opportunities on the neighbor islands consistent with community needs and desires.

(b)(3) Promote increased opportunities for Hawaii's people to pursue their socio-economic aspirations throughout the islands.

Chapter 226-6, HRS, Objectives and Policies for the Economy

(b)(6) Strive to achieve a level of construction activity responsive to, and consistent with, State growth objectives.

(b)(10) Stimulate the development and expansion of economic activities which will benefit areas with substantial or expected employment problems.

Discussion and Response:

The proposed project conforms to the objectives and policies of HRS 226-4, 5,

and 6 for the economy, potential growth activities, and population. The proposed 10.365-acre Waiale single-family affordable residential subdivision will provide a wide-range of economic activities through construction of the subdivision improvements and housing development for working families in the Kahului-Wailuku Community Plan region and for the island residents. It is anticipated that the development of this project will generate significant expenditures by the developer during the construction of the site work for subdivision and construction of the residential dwelling units. With the infusion of new capital expenditures on this project, these investments are expected to favorably impact the Maui economy on a broad scale, and in multitude of ways. With the capital investment during the initial phase of the subdivision development and construction of the housing units, significant direct new construction job opportunities are expected to be created by this project.

The proposed development is intended to reflect and meet the housing needs at affordably priced single-family residential subdivision for Maui's working families. The architectural design of the proposed dwelling units will compliment with the recently developed Waikapu Gardens Phases I and II affordable housing projects located immediately south of the project site.

Chapter 226-11, HRS, Objectives and Policies for the Physical Environment - Land-Based, Shoreline, and Marine Resources

(a)(2) Effective protection of Hawaii's unique and fragile environmental resources.

(b)(3) Take into account the physical attributes of areas when planning and designing activities and facilities.

(b)(8) Pursue compatible relationships among activities, facilities, and natural resources.

Chapter 226-12, HRS, Objectives and Policies for the Physical Environment-Scenic, Natural Beauty, and Historic Resources

(b)(5) Encourage the design of developments and activities that complement the natural beauty of the islands.

Discussion and Response:

The proposed project meets with stated objective and policies of HRS 226-11 & 12 for physical environment, scenic and historic resources. The planning and design concept of the proposed project will reflect similar architectural character of the neighboring residential development in Waikapu town, the history, location and topography and setting of the site. View corridors and topographic features will be maintained and highlighted in the project design. The historical setting of the region will be reflected in the proposed project's traditionally-based planning and design of the subdivision. The project's design concept will embrace similar architectural design of its neighboring residential development and will meet the intent and stated objectives of HRS 226-11 & 12.

Based on thorough field assessment of the site by the applicant's consultant, no rare or endangered plant and animal species or habitats are present on site. Native habitats do not exist on the site given its history of agricultural activities of the site.

Chapter 226-13, HRS, Objectives and Policies for the Physical Environment-Land, Air, and Water Quality

(b)(2) Promote the proper management of Hawaii's land and water resources.

(b)(6) Encourage design and construction practices that enhance the physical qualities of Hawaii's communities.

(b)(7) Encourage urban developments in close proximity of existing services and facilities.

Discussion and Response:

The proposed 10.365-acre single family affordable residential subdivision will be designed to be complimentary to the neighboring existing residential development in Waikapu Town village and Waikapu Gardens Phases I and II affordable housing projects that will meet the needs of Maui's working families. The proposed project is located along the main thorough fare to west and central Maui and in very close proximity to Kahului and Wailuku regions as well as Paia and South Maui regions. The project is inland and will not have any impact on our shoreline resources. Also, the project is in close proximity to existing public services and facilities that are critical to the success of the project.

Chapter 226-19, HRS, Objectives and Policies for Socio-Cultural Advancement – Housing

(a)(2) The orderly development of residential areas sensitive to community needs and other land uses.

(b)(1) Effectively accommodate the housing needs of Hawaii's people.

(b)(3) Increase homeownership and rental opportunities and choices in terms of quality, location, cost, densities, style, and size of housing.

(b)(5) Promote design and location of housing developments taking into account the physical setting, accessibility to public facilities and services, and other concerns of existing communities and surrounding areas.

(b)(7) Foster a variety of lifestyles traditional to Hawaii through the design and maintenance of neighborhoods that reflect the culture and values of the community.

Discussion and Response:

The proposed affordable residential housing project meets the stated objectives and policies of HRS 226-19 for the orderly development of residential areas sensitive to community needs. The proposed project effectively accommodate the housing needs of Maui's residents and will increase homeownership opportunities

at an affordably-priced single family dwelling units. The design of the project is consistent with the surrounding residential subdivision (refer to Appendix K, house floor plans models). The proposed project is centrally located within the Wailuku-Kahului Community Plan region and it is conveniently accessible to public facilities and services.

Priority Guidelines of the Hawaii State Plan

The proposed project is consistent with the following priority guidelines of the Hawaii State Plan:

Chapter 226-103, HRS, Economic Priority Guidelines

(1) Seek variety of means to increase the availability of investment capital for new and expanding enterprises:

A. Encourage investments which:

(i) Reflect long-term commitments to the State;

(ii) Rely on economic linkages within the local economy;

(iii) Diversify the economy;

(iv) Reinvest in the local economy;

(v) Are sensitive to community needs and priorities; and

(vi) Demonstrate a commitment to provide management opportunities to Hawaii's residents.

Discussion and Response:

As noted earlier in this report, the proposed 10.365-acre parcel Waiale affordable single-family residential subdivision will provide a variety of economic activities for the Waikapu Town and in the Kahului-Wailuku Community Plan regions. Because of the anticipated large investment capital that will be infused in the development of the proposed affordable housing project, short-term construction employment opportunities will be created as a result from the development of the subdivision. Approximately $18 million dollars will be invested for the construction of the proposed project, thereby creating short-term construction

related jobs. The project will contribute, because of its infusion of capital investment, to the growth of Maui's economic base.

Chapter 226-104, HRS, Population Growth and Land Resources Priority Guidelines

(a)(1) Encourage planning and resource management to insure that population growth rates throughout the State are consistent with available and planned resource capacities and reflect the needs and desires of Hawaii's people.

(b)(1) Encourage urban growth primarily to existing urban areas where adequate public facilities are already available or can be provided with reasonable public expenditures and away from areas where other important benefits are present, such as protection of important agricultural land or preservation of lifestyles.

(b)(2) Make available marginal or non-essential agricultural lands for appropriate urban uses while maintaining agricultural lands of importance in the agricultural district.

(b)(12) Utilize Hawaii's limited land resources wisely, providing adequate land to accommodate projected population and economic growth needs while ensuring the protection of the environment and the availability of the shoreline, conservation lands, and other limited resources for future generations.

Discussion and Response:

The proposed project is in keeping with HRS 226-104 Priority Guidelines on Population, Growth and Land Resources. The proposed project is located within the existing urban core of Waikapu Town where adequate public facilities and services are already available such as water and wastewater services for the proposed project. In addition, the project is located in very close proximity to parks, schools, medical facilities, fire and police services and other public facilities that serve the Wailuku-Kahului Community Plan District. The proposed

affordable housing project will meet the existing and projected housing needs for Maui's working families. The project location is far inland and will not have any impact on the shoreline or conservation lands.

Chapter 226-106, HRS, Affordable Housing Priority Guidelines

(1) Seek to use marginal or nonessential agricultural land and public land to meet housing needs of low and moderate-income and gap group households.

(8) Give a higher priority to the provision of quality development of housing that is affordable for Hawaii's residents and less priority to development of housing intended primarily for individuals outside of Hawaii.

Discussion and Response:

The proposed affordable housing project meets the stated Affordable Housing Policy Guidelines for the provision of affordable housing pursuant to Chapter 226-106, HRS. The project site has been vacant and hasn't been used for agricultural purposes for decades. The site is centrally-located within the Wailuku-Kahului Community Plan region and surrounded with existing residential housing development, the proposed project is complementary and consistent with its neighboring residential developments. The proposed project will be 100 percent affordable under the Maui county affordable housing guidelines meeting those families within the 80 percent to 140 percent of Maui's median family income.

D. STATE FUNCTIONAL PLANS

The State Functional Plans (SFP) define actions for implementation of the Hawaii State Plan through the identification of needs, problems and issues, and recommendations on policies and priorities, which address the identified areas of concern. The proposed affordable housing project is consistent with the stated objectives of the following State functional plans:

a. State Agricultural Functional Plan

The proposed action to reclassify approximately 10.365 acres of land from State agricultural district to the State urban district pursuant to 210H, HRS for the proposed single-family affordable residential subdivision. As noted earlier in this report, the subject property has been vacant and remained fallow for decades and hasn't been used for any agricultural activities. The subject property is in very close proximity to existing urban uses, particularly, residential development, therefore, the proposed affordable housing project at the subject site is appropriate use of the land for urban residential development. The proposed action is not anticipated to adversely impact agricultural productivity on the island.

b. State Housing Functional Plan

As noted in the Maui County's Housing Planning Study, 2011 conducted by SMS for the Maui County Department of Human Concerns and Housing, there's critical need for affordable housing especially for working families in Maui County. According to the SMS report, a significant number of Maui households live in overcrowded conditions or are "double-up" with other families. This growing public demand for affordable housing indicates a current shortage of affordable single-family housing especially in the Wailuku-Kahului Community Plan District. With the proposed 71 single family affordable residential homes planned within the subject property will help to address a critical community need.

E. COUNTYWIDE POLICY PLAN – COUNTY OF MAUI 2030 GENERAL PLAN

The Countywide Policy Plan was adopted by Ordinance No. 3732 (2010) and took effect on March 24, 2010. This Policy Plan that was recently adopted is an update and an amendment to the Maui County's 1990 General Plan. As noted in the subject policy plan, Maui County has experienced significant changes

economically, demographically, socially, and physically that must be addressed in the scope of the Countywide Policy Plan.

The purpose of the Countywide Policy Plan is to provide broad goals, objectives, policies, and implementing actions that portray the desired direction of the County's future. The Countywide Policy Plan further provides the policy framework for the development of the Maui Island Plan and the nine community plans.

The newly adopted Countywide Policy Plan advances the following core themes:

- Protect the natural environment
- Preserve local cultures and traditions
- Improve education
- Strengthen social and healthcare services
- Expand housing opportunities for residents
- Strengthen the local economy
- Improve parks and public facilities
- Diversify transportation options
- Improve physical infrastructure
- Promote sustainable land use and growth management
- Strive for good governance

According to the Countywide Policy Plan, shelter is among the most basic of human needs. The affordability, quality, and location of housing – including the degree of crowding within the home and within the neighborhood – play an enormous role in the quality of life of Maui County's residents.

The proposed Waiale single-family affordable residential subdivision meets the following stated goals, objectives, policies and actions of the Countywide Policy Plan – County of Maui 2030 General Plan:

"E. Expand Housing Opportunities for Residents"

Goal:

Quality, island-appropriate housing will be available to all residents.

Objective:

1. Reduce the affordable housing deficit for residents.

Policies:

a. Ensure that an adequate and permanent supply of affordable housing, both new and existing units, is made available for purchase or rental to our resident and/or workforce population, with special emphasis on providing housing for low to moderate income families, and ensure that all affordable housing remains affordable in perpetuity.

b. Seek innovative ways to lower housing costs without compromising the quality of our island lifestyle.

c. Seek innovative methods to secure land for the development of low and moderate income housing.

k. Ensure residents are given priority to obtain affordable housing units developed in their communities, consistent with all applicable regulations.

l. Establish pricing for affordable housing that is more reflective of Maui County's workforce than the Unites States Housing and Urban Development's median income estimates for Maui County.

Objective:

2. Increase the mix of housing types in towns and neighborhoods to promote sustainable land use planning, expand consumer choice, and protect the County's rural and small town character.

Policies:

b. Design neighborhoods to foster interaction among neighbors.

c. Encourage a mix of social, economic, and age groups within neighborhoods.

d. Promote infill housing in urban areas at scales that capitalize on existing infrastructure, lower development costs, and are consistent with existing or desired patterns of development.

Objective:

3. Increase and maintain the affordable housing inventory.

Policies:

a. Recognize housing as basic human need, and work to fulfill that need.
b. Prioritize available infrastructure capacity for affordable housing.
g. Minimize the intrusion of housing on prime, productive, and potentially productive agricultural lands and regionally valuable agricultural lands.
h. Encourage long-term residential use of existing and future housing to meet residential needs.

Discussion and Response:

The proposed affordable housing project is consistent and meets the stated goals, objectives, and policies of the Maui County's Countywide Policy Plan – 2030 General Plan. Conformance with the objectives and policies of the Maui County Policy Plan is achieved by the proposed project as it will provide needed affordable housing for working families on Maui. The project will be 100 percent affordable meeting families with income of 80 percent to 140 percent of Maui's median income pursuant to Maui's Affordable Housing Guidelines.

The project design (refer to Appendix K, identified as floor plans models) is consistent and complementary with is neighboring residential subdivisions in Waikapu Town. The project site is in close proximity to existing urban core of Kahului-Wailuku Community Plan District and Waikapu Town village and the availability of existing infrastructures for the proposed project.

F. KAHULUI-WAILUKU COMMUNITY PLAN

The project site is located within the Kahului-Wailuku Community Plan region, one (1) of nine (9) community plan regions established in the County of Maui. Each region's growth and development is guided by a Community Plan. The County's Community Plan reflects current and anticipated conditions in the Wailuku-Kahului region and advances planning goals, objectives, policies and implementation considerations to guide decision-making in the region. The primary purpose of the Community Plan is to outline a detailed agenda for carrying out these policies and objectives. The Kahului-Wailuku Community Plan was adopted by the County of Maui through Ordinance Number 3061, Bill Number 29, and became effective on June 5, 2002. The Community Plan land use map designates the subject property as "Agricultural". As part of the project's Section 201H application, an exemption from the community amendment process is being sought.

The Wailuku-Kahului Community Plan identified the lack of affordable housing as one of its major problems. Similarly, the Countywide Policy Plan and the 2011 SMS report entitled "Housing Planning Study for Maui County" is one of Maui's challenges to address in order to meet this critical need and demand for affordable housing. It further recognizes that providing affordable housing opportunities for residents, specifically those earning below 80 percent to 140 percent of the Maui's median income, needs to be addressed and should be front and center of Maui's policy decision makers. The proposed project is consistent with the following goals, objectives, and policies of the Kahului-Wailuku Community Plan:

Goal:

Housing:

A sufficient supply and choice of attractive, sanitary and affordable housing accommodations for the broad cross section of residents, including the elderly.

Objectives and Policies:

(1) Utilize a project district planning approach for major housing expansion areas which will allow flexibility in project planning. The will provide for flexible development standards and a mix housing types which can result in more efficient site utilization and potential reductions in housing development costs.

(2) Provide efficient land areas for new residential growth which relax constraints on the housing market and afford variety in type, price, and locations of units. Opportunities for the provision of housing are presently constrained by a lack of expansion areas. This condition should be relieved by a choice of housing in a variety of locations, both rural and urban in character.

(3) Seek alternative residential growth areas within the planning region, with high priority given to the Wailuku and Kahului areas. This action should recognize that crucial issues of maintaining important agricultural lands, achieving efficient patterns of growth, and providing adequate housing supply and choice of price and location must be addressed and resolved.

(8) Promote efficient housing designs in order to reduce residential home energy and water consumption.

Discussion and Response:

The proposed affordable housing project is consistent and meets the stated goals, objectives and policies of the Wailuku-Kahului Community Plan. As clearly noted earlier in this report, this proposed housing project will be 100 percent affordable based on Maui's Affordable Housing Guidelines those earning 80 percent to 140 percent of Maui's median income. The project site is centrally-located and surrounded with existing residential neighborhoods and it is in very close proximity to public facilities within community plan region. Equally important, existing infrastructures required for the project are available at the site.

Designs of the dwelling units are compatible and consistent with its residential neighbors.

G. COUNTY ZONING

The proposed housing project site is zoned "Agricultural", according to Maui County zoning. While the current zoning does not allow for the proposed residential uses, this 201H application has been prepared for submittal with the Maui County Council through the Maui County Department of Housing and Human Concerns. Included in this 201H filing is a request to exempt the proposed project from the County's Title 19 zoning provisions which will allow the proposed project to be developed for single-family homes as affordable residential housing project.

H. MAUI ISLAND PLAN

The Maui Island Plan, adopted on December 28, 2012, provides direction for future growth, the economy, and social and environmental decisions on the island through 2030. The project site is located within the Urban Growth Boundary (UGB) in the Wailuku-Kahului region (see Appendix H, Maui Island Plan) and outside of protected areas. The proposed affordable housing project meets the goals, objectives, and policies as stated in Chapter 5 of the Maui Island Plan.

I. COASTAL ZONE MANAGEMENT OBJECTIVES AND POLICIES

Pursuant to Chapter 205A, Hawaii Revised Statutes, projects should be evaluated with respect to Coastal Zone Management (CZM) objectives, policies and guidelines. The subject parcel is not located within the County of Maui's Special Management Area, however, the applicability of coastal zone management considerations have been reviewed and assessed.

Recreational Resources:

Objectives:

Provide coastal recreational opportunities accessible to the public.

Policies:

(A) Improve coordination and funding of coastal recreational planning and management; and

(B) Provide adequate, accessible, and diverse recreational opportunities in the coastal zone management area by:

(i) Protecting coastal resources uniquely suited for recreational activities that cannot be provided in other areas;

(ii) Requiring replacement of coastal resources having significant recreational value, including but not limited to surfing sites, fishponds, and sand beaches, when such resources will be unavoidably damaged by development; or requiring reasonable monetary compensation to the state for recreation when replacement is not feasible or desirable;

(iii) Providing and managing adequate public access, consistent with conservation of natural resources, to and along shoreline with recreational value;

(iv) Providing an adequate supply of shoreline parks and other recreational facilities suitable for public recreations;

(v) Ensuring public recreational use of county, state, and federally owned or controlled shoreline lands and waters having recreational value consistent with public safety standards and conservation of natural resources;

(vi) Adopting water quality standards and regulating point and non-point sources of pollution to protect, and where feasible, restore the recreational value of coastal waters;

(vii) Developing new shoreline recreational opportunities, where appropriate, such as artificial lagoons, artificial beaches, and artificial reefs for surfing and fishing.

Discussion and Response:

The proposed project site is located inland, miles away from the coastline. As such, there should be no adverse impact on coastal recreational opportunities or adverse affect on existing public access to the shoreline.

Historic Resources:

Objective:

Protect, preserve and, where desirable, restore those natural and manmade historic and prehistoric resources in the coastal zone management area that are significant in Hawaiian and American history and culture.

Policies:

(A) Identify and analyze significant archaeological resources;

(B) Maximize information retention through preservation of remains and artifacts or salvage operations; and

(C) Support state goals for protection, restoration, interpretation, and display of historic resources.

Discussion and Response:

The proposed project does not have an adverse affect on historical or archaeological resources. Archaeological Services Hawaii, LLC, project's archaeological consultant for the project conducted an archaeological inventory survey of site to assess any presence and/or absence of any historical and archaeological resources on the proposed project site. Based on the archaeological consultant's survey (refer to Appendix D) there are no archeological and historical resources on the project site.

Economic Uses:

Objective:

Provide public or private facilities and improvements important to the State's economy in suitable locations.

Policies:

(A) Concentrate coastal dependent development in appropriate areas;

(B) Ensure that coastal dependent development such as harbors and ports, and coastal related development such as visitor facilities and energy generating facilities, are located, designed, and constructed to minimize adverse social, visual, and environmental impacts in the coastal zone management area; and

(C) Direct the location and expansion of coastal dependent developments to areas presently designated and use for such developments and permit reasonable long-term growth at such areas, and permit coastal dependent development outside of presently designated areas when:

  (i) Use of presently designated locations is not feasible;

  (ii) Adverse environmental effects are minimized; and

  (iii) The development is important to the State's economy.

Discussion and Response:

The proposed project is not a coastal dependent development. The project site is miles inland from the shoreline. The proposed project, with the infusion of capital investment will stimulate the economy through the generation of construction jobs and related job opportunities during the development of the housing subdivision. The proposed project is consistent with the objective and policy for economic use.

Coastal Hazards:

Objectives:

Reduce hazard to life and property from tsunami, storm waves, stream

flooding, erosion, subsidence and pollution.

Policies:

(A) Develop and communicate adequate information about storm wave, tsunami, flood, erosion, subsidence, and point and nonpoint source pollution hazards;

(B) Control development in areas subject to storm wave, tsunami, flood, erosion, hurricane, wind, subsidence, point and non-point pollution hazards;

(C) Ensure that developments comply with requirements of the Federal Flood Insurance Program;

(D) Prevent coastal flooding from inland projects; and

(E) Develop a coastal point and nonpoint source pollution control program.

Discussion and Response:

As noted earlier in this report, the project site is in Flood Zone "X", which represents areas outside of the 0.2% annual chance flood plain, according to FEMA. In addition, tsunami inundation parameters do not apply to the subject project.

Beach Protection

Objective:

Protect beaches for public use and recreation.

Policies:

(A) Locate new structures inland from the shoreline setback to conserve open space ad to minimize loss of improvements due to erosion.

(B) Prohibit construction of private erosion-protection structures seaward of the shoreline, except when they result in improved aesthetic and engineering solutions to erosion

at the sites and do not interfere with existing recreational and waterline activities; and

(C) Minimize the construction of public erosion-protection structures seaward of the shoreline.

Discussion and Response:

The proposed project is located miles inland, away from the shoreline and as a result, there is no anticipated adverse impact on beaches.

Marine Resources:

Objective:

Implement the State's ocean resources management plan.

Policies:

(A) Exercise an overall conservation ethic, and practice stewardship in the protection, use, and development of marine and coastal resources;

(B) Assure that the use and development of marine and coastal resources are ecologically and environmentally sound and economically beneficial;

(C) Coordinate the management of marine and coastal resources and activities management to improve effectiveness and efficiency;

(D) Assert and articulate the interests of the State as a partner with federal agencies in the sound management of ocean resources within the United States exclusive economic zone;

(E) Promote research, study, and understanding of ocean processes, marine life, and other ocean resources in order to acquire and inventory information necessary to understand how ocean

development activities relate to and impact upon ocean and coastal resources; and

(F) Encourage research and development of new, innovative technologies for exploring, using, or protecting marine and coastal resources.

Discussion and Response:

As previously stated, the proposed project is located miles inland, away from the ocean and is therefore, no anticipated adverse impact on marine or coastal resources. Appropriate Best Management Practices (BMP) will be utilized to ensure that construction runoff is appropriately captured, minimizing any impact on coastal waters.

Scenic and Open Space Resources:

Objective:

Protect, preserve, and where desirable, restore or improve the quality of coastal scenic and open space resources.

Policies:

(A) Identify valued scenic resources in the coastal zone management area.

(B) Ensure that new developments are compatible with their visual environment by designing and locating such developments to minimize the alteration of natural landforms and existing public views to and along the shoreline.

(C) Preserve, maintain and, where desirable, improve and restore shoreline open space and scenic resources.

(D) Encourage those developments which are not coastal dependent to locate in inland areas.

Discussion and Response:

The proposed affordable housing project will not adversely impact the scenic and open space resources. The project will not involve significant alteration of the existing topographic character of the project site and will not impact public views to and along the coastal shorelines.

Public Participation

Objective:

Stimulate public awareness, education, and participation in coastal management.

Policies:

(A) Maintain a public advisory body to identify coastal management problems and to provide policy advice and assistance to the coastal zone management;

(B) Disseminate information on coastal management issues by means of educational materials, published reports, staff contact, and public workshops for persons and organizations concern with coastal-related issues, developments, and government activities; and

(C) Organize workshops, policy dialogues, and site-specific mediations to respond to coastal issues and conflicts.

Discussion and Response:

The project will meet county public awareness, education and participation objectives. Community meetings with the Waikapu Community Association were held on August 10 and September 14, 2015 to solicit input from the public regarding the proposed project. Also, meetings were held with FACE Maui Affordable Housing Alliance on August 1 and September 7, 2015 to discuss and seek input regarding the

proposed affordable housing project. In addition, the applicant along with the project's consultant met with representatives from County agencies to review the proposed project and seek comments. Also, opportunities for agency and further public review of the proposed action are provided through the notification review and comment processes by the County.

V. Neighborhood Informational Meetings

NEIGHBORHOOD INFORMATIONAL MEETINGS

The project's applicant held two (2) meetings with the Waikapu Community Association, representing members of the Waikapu community, Waiolani subdivision and the Waikapu Gardens Phases I and II subdivisions, located west and south of the project site, respectively. Also, two (2) meetings were held with the members of F.A.C.E Maui affordable housing alliance representing various faith-based community organizations on Maui advocating for the development of affordable housing projects for Maui's working families. Also, the applicant met on January 15, 2016 with over 100 members from various Maui churches to present and seek comments regarding the proposed affordable housing project.

The community meetings with various community organizations were held to present the proposed affordable housing project, and more importantly, to solicit input from the members of the community. At the said meetings, a preliminary conceptual subdivision layout, conceptual landscape plan and brief overview, project background and vision was presented by the applicant. The applicant noted that access to the proposed subdivision will be Waiale Road. In addition, the applicant assured the Waikapu Gardens residents that there will be no access to Kokololio Road from the proposed project. In response to the Waikapu Community Association comments, the applicant has included a neighborhood park within the proposed subdivision. It was also presented that the proposed single-family residential housing project will be 100 percent affordable based on Maui's Affordable Housing Sales Guidelines and will meet those families earning 80 percent to 140 percent of Maui's median income. The applicant also presented proposed preliminary various house floor designs that are envisioned for the proposed project. It is further noted that the architectural design will be consistent and complementary with its neighboring residential housing developments at Waikapu town village.

During the community meetings, the applicant noted that the proposed project will be 100 percent affordable project based on the Department of Housing and Human Concerns Affordable Housing Sales Guidelines. The project will target those working families earning 80 percent to 140 percent of Maui's median income. It was also noted that the proposed affordable housing project will be processed through the Department of Housing and Human Concerns pursuant to 201H, Hawaii Revised Statutes (HRS). Based on the 201H, HRS, the applicant will be seeking various exemptions from County and State laws and regulations to make the project affordably-priced and to expedite the development of the proposed project for Maui's working families. Because of the project's 100 percent affordable, the community members that attended the various community meetings expressed support of the proposed affordable housing project and noted that they were glad that the applicant is proceeding with the project in order to meet the demand for more housing on Maui.

VI. Proposed Exemptions Request Pursuant to 201H-38, HRS

WAIALE AFFORDABLE RESIDENTIAL HOUSING PROJECT – PROPOSED EXEMPTIONS FROM THE MAUI COUNTY CODE (MCC) AND THE HAWAII REVISED STATUTES PURSUANT TO SECTION 201H-38, HRS

A. EXEMPTIONS FROM TITLE 2, MCC, ADMINISTRATION AND PERSONNEL

1. An exemption from Chapter 2.80B, MCC, General Plan and Community Plans, shall be granted to permit the project to proceed without obtaining a community plan amendment.

B. EXEMPTIONS FROM TITLE 12, MCC, STREETS, SIDEWALKS, AND PUBLIC PLACES

1. An exemption from Chapter 12.08, MCC, Driveways, shall be granted to exempt the project from driveway permit and inspection fees.

2. An exemption from Chapter 12.24A, MCC, Landscape Planting and Beautification, shall be granted to exempt the project from requiring Compliance with the Landscape Planting Plan as it pertains to requiring one (1) tree per residential lot.

C. EXEMPTION FROM TITLE 14, MCC, PUBLIC SERVICES

1. An exemption from Title 14.35, MCC, Wastewater Assessment Fees for Facility Expansion for the Wailuku/Kahului Wastewater Treatment System, shall be granted to exempt the project from wastewater assessment fees.

2. An exemption from Title 14.05.090, MCC, Fire Protection, shall be granted to exempt the project from providing the fire protection for the portions of the property along Waiale Road and Kokololio Street.

D. EXEMPTIONS FROM TITLE 16, MCC, BUILDINGS AND CONSTRUCTION

1. Exemptions from MCC Chapters 16.04C, Fire Code, 16.18B, Electrical Code, 16.20B, Plumbing Code, and 16.26B, Building Code, shall be granted to exempt the project from fire, electrical, plumbing, and building inspection fees.

2. An exemption from MCC Chapter 16.04C, Fire Code, shall be granted to exempt the project from any permit fees required by the Fire Code.

3. Exemption from Title 16.04C.470, MCC, Fire Code, shall be granted to

exempt the project from providing fire protection for the portions of the property along Waiale Road and Kokololio Street.

E. EXEMPTIONS FROM TITLE 18, MCC, SUBDIVISIONS

1. An exemption from Section 18.20.020, MCC, Sewage Disposal, as it relates to sewer lateral connections for residences, shall be granted to allow for the use of double laterals instead of single laterals to the single-family homes.

2. Exemptions from Section 18.04.030, MCC, Administration, and Section 18.16.020, MCC, Compliance, shall be granted to exempt the project from obtaining a change in zoning and community plan amendment.

3. An exemption from Sections 18.20.040, 18.20.070, 18.20.080, and 16.26B.3600, MCC, as they relate to the urban standards for curbs, gutters, and sidewalks shall be granted for the portions of the Project adjacent to Waiale Road.

4. An exemption from Section 18.20.040, MCC, shall be granted to exempt the project from constructing a sidewalk along the existing Kokololio Street south of the project site fronting the property.

5. An exemption from Section 18.20.070, MCC, shall be granted to exempt the project from constructing sidewalks on both sides of the internal subdivision roadways. Five foot-wide concrete sidewalk will be provided on one side of the internal subdivision roadways.

F. EXEMPTION FROM TITLE 19, MCC, ZONING

1. An exemption from Chapter 19.30A, MCC, Agricultural District, shall be granted to permit the development and use of the subject parcel for single-family residential purposes. The proposed affordable housing project shall be exempt from all development design standards set forth in Chapter 19.30A, including wall height restrictions. Further, this exemption shall allow the subdivision of the property in the plat configuration shown in the Exhibit "1". The following zoning standards shall apply to the proposed lots:

Minimum lot size:	3,900 Square Feet
Height:	No building shall exceed 2 stories or thirty (30) feet in height
Minimum Lot Width:	50 Feet
Total No. of Residential Lots in Subdivision:	70 Lots
Neighborhood Park:	Approximately 5,366 s.f.

SETBACK	
Front yard	Minimum of 20 feet
Garage	Minimum of 20 feet
One story homes (side and rear)	Minimum of 6 feet
Two Story Homes (side and rear)	Minimum of 10 feet

G. EXEMPTIONS FROM CHAPTER 8.04, MCC, REFUSE COLLECTION AND LANDFILLS

1. An exemption from Chapter 8.04.040, MCC, Disposal permits – Application and suspension, shall be granted to exempt the project from the requirement of acquiring a disposal permit.

2. An exemption from Chapter 8.04.050, MCC, Disposal charges, shall be granted to exempt the project from disposal charges.

H. EXEMPTION FROM 302A, HAWAII REVISED STATUTES (HRS)

1. An exemption from HRS Chapter 302A Education, Part VI Provisions Affecting Facilities, Section B School Impact Fees, shall be granted to exempt the project from State of Hawaii, Department of Education school impact fees.

I. EXEMPTIONS FROM CHAPTER 14.76, MCC, IMPACT FEES FOR TRAFFIC AND ROADWAY IMPROVEMENTS

1. An exemption from Chapter 14.76, MCC, Traffic and Roadway Improvements, shall be granted to exempt the project from traffic impact fees should such fees be adopted prior to the issuance of building permits for the project.

J. EXEMPTIONS FROM CHAPTER 19.68, MCC AND CHAPTER 205, HRS

1. An exemption from Chapter 19.68, MCC, and Chapter 205, HRS, shall be granted to exempt the project from obtaining a State Land Use District Boundary Amendment.

K. AS A PROJECT CONTAINING 100% RESIDENTIAL WORKFORCE HOUSING UNITS, THE PROJECT SHALL BE UTILIZING THE FOLLOWING EXEMPTIONS PROVIDED FOR BY THE MAUI COUNTY CODE

1. MCC Section 12.08.050(D), as it pertains to driveway permit fees.
2. MCC Section 18.16.320 (I)(5), as it pertains to the park assessment fee.
3. MCC Section 20.08.090(D), as it pertains to grading and grubbing permit fee.
4. MCC Section 16.18.107, as it pertains to the electrical permit fee in Section 107-1(c).
5. MCC Section 16.20B.103.4, as it pertains to the plumbing permit fee in Section 103.4.I.3.
6. MCC Section 16.26B.108, as it pertains to building permit fee in Section 108.2.
7. MCC Section 14.12.030, as it pertains to the exemption from Chapter 14.12, MCC.

VII. Comments Received From Agencies and Responses To Substantive Comments

DEPARTMENT OF THE ARMY
HONOLULU DISTRICT, U.S. ARMY CORPS OF ENGINEERS
FORT SHAFTER, HAWAII 96858-5440

February 18, 2016

SUBJECT: Approved Jurisdictional Determination and No Permit Required for Waiale Affordable Housing, Waiale Road, Wailuku, Island of Maui, Hawaii. DA File No. POH-2015-00253

Waiale Road 201, LLC
c/o Vince Bagoyo
Bagoyo Development Consulting Group
1500 Kilinoe Place
Wailuku, Hawaii 96793

Dear Mr. Bagoyo:

We have received your letter dated December 2, 2015 requesting Department of Army Permit for the proposed Waiale Affordable Housing Project, located at Tax Map Key (2) 3-5-002:012 west of the intersection of Kokilolio Street and Waiale Road, in Wailuku, Island of Maui, Hawaii. We have assigned your project Department of the Army (DA) file number POH-2015-00253. Please reference this number in all future correspondence concerning this project.

We have reviewed your submittal pursuant to Section 10 of the Rivers and Harbors Act of 1899 (Section 10) and Section 404 of the Clean Water Act (Section 404). Section 10 requires that a DA permit be obtained for certain structures or work in or affecting navigable waters of the United States, prior to conducting the work (33 U.S.C. 403). Section 404 requires that a DA permit be obtained for the discharge of dredged and/or fill material into waters of the U.S., including wetlands and navigable waters of the U.S, prior to conducting the work (33 U.S.C. 1344).

Based on our review of your submittal, we have determined that there are no waters of the United States, including wetlands, under the regulatory jurisdiction of the Corps within the review area (project site) as described above and depicted on the attached map (Enclosure 1). Assuming your project is conducted only as set forth in the information provided, this office has determined the proposed activity does not affect the course, capacity, condition, or location of a Navigable Water of the U.S. as defined by Section 10 and would not result in the discharge of dredged or fill material into waters of the U.S. as defined by Section 404. Therefore, a DA permit will not be required.

This letter contains an approved JD that identified the basis for asserting jurisdiction (Enclosure 2). The approved JD is valid for a period of five (5) years from the date of this letter, unless new information warrants revision of the determination before the expiration date. If you object to this determination, you may request an Administrative Appeal under 33 CFR 331. We have enclosed a Notification of Appeal Process and Request for Appeal (NAP/RFA) form. If you request to appeal this determination you must submit a completed RFA form, according to instructions in the RFA, to the Corps' Pacific Ocean Division office at the following address:

Appeals Review Officer
U.S. Army Corps of Engineers
Pacific Ocean Division, ATTN: CEPOD-PDC
Building 525
Fort Shafter, HI 96858-5440

This JD and statement of no permit required does not relieve Waiale Road 201, LLC of any need to obtain other federal, state, or local authorizations required by law, ordinance and/or regulation.

Thank you for your cooperation with the Honolulu District Regulatory Program. Should you have any questions related to this determination, please contact Ms. Vera Koskelo of my staff at 808-835-4310 or via e-mail at Vera.B.Koskelo@usace.army.mil. You are encouraged to provide comments on your experience with the Honolulu District Regulatory Office by accessing our web-based customer survey form at http://corpsmapu.usace.army.mil/cm_apex/f?p=136:4:0.

Sincerely,

Michelle R. Lynch
Chief, Regulatory Office

Enclosure(s)

cc:
State of Hawaii DBEDT Office of Planning (John Nakagawa)
State of Hawaii DOH-CWB (Darryl Lum)
Vbagoyo-devgroup@hawaii.rr.com

BAGOYO
DEVELOPMENT
CONSULTING GROUP

March 1, 2016

Ms. Michelle R. Lynch
Chief, Regulatory Office
U.S. Army corps of Engineers
Fort Shafter, Honolulu, HI 96958-5440

Subject: Proposed Waiale Affordable Housing Project
Located at TMK: (2) 3-5-002:012 por, Waiale Road, Wailuku, Island of Maui, HI
DA File No. POH-2015-00253

Dear Ms. Lynch:

This is to acknowledge receipt of your letter dated February 18, 2016 regarding the proposed above subject project. Thank you for your comments and confirming that your office has determined that there are no waters of the United States, including wetlands, within the project area. Therefore, a DA permit will not be required for the proposed affordable housing project.

Again, thank you for your kind comments and should you have further questions or require additional information relative to the proposed project, please feel free to contact the undersigned at (808) 357-3842.

Sincerely,

Vince Bagoyo

Cc: Ms. Carol Reimann (Director, Dept. of Housing and Human Concerns)
Waiale Road 201, LLC (Mr. Peter Martin)
Mr. William Frampton

1500 KILINOE PLACE
WAILUKU, HI 96793
(808)357-3842
VBAGOYO-DEVGROUP@HAWAII.RR.COM

ALAN M. ARAKAWA
Mayor

DAVID C. GOODE
Director

ROWENA M. DAGDAG-ANDAYA
Deputy Director

Telephone: (808) 270-7845
Fax: (808) 270-7955

COUNTY OF MAUI
DEPARTMENT OF PUBLIC WORKS
200 SOUTH HIGH STREET, ROOM NO. 434
WAILUKU, MAUI, HAWAII 96793

GLEN A. UENO, P.E., P.L.S.
Development Services Administration

CARY YAMASHITA, P.E.
Engineering Division

BRIAN HASHIRO, P.E.
Highways Division

January 20, 2016

Mr. Vince Bagoyo
V. Bagoyo Development Consulting
Group, LLC
1500 Kilinoe Place
Wailuku, Maui, Hawaii 96793

Dear Mr. Bagoyo:

SUBJECT: DRAFT APPLICATION FOR PROPOSED WAIALE AFFORDABLE HOUSING PROJECT PURSUANT TO 201H, HAWAII REVISED STATUTES AT WAIALE ROAD, WAILUKU, MAUI, HAWAII; TMK: (2) 3-5-002:012 POR.

We reviewed the subject application and have the following comments:

Comments from the Highways Division:

1. We note that the internal roadways will be built to County standards. We presume this is so that the roadways can be dedicated to the County. However, we note that Waiale Road is still privately owned. No dedication of this project's roadways can occur until after Waiale Road is accepted as a County road.

2. The project should include road improvements along the project's frontage with Waiale Road. Please consult with the Department of Public Works' Engineering Division for the appropriate standards.

3. Although access will be restricted onto Waiale Road from the properties that front Waiale Road, under current Maui County Code, those properties will be responsible for the maintenance of the road shoulder from their property boundary to the edge of asphalt pavement or the edge of the concrete curb. Similarly, all internal subdivision roads will have the same maintenance requirement of the road shoulders. If a home owners association (HOA) is formed, consider having that HOA do shoulder maintenance along Waiale Road.

4. We note that drainage will be taken to the existing drainage retention basins to the east of Waiale Road. Written permission from the basin owner will be required in order to process grading permits.

Comments from the Engineering Division:

5. Update report for current timetable of 2017 for build out and occupancy.

6. TIAR, Page 10, Section 4.2: Please confirm whether A&B's Waiale Development is included in the Maui Regional Traffic Demand Model (MRTDM).

7. TIAR, Section 4.2: For each of the projects listed, provide a status on its development and anticipated build out year.

8. TIAR, Table 4.1: Note below table mentions "Not all traffic generated by these developments travel through the study area." Remove these projects from the report or clearly denote which projects do not affect the study area.

9. TIAR, Base Year: Provide exhibit showing distribution of developments cited in 4.2 for clarity.

10. General comment: Provide sidewalks on both sides of all internal subdivision roadways.

11. General comment: Provide sidewalk along Waiale Road project frontage.

12. Provide updated figures and exhibits. There were discrepancies throughout the report.

Please call Rowena M. Dagdag-Andaya at 270-7845 if you have any questions regarding this letter.

Sincerely,

for DAVID C. GOODE
Director of Public Works

DCG:RMDA:da
xc: Highways Division
Engineering Division
S:\DSA\Engr\CZM\Draft Comments\35002012_proposed_waiale_affordable_hsg_proj_draft_app.wpd

BAGOYO
DEVELOPMENT
CONSULTING GROUP

January 28, 2016

Mr. David C. Goode
Director
Dept. of Public Works
200 So. High Street
Wailuku, HI 96793

Subject: Proposed Waiale Affordable Housing Project Pursuant to 201H, Hawaii Revised Statutes ("HRS"), Located at Waiale Road, Wailuku, HI TMK: 92) 3-5-002:012 por

Dear Mr. Goode:

We acknowledge receipt of your letter dated January 20, 2016 regarding the aforementioned proposed affordable housing project. Following below are responses to your comments in the order as noted in your letter:

1. Acknowledge.

2. Please see the attached typical section for the Waiale Road improvements fronting the project site which includes a grass swales and concrete sidewalk. These proposed improvements were earlier discussed with your department. An exemption is being requested for curbs and gutters.

3. Acknowledge.

4. A copy of written agreement with the drainage basin owner will be provided during the grading permit process.

5. Per our traffic engineer, the proposed Waiale affordable housing TIAR will be updated to reflect the current timetable for build-out and occupancy.

6. According to our traffic engineering consultant, noted that the proposed Waiale development does not impact the project's TIAR, since it is not anticipated to be constructed before the build-out of the Waiale affordable housing project. However, based on an assessment of the Traffic Analysis Zones (TAZ) in relation to forecast number of households in the Maui Regional Traffic Demand Model (MRTDM), the Waiale development appears to be included in the forecast of the MRTDM.

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(808)357-3842
VBAGOYO-DEVGROUP@HAWAII.RR.COM

7. As your are aware, only the Waikapu Gardens Phase II and Central Maui Regional Sports Complex Phase I have begun construction. It is possible that these developments could be completed by this year or next. To our knowledge, the remaining three (3) developments, which include Waikapu Light Industrial, Waiko Baseyard Light Industrial and Valley Isle Fellowship Church have all obtained necessary land use and zoning approvals to begin construction., pending any obligations that are required to be fulfilled prior to occupancy. As is common, these projects may be subject to potentially unforeseen delays, therefore anticipated build-outs cannot be accurately determined however, they were conservatively included in the TIAR per our traffic engineer, since it is possible they could be built by our build-out year.

8. According to the project's traffic engineer, Table 4.1 shows the TOTAL trips generated by each of the background projects. The intent of the Note below the table was written to inform the reviewer that for some of the background projects, only a portion of trips would travel through the designated Waiale affordable housing TIAR study intersections along Honoapiilani Highway, Waiale Road and Waiko Road.

Please see attached Figure A1, which shows the trip distribution percentages for background projects. As an example, the Waiko Baseyard Light Industrial TIAR estimated that 65% of vehicular trips would be assigned to travel along Kuihelani Highway. Since Kuihelani highway was not part of the study area for the Waiale affordable housing TIAR, the 65% of trips generated by Waiko Baseyard Light Industrial would not travel through the analyzed intersections defined in the Waiale affordable housing TIAR.

9. As noted above, please see attached Figure A1.

10. Please see the attached typical section for the internal subdivision roadway. An exemption is being requested to construct a sidewalk on one side of the street.

11. A sidewalk is being proposed along the Waiale road project frontage.

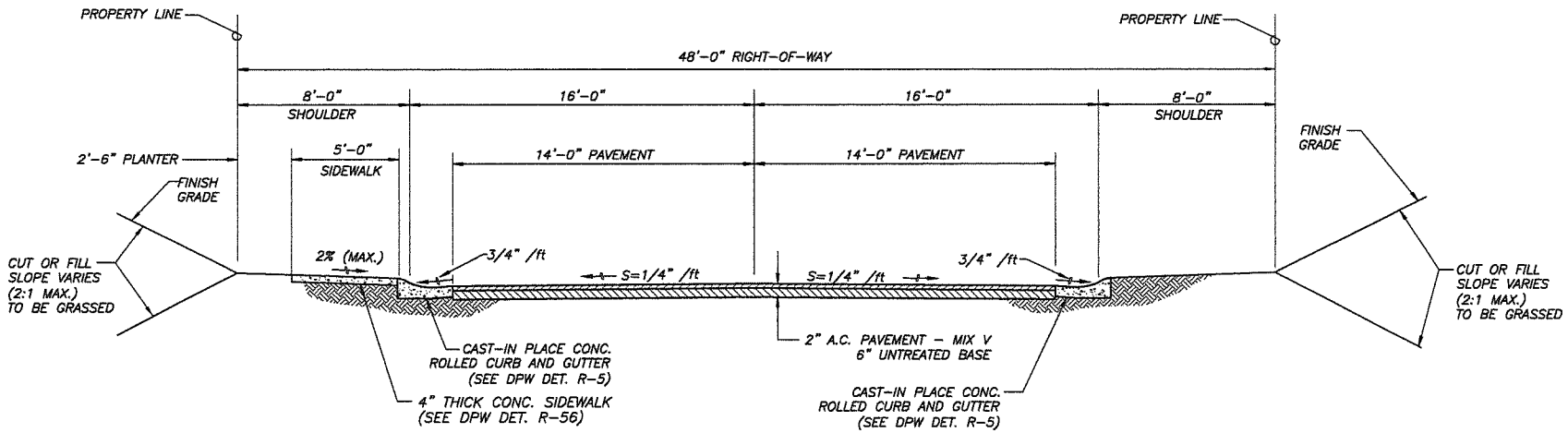
12. All exhibits will be updated and included in the final 201H, HRS application. Please see attached updated preliminary site plan for the proposed project.

Thank you for your comments and should you have further questions or require additional information, please feel free to contact me at (808) 357-3842.

Sincerely,

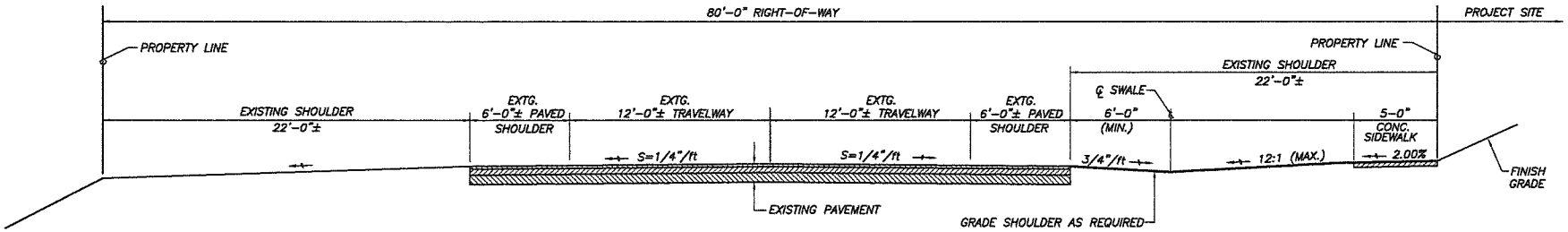
Vince Bagoyo

Cc: Mr. Carol Reimann (Director, Dept. of Housing and Human Concerns)
Waiale Road 201, LLC (Mr. Peter Martin)
Mr. William Frampton



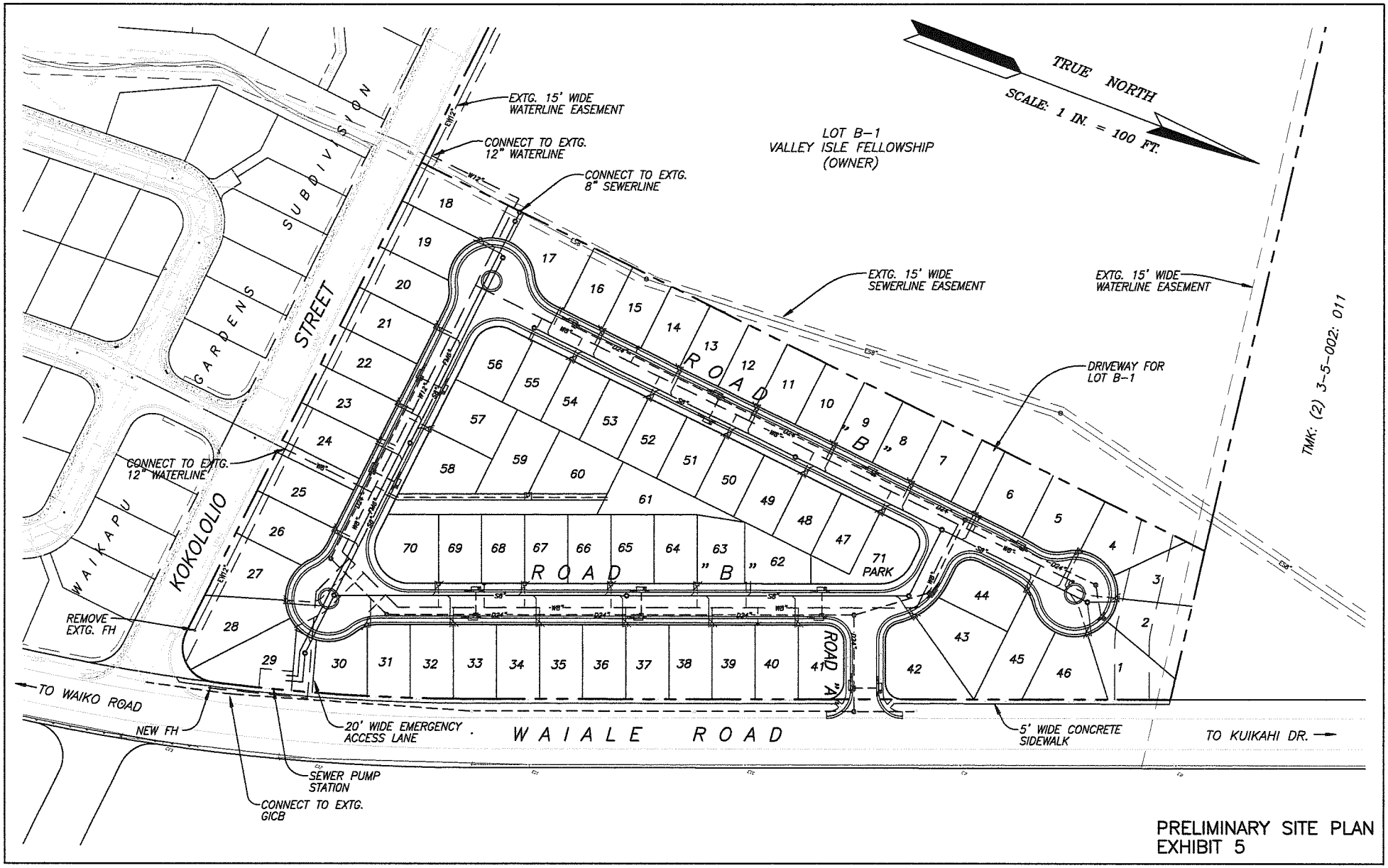
TYPICAL SECTION – SUBDIVISION INTERIOR ROAD (48 FT. RIGHT-OF-WAY)

NOT TO SCALE



TYPICAL SECTION – WAIALE ROAD (80 FT. RIGHT-OF-WAY)

NOT TO SCALE



PRELIMINARY SITE PLAN
EXHIBIT 5

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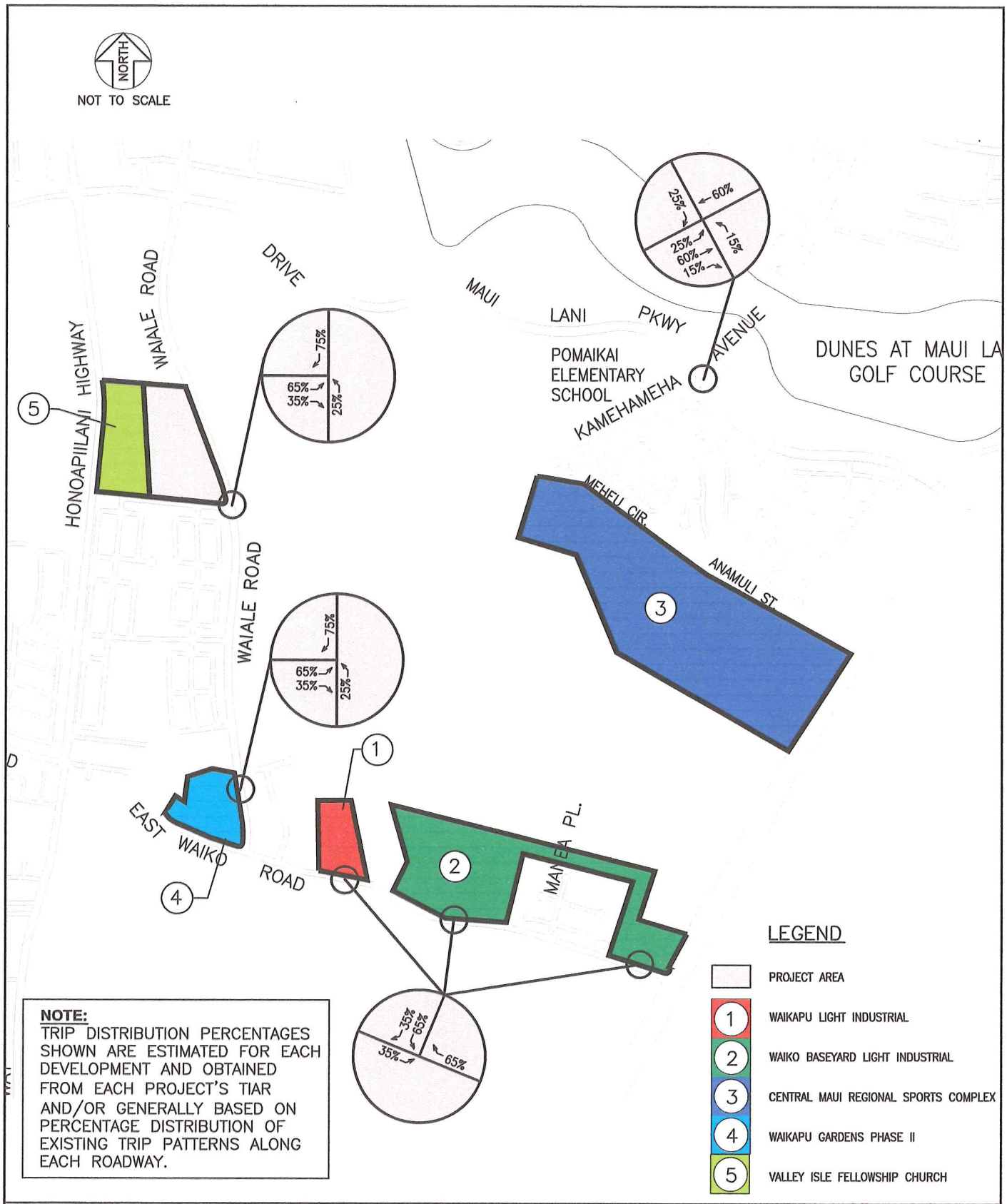

WAIALE AFFORDABLE HOUSING TIAR

AUSTIN, TSUTSUMI & ASSOCIATES, INC.
ENGINEERS, SURVEYORS • HONOLULU, HAWAII

DISTRIBUTION OF BACKGROUND DEVELOPMENT TRIPS IN PROJECT VICINITY

FIGURE A1

ALAN M. ARAKAWA
Mayor

WILLIAM R. SPENCE
Director

MICHELE CHOUTEAU McLEAN
Deputy Director

COUNTY OF MAUI
DEPARTMENT OF PLANNING

December 15, 2015

Mr. Vince Bagoyo
Bagoyo Development Consulting Group, LLC
1500 Kilinoe Place
Wailuku, Hawaii 96793

Dear Mr. Bagoyo:

SUBJECT: COMMENTS AND EARLY CONSULTATION ON A DRAFT APPLICATION FOR THE PROPOSED 201H, HAWAII REVISED STATUTES (HRS), WAIALE AFFORDABLE HOUSING PROJECT, LOCATED AT THE INTERSECTION OF WAIALE ROAD AND KOKOLOLIO STREET, WAILUKU, ISLAND OF MAUI, HAWAII; TMK: (2) 3-5-002:012 (POR.) (RFC 2015/0193)

The Department of Planning (Department) is in receipt of the above-referenced request for comments on the Draft Application for the above-referenced 201H Waiale affordable housing project. The Department understands the proposed action includes the following:

- The Applicant is Waiale Road 201, LLC;
- The owner currently is Valley Isle Fellowship;
- The project will consist of 71 single-family residential housing units on approximately 10.365 acres of land;
- The project proposes to seek approval via the 201H, HRS process, and seeks exemptions from the Community Plan Amendment (CPA) and Change in Zoning (CIZ) processes, along with other exemptions; and
- The project is not located within the Special Management Area (SMA) and will not require a SMA Use Permit.

Based on the foregoing, the Department provides the following comments on the Draft Application:

- On page 10 of the draft document it is stated, *"the applicant is also requesting pursuant to 201H-38, HRS, to designate the approximately 10.365-acre parcel to be designated from "Agriculture" to "Urban" District by Maui County."* Yet on page 92 of the draft document it is stated, *"An exemption from Chapter 19.68, MCC, and Chapter 205, HRS, shall be Granted to exempt the project from*

obtaining a State Land Use District Boundary Amendment." The Department presumes the Applicant is requesting an exemption from a District Boundary Amendment but please clarify what exactly is being requested.

- The Zoning and Flood Confirmation Form found in Appendix M should be revised in the County Zoning section to include the word "Agriculture." The property has split zoning and the parcel under consideration in this application has a County Zoning designation of "Agriculture."

- The Department concurs with the letter dated May 4, 2011, from the Consulting Archeologist Lisa Rotunno-Hazuka who states. "archaeological monitoring is recommended during all construction related activities." Clarification is requested from Archeological Services Hawaii, LLC., and the Department of Land and Natural Resources-State Historic Preservation Division (DLNR-SHPD) whether or not this would be modified to include "ground altering activities." Review this issue in greater detail.

- Projects developed as 201-H Affordable Housing should include projected pricing data to evaluate. Please include pricing and corresponding target market information in *Section III. Potential Impacts and Mitigative Measures* which substantiate that this project meets the conditions for classification as a "201-H."

- Show the project conceptual plan in more detail outlining multi-model connectivity to other residential and commercial areas, such as sidewalks for pedestrian travel, bikeways, and greenways. Are sidewalks proposed WITHIN the project? If not, please explain. Are sidewalks proposed along the project boundary on Waiale Road? If not, please explain.

- There do not appear to be any green park areas, not even "pocket parks," on the proposed conceptual plan. The Department understands the need for "affordable housing;" however, the perceived lack of any park area seems problematic. Please explain why there appears to be no dedicated green areas for the rest and relaxation of residents.

- All of the housing plans appear to have "front-loading" garages making the garage and driveway a principal design element of the community. Again the Department understands this is an "affordable project," however further discussion and review needs to be given to modifying the streetscape with side-loaded garages, alleyways, etc. Further design review is warranted and ***alternative subdivision designs should be illustrated in the report.***

- There does not appear to be a color scheme of the proposed homes. Please include a description of the proposed colors to be used for the project, roof material and color, and accent features.

- There does not appear to be a proposed landscape plan. If such a plan has not been included in this draft report, please include a planting, landscape, and lighting plan with the revised report, showing proposed plants and lighting fixtures to be employed in the project.

- Further work should be done with regards to design elements within this Waiale housing project. The challenges of innovative design are even greater in "affordable projects."

Thank you for the opportunity to comment. *Please provide a copy of the revised 201H, HRS application on compact disc or digital format to the Department of Planning*. Should you require further clarification, please contact Staff Planner Kurt Wollenhaupt at kurt.wollenhaupt@mauicounty.gov or at (808) 270-1789.

Sincerely,

WILLIAM SPENCE
Planning Director

xc: Clayton I. Yoshida, AICP, Planning Program Administrator (PDF)
Kurt F. Wollenhaupt, Staff Planner (PDF)
Carol K. Reimann, Director, Department. of Housing and Human Concerns (PDF)
William Frampton, Frampton & Ward, LLC
Project File
General File

WRS:CIY:KFW:sn
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BAGOYO
DEVELOPMENT
CONSULTING GROUP

February 8, 2016

Mr. William R. Spence
Director
Dept. of Planning
2200 Main Street, Ste. 315
Wailuku, HI 96793

Subject: Proposed Waiale Affordable Housing Project Pursuant to 201H, Hawaii Revised Statutes ("HRS")
Located at Waiale Road, Wailuku, HI
TMK: (2) 3-5-002:012 por; (RFC 2015/0193)

Dear Mr. Spence:

This is to acknowledge receipt of your letter dated December 15, 2015 regarding the aforementioned proposed Waiale affordable housing project. Following below are responses to your comments in the order as noted in your letter:

- The verbiage on page 10 of the draft application requesting to designate the subject parcel to "urban" district will be deleted from the text since an exemption request from Chapter 19.68, MCC, and Chapter 205, HRS will be included in the project's list of exemptions that are being requested pursuant to 201H-38, HRS.

- The Zoning and Flood Confirmation Form has been revised by the Maui Planning Department to include "Agriculture" in the County Zoning Section.

- The Applicant is sensitive to, and aware of; the importance of the need to protect and preserve the island's archaeological and historical resources. In response to the State Historic Preservation Division (SHPD) comments to the draft 201H application, Ms. Lisa Rotunno-Hazuka of Archaeological Services Hawaii, LLC has completed the archaeological inventory survey (AIS) along with the archaeological monitoring plan and have been resubmitted to SHPD.

- The applicant's sole vision of the proposed project is to be able to develop a 100 percent affordable housing project in order to provide Maui families and residents with a unique opportunity to purchase their own house and lot at affordable prices. The proposed project is being processed pursuant to 201H, HRS, hence, the proposed sales price for the house and lot are set in accordance with the *Maui County's Affordable Sales Price Guidelines* which incorporate several factors (such as median family income, prevailing interest rates). The basic parameters of the allocation of affordability for the proposed project are clearly noted on page 3 of the draft 201H, HRS application. This affordability

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WAILUKU, HI 96793
(808)357-3842
VBAGOYO-DEVGROUP@HAWAII.RR.COM

allocation is mandated by the Department of Housing and Human Concerns (DHHC). You may view the price ranges on each of the affordability allocation at DHHC's *Maui County's Affordable Sales Price Guidelines.*

- In response to your comments, the revised plan now incorporates several features aimed at increasing pedestrian-friendly options, increasing alternatives for non-motorized transportation; and increasing opportunities for recreational activities (see attached revised site preliminary site plan and conceptual landscape plan). The revised plan includes: new greenway for pedestrians (walk/jog) and bicycles to be built over existing 15-feet wide County sewer easement. The trail network will run in a north/south alignment across property; new internal sidewalks within street network; and new exterior sidewalk fronting the project site on Waiale Drive.

- As noted above (refer to attached revised site plan), the preliminary plan has been revised to include pocket park and greenways which makes it more attractive to families who want to have healthy and active lifestyles – increased opportunity for walking, jogging, biking, playing/recreation at park.

- As shown on the attached conceptual landscape plan, a pocket park along with multiple greenways has been included in the landscape plan.

- The preliminary site plan has been revised to address the "Front Loading" design issue. The applicant's architect has prepared some house models for the project which have a garage with an entrance that is perpendicular to the street (see attached plan).

- The proposed color scheme is a pallet of earthy tones that are variations of browns, blues and greens that are lighter hues for the body color with accent trim that is darker variations of these earthy tones. The roofing will be asphalt shingles that are light grays and browns. The color pallet will be similar to the surrounding neighborhood.

- As noted above, a conceptual landscape plan has been prepared for the proposed project (see attached conceptual landscape plan).

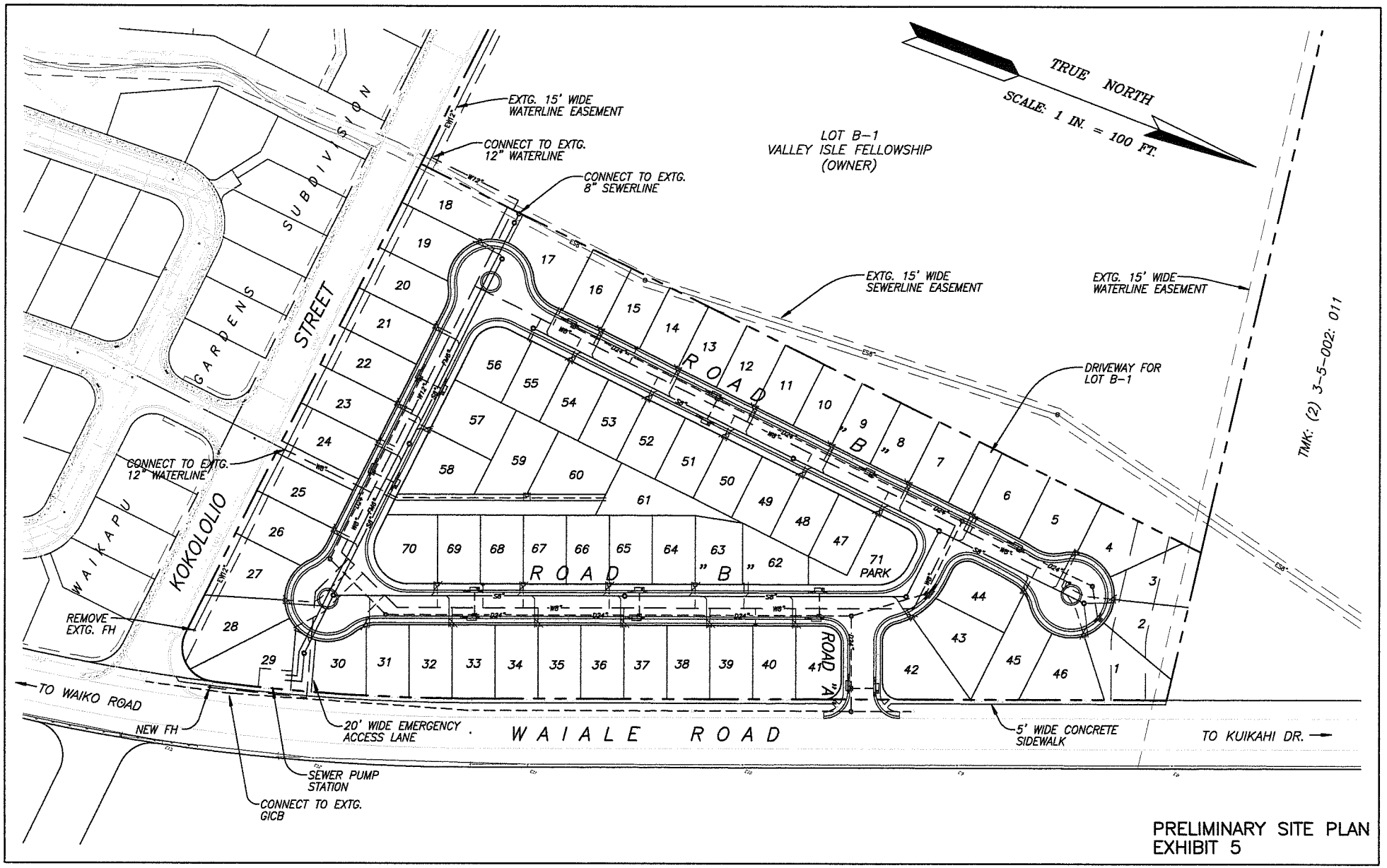
Again, Thank you for your comments and should you have further questions, feel free to contact me at (808) 357-3842.

Sincerely,

Vince Bagoyo

Encls.

Cc: Ms. Carol Reimann (Director, Dept. of Housing and Human Concerns)
Waiale Road 210, LLC (Mr. Peter Martin)
Mr. William Frampton



PRELIMINARY SITE PLAN
EXHIBIT 5

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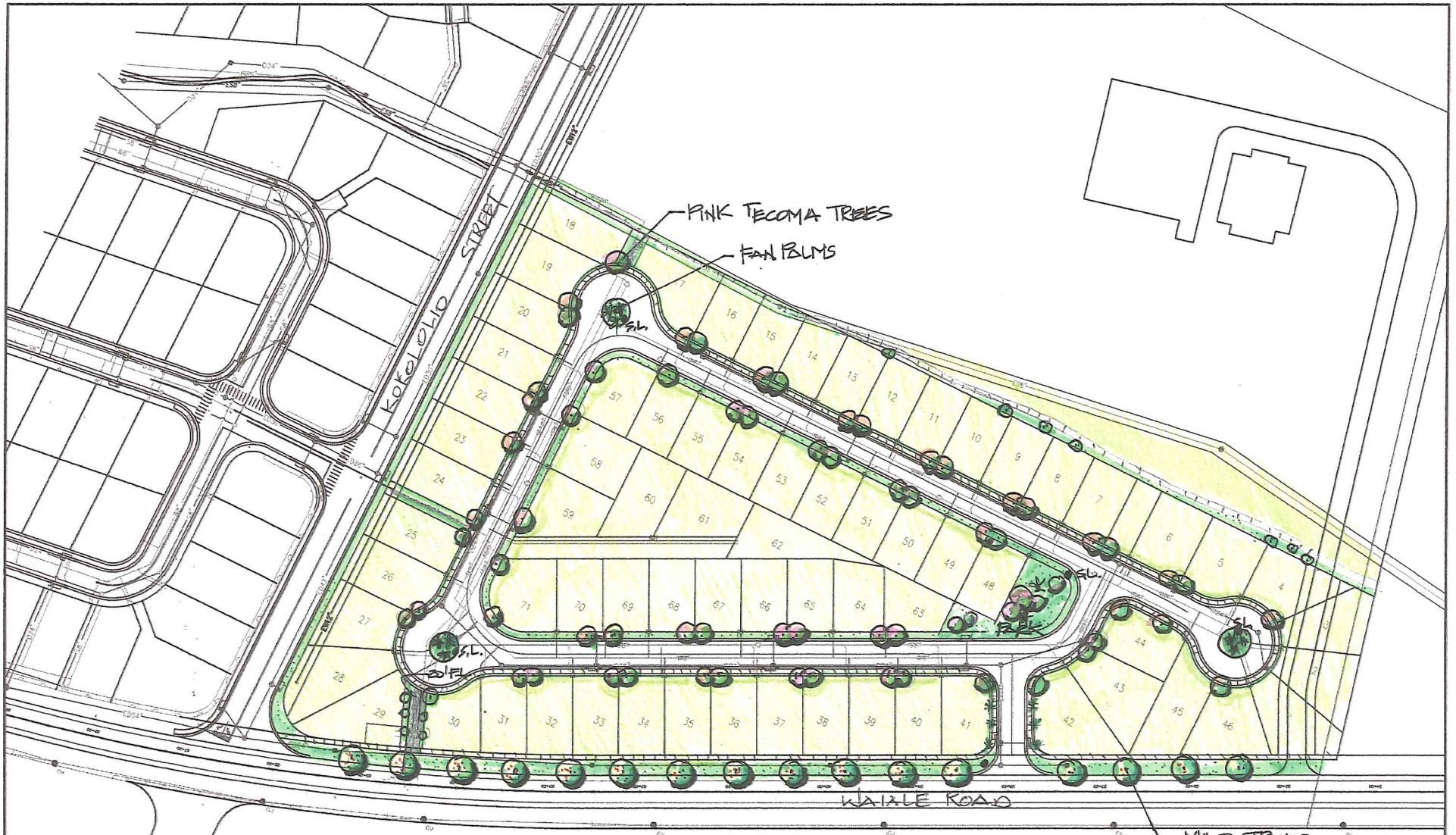


LANDSCAPE

DRAFT CONCEPT PLAN

WAIALE AFFORDABLE

WAILUKU

TMK: (2) 3-5-002: 012

BAR SCALE

0 50 100 200 300

SCALE: 1" =100'-0"

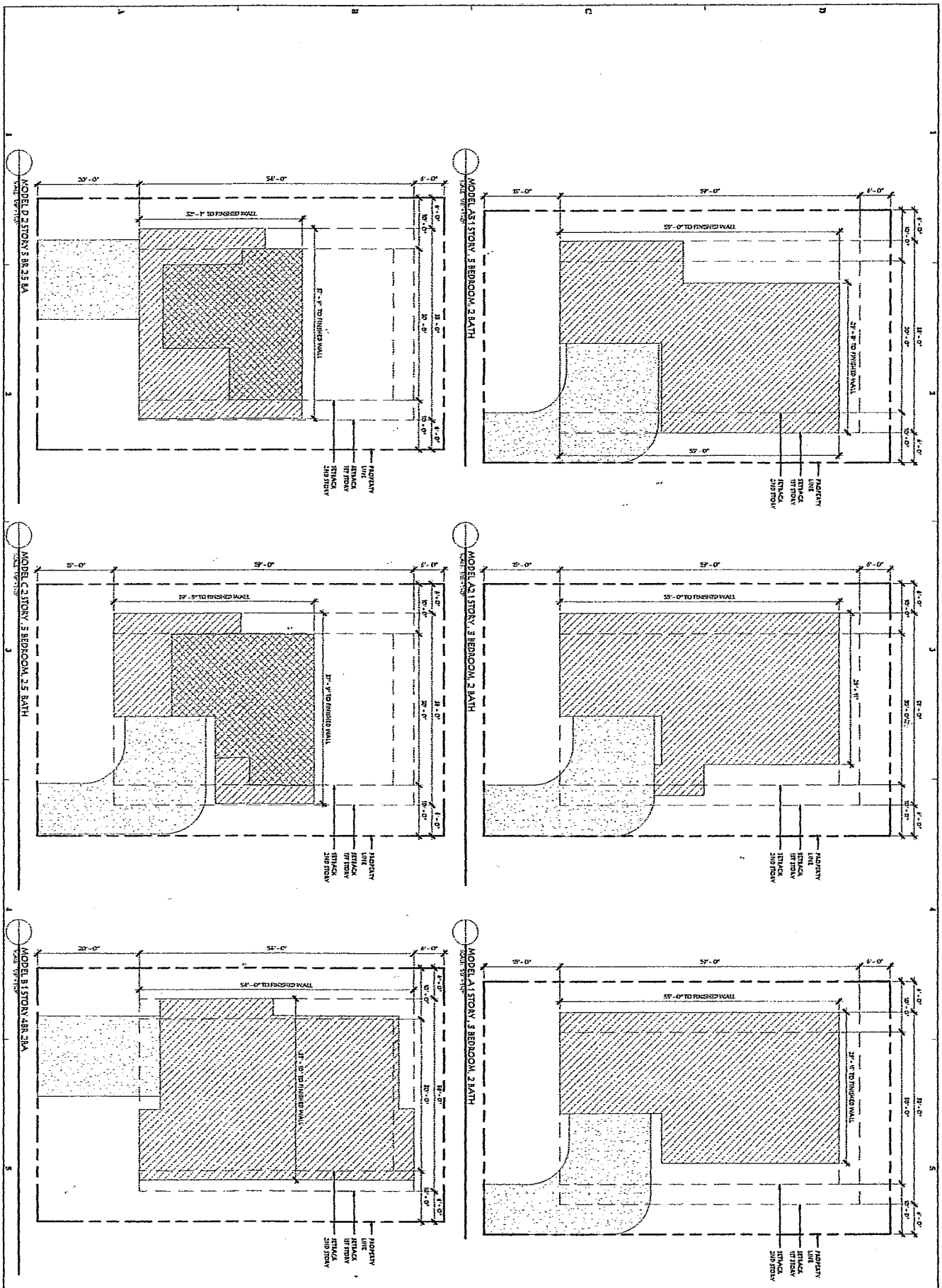
PROJECT: 15-066 DATE: 01/12/16

HAWAII LAND DESIGN

LANDSCAPE ARCHITECTS
LAND PLANNERS, LLC

2331 W. MAIN STREET
WAILUKU, MAUI, HI 96793
TELEPHONE: 808-249-2803
FACSIMILE: 808-249-2804

1/6/2016 11:18:11 AM



A-0	PLOT PLANS			WAIALE RESIDENTIAL MODELS – PLOT PLAN	MAG ARCHITECTURAL GROUP INC

Sheet No. A-0
Sheet Name: PLOT PLANS
Date: Issue Date
Scale: 1/8" = 1'-0"
File: Project File Info
Drawn/Designed: Project Team Info
No. Revisions

DAVID Y. IGE
GOVERNOR

KATHRYN S. MATAYOSHI
SUPERINTENDENT

STATE OF HAWAI`I
DEPARTMENT OF EDUCATION
P.O. BOX 2360
HONOLULU, HAWAI`I 96804

OFFICE OF SCHOOL FACILITIES AND SUPPORT SERVICES

December 16, 2015

Mr. Vince Bagoyo
Bagoyo Development Consulting Group
1500 Kilinoe Place
Wailuku, Hawaii 96793

Re: Draft Application for Waiale Affordable Housing Project
Wailuku, MauiTMK: (2) 3-5-002:012

Dear Mr. Bagoyo:

The Department of Education (DOE) has reviewed your Draft Application for the Waiale Affordable Housing Project (Project). The DOE has some concerns about the statements made on pages 50 and 59. We do not agree with your statements on page 50, that the proposed Project has no impact to existing schools. We have no indication that the applicant will work closely with us to ensure that the project meets the DOE's appropriate assessment policy. Further, there is no basis for the statement that no mitigation measures are expected to be required.

We also do not agree with your statement on page 59 that the neighboring Waikapu Gardens project addressed its impact on public services as part of its entitlement process. And. it is not clear what claims about Waikapu Gardens have to do with this Project. We have not received any indication that the applicant for the Project will work closely with us to ensure compliance of the DOE's rules and regulations.

On page 94, the application states it will be seeking exemption from the Chapter 302A, Hawaii Revised Statutes (HRS), the State of Hawaii's law on school impact fees. If the project is seeking exemption from the DOE's laws requiring payment of school impact fees, it is not clear how the applicant can ensure compliance with DOE's assessment policy, which is to collect impact fees on new homes built in Central Maui. The DOE has been mandated by law to collect school impact fees in defined districts that need to expand school facilities to meet the school enrollment impact of new residential development. The Project is located in the Central Maui School Impact Fee District and is required to pay school impact fees just like every other residential development in the district.

The DOE and the County of Maui are required to comply with the following sections of HRS:

§46-142.5 School impact districts; new building permit requirements.] No new residential development in a designated school impact district under chapter 302A shall be issued a residential building permit or condominium property regime building permit until the department of education provides written confirmation that the permit applicant has fulfilled its school impact fee requirements. This section shall only apply to new dwelling units. [L 2007, c 245, §3]

§302A-1603 Applicability and exemptions. (a) Except as provided in subsection (b), any person who seeks to develop a new residential development within a designated school impact district requiring:

(1) A county subdivision approval;
(2) A county building permit; or
(3) A condominium property regime approval for the project, shall be required to fulfill the land component impact fee or fee in lieu requirement and construction cost component impact fee requirement of the department, including all government housing projects.

(b) The following shall be exempt from this section:

(1) Any form of housing permanently excluding school-aged children, with the necessary covenants or declarations of restrictions recorded on the property;
(2) Any form of housing that is or will be paying the transient accommodations tax under chapter 237D;
(3) All nonresidential development; and
(4) Any development with an executed education contribution agreement or other like document with the department for the contribution of school sites or payment of fees for school land or school construction. [L 2007, c 245, pt of §2; am L 2010, c 188, §6]

Please note; there is nothing in Section 302A, HRS, that allows the counties, DOE, or any other agency to make a discretionary decision to exempt a residential project from school impact fees. If you have any questions, please call Heidi Meeker of the Facilities Development Branch at (808) 377-8301.

Respectfully,

Kenneth G. Masden II
Public Works Manager

KGM:jmb

c: Carol Reimann, Maui County Department of Housing and Human Concerns

BAGOYO
DEVELOPMENT
CONSULTING GROUP

January 26, 2016

Mr. Kenneth G. Masden II
State Dept. of Education
P.O. Box 2360
Honolulu, HI 96804

Subject: Proposed Waiale Affordable Housing Project Per 201H, Hawaii Revised Statutes
Located at Waiale Road, Wailuku, HI; TMK: (2) 3-5-002:012 por

Dear Mr. Masden:

This is to acknowledge receipt and in response to your letter dated December 16, 2015 regarding the above subject affordable housing project. As noted in the draft 201H, HRS application, the proposed project will be developed 100 percent affordable to families earning 80 percent to 140 percent of Maui's median income. As you are probably aware, Maui is experiencing a shortage of affordable housing that has now reached to a crisis proportion. This proposed Waiale housing project will help meet the demand for affordable housing units for Maui's working families. According to the project's market demand study, the proposed project's potential buyers are anticipated to be current Maui residents and working families, thus, project is not expected to be a population generator. The project will be processed pursuant to 201H-38, HRS which will allow the applicant to seek various exemptions from *"all statutes, ordinance, charter provisions, and rules of any government agencies."* Regarding your comments on pages 50 and 59 of the draft application, the applicant acknowledges that the project is located in the Central Maui Impact Fee District and further acknowledges that decisions on which schools will serve new residential areas are determined at the local level by the complex area superintendent who is responsible for all schools on Maui.

With regards to the applicant's plan to seek exemption from Chapter 302A, HRS (school impact fees), Mr. Jeffrey Ueoka, Maui County Deputy Corporation Counsel has opined during the September 4, 2013 meeting of the Maui County Council's Land Use Committee that "waiving fees by the Council is legally defensible" and such powers are granted pursuant to 201H and 46-15.1, Hawaii Revised Statutes. The primary reason for seeking such exemption is to allow the proposed project to be affordable to Maui's working families.

Thank you again for your comments and consideration.

Sincerely,

Vince Bagoyo

Cc: Ms. Carol Reimann (Director, Dept. of Housing and Human Concerns)
Waiale Road 201, LLC (Mr. Peter Martin)
Mr. William Frampton

1500 KILINOE PLACE
WAILUKU, HI 96793
(808)357-3842
VBAGOYO-DEVGROUP@HAWAII.RR.COM

DAVID Y. IGE
GOVERNOR

ARTHUR J. LOGAN
MAJOR GENERAL
ADJUTANT GENERAL

KENNETH S. HARA
BRIGADIER GENERAL
DEPUTY ADJUTANT GENERAL

STATE OF HAWAII
DEPARTMENT OF DEFENSE
OFFICE OF THE ADJUTANT GENERAL
3949 DIAMOND HEAD ROAD
HONOLULU, HAWAII 96816-4495

January 7, 2016

Bagoyo Development Consulting Group
1500 Kilinoe Place
Wailuku, Hawai'i 96793

Attn.: Mr. Vince Bagoyo

Subject: Draft Application for Proposed Waiale Affordable Housing Project Pursuant to 201H, Hawaii Revised Statutes (HRS) Located at Waiale Road, Wailuku, Hawaii, TMK: (2) 3-5-002: 012 por

Dear Mr. Bagoyo:

Thank you for the opportunity to comment on the above project. The State of Hawaii Department of Defense has no comments to offer relative to the project.

Should there be any questions, please contact Mr. Lloyd Maki, Assistant Chief Engineering Officer at (808) 733-4250.

Sincerely,

for ARTHUR J. LOGAN
Major General
Hawaii National Guard
Adjutant General

c: Ms. Havinne Okamura, Hawaii Emergency Management Agency

DAVID Y. IGE
GOVERNOR OF HAWAII

SUZANNE D. CASE
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

KEKOA KALUHIWA
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JEFFREY T. PEARSON
DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

STATE HISTORIC PRESERVATION DIVISION
KAKUHIHEWA BUILDING
601 KAMOKILA BLVD, STE 555
KAPOLEI, HAWAII 96707

December 7, 2015

Vince Bagoyo
Bagoyo Development Consulting Group
vbagoyo-devgroup@hawaii.rr.com

LOG NO: 2015.04180
DOC NO: 1512JP01
Archaeology

Aloha Mr. Bagoyo:

SUBJECT: **Chapter 6E-42 Historic Preservation Review –**
Draft Application for Proposed Waiale Affordable Housing Project
Pursuant to 201H, Hawaii Revised Statutes (HRS)
Waikapū Ahupua'a, Wailuku District, Island of Maui
TMK (2) 3-5-002:012 (por.)

Thank you for the opportunity to review the submittal received by our office on December 3, 2015. Proposed plans include the development of 71 affordable single-family residences and related improvements. The applicant entered into a purchase agreement with landowner Valley Isle Fellowship (VIF) for the eastern 10.365 acre portion of the 25.355 acre subject parcel for the proposed development. The subject area is also known as Lot B of the Waikapu East (Large Lot) Subdivision. The remaining western portion of the parcel is owned and utilized by VIF.

A search of our records indicates there is no archaeological inventory survey for the parcel. We reviewed the proposed grubbing and grading application for VIF to construct a multi-purpose worship center, a hospitality building, staff offices, and recreational facilities. We reviewed the subject Change in Zoning Application (CIZ 2006/0011) and State Land Use District Boundary Reclassification (DBA 2006-0004) for approximately 14.99 acres. In August 2006 and May 2007, our office formally recommended an archaeological inventory survey be conducted for the parcel (*Log No. 2006.2674, Doc No. 0608MK09 and Log No. 2007.1110, Doc No. 0704JP11)*. Please note these recommendations were made following the Archaeological Surveys Hawaii field inspection correspondence (Appendix D). We do not accept field visit summaries in lieu of archaeological inventory survey reports.

The subject property is located in an area formerly utilized during the historic sugarcane era within Aeolian sand deposits, which are known to contain human burial features and habitation sites. Features of the partially documented historic "Kama Ditch" (SIHP 50-50-04-5474) are located on the subject parcel. Once the archaeological inventory survey report is accepted, additional archaeological mitigation will most likely be necessary. At this time, we do not have enough information to determine any potential effects the proposed project may have on historic properties.

We continue to **request additional information** regarding potential historic properties within the subject area, and strongly recommend that an **archaeological inventory survey with subsurface testing** be conducted in order to assess the potential effect this project may have on historic properties. Please contact Jenny Pickett at (808) 243-5169 or Jenny.L.Pickett@hawaii.gov if you have any questions or concerns about this letter.

Mahalo,

Morgan E. Davis
Lead Archaeologist, Maui Section

cc: County of Maui
Department of Planning
Planning@co.maui.hi.us

County of Maui
Department of Public Works – DSA
Cathy.Hasfurther@co.maui.hi.us

County of Maui
Cultural Resources Commission
Annalise.Kehler@co.maui.hi.us

BAGOYO
DEVELOPMENT
CONSULTING GROUP

January 25, 2016

Ms. Morgan E. Davis
Lead Archaeologist, Maui Section
State Historic Preservation Division
Dept. of Land and Natural Resources
601 Kamokila Blvd., Ste. 555
Kapolei, HI 96707

Subject: Proposed Waiale Affordable Housing Project Pursuant to 201H, HRS
Located at Waiale Road, Wailuku, Island of Maui, HI
TMK: (2) 3-5-002:012 por
Log No: 2015.04180; Doc. No: 1512JP01

Dear Ms. Morgan:

This is to acknowledge receipt of your letter dated December 7, 2015 regarding the above subject project. We appreciate your comments and recommendations as noted in the said letter.

In response to your comments, we are pleased to inform you that the archaeological inventory survey along with the proposed monitoring plan for the project will be resubmitted to your office by the project's archaeological consultant, Ms. Lisa J. Rotunno-Hazuka of the Archaeological Services Hawaii, LLC.

Once again, than k you so much for your comments and should you have any questions, please feel free to contact me at (808) 357-3842.

Sincerely,

Vince Bagoyo

Cc: Ms. Carol Reimann (Director, Dept. of Housing and Human Concerns)
Waiale Road 201, LLC (Mr. Peter Martin)
Mr. William Frampton
Ms. Lisa Rotunno-Hazuka

1500 KILINOE PLACE
WAILUKU, HI 96793
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VBAGOYO-DEVGROUP@HAWAII.RR.COM

DAVID Y. IGE
GOVERNOR OF HAWAII

SUZANNE D. CASE
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE
MANAGEMENT

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

January 8, 2016

Bagoyo Development Consulting Group
Attention: Mr. Vince Bagoyo
1500 Kilinoe Place
Wailuku, Hawaii 96793

via email: vbagoyo-devgroup@hawaii.rr.com

Dear Mr. Bagoyo:

SUBJECT: Wai'ale Affordable Housing Project

Thank you for the opportunity to review and comment on the subject matter. In addition to the comments previously sent you on December 28, 2015, enclosed are comments from the Commission on Water Resource Management on the subject matter. Should you have any questions, please feel free to call Lydia Morikawa at 587-0410. Thank you.

Sincerely,

Russell Y. Tsuji
Land Administrator

Enclosure(s)
cc: Central Files

DAVID Y. IGE
GOVERNOR OF HAWAII

SUZANNE D. CASE
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

December 9, 2015

MEMORANDUM

TO: **DLNR Agencies:**
___Div. of Aquatic Resources
___Div. of Boating & Ocean Recreation
_X_ Engineering Division
___Div. of Forestry & Wildlife
___Div. of State Parks
_X_ Commission on Water Resource Management
___Office of Conservation & Coastal Lands
_X_ Land Division – Maui District
_X_ Historic Preservation

FROM: Russell Y. Tsuji, Land Administrator
SUBJECT: Wai'ale Affordable Housing Project
LOCATION: Wailuku, Island of Maui; TMK: (2) 3-5-002:012 (por.)
APPLICANT: Wai'ale Road 201, LLC

Transmitted for your review and comment is information on the above-referenced project. We would appreciate your comments on this document which can be found at:

1. https://sp01.ld.dlnr.hawaii.gov/LD
2. Username: LD/Visitor
3. Password: 0pa$$word0 (first and last characters are zeros, not O's)
4. Click on: Request for Comments, then click on the subject link. Please contact Linda Kawakami at (808) 587-0371 or linda.kawamaki@hawii.gov if there are any issues accessing the document.

Please submit any comments by **December 23, 2015**. If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact Lydia Morikawa at 587-0410. Thank you.

Attachments

( ) We have no objections.
( ) We have no comments.
(x) Comments are attached.

Signed: /s/ Jeffrey T. Pearson, P.E.
Deputy Director
Print Name:
Date: January 4, 2016

cc: Central Files

RFD 4298.6
13586.1

DAVID Y. IGE
GOVERNOR OF HAWAII

SUZANNE D. CASE
CHAIRPERSON

WILLIAM D. BALFOUR, JR.
KAMANA BEAMER, PH.D.
MICHAEL G. BUCK
MILTON D. PAVAO
VIRGINIA PRESSLER, M.D.
JONATHAN STARR

JEFFREY T. PEARSON, P.E.
DEPUTY DIRECTOR

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT
P.O. BOX 621
HONOLULU, HAWAII 96809

January 4, 2016

REF: RFD.4298.6

TO: Mr. Russell Tsuji, Administrator
Land Division Oahu, DLNR-LD

FROM: Jeffrey T. Pearson, P.E., Deputy Director
Commission on Water Resource Management

SUBJECT: Waiale Affordable Housing Project

FILE NO.: RFD.4298.6
TMK NO.: (2) 3-5-002:012 (por.)

Thank you for the opportunity to review the subject document. The Commission on Water Resource Management (CWRM) is the agency responsible for administering the State Water Code (Code). Under the Code, all waters of the State are held in trust for the benefit of the citizens of the State, therefore all water use is subject to legally protected water rights. CWRM strongly promotes the efficient use of Hawaii's water resources through conservation measures and appropriate resource management. For more information, please refer to the State Water Code, Chapter 174C, Hawaii Revised Statutes, and Hawaii Administrative Rules, Chapters 13-167 to 13-171. These documents are available via the Internet at http://dlnr.hawaii.gov/cwrm.

Our comments related to water resources are checked off below.

[X] 1. We recommend coordination with the county to incorporate this project into the county's Water Use and Development Plan. Please contact the respective Planning Department and/or Department of Water Supply for further information.

[ ] 2. We recommend coordination with the Engineering Division of the State Department of Land and Natural Resources to incorporate this project into the State Water Projects Plan.

[X] 3. We recommend coordination with the Hawaii Department of Agriculture (HDOA) to incorporate the reclassification of agricultural zoned land and the redistribution of agricultural resources into the State's Agricultural Water Use and Development Plan (AWUDP). Please contact the HDOA for more information.

[X] 4. We recommend that water efficient fixtures be installed and water efficient practices implemented throughout the development to reduce the increased demand on the area's freshwater resources. Reducing the water usage of a home or building may earn credit towards Leadership in Energy and Environmental Design (LEED) certification. More information on LEED certification is available at http://www.usgbc.org/leed. A listing of fixtures certified by the EAP as having high water efficiency can be found at http://www.epa.gov/watersense.

[X] 5. We recommend the use of best management practices (BMP) for stormwater management to minimize the impact of the project to the existing area's hydrology while maintaining on-site infiltration and preventing polluted runoff from storm events. Stormwater management BMPs may earn credit toward LEED certification. More information on stormwater BMPs can be found at http://hawaii.gov/dbedt/czm/initiative/lid.php.

[X] 6. We recommend the use of alternative water sources, wherever practicable.

[ ] 7. We recommend participating in the Hawaii Green Business Program, that assists and recognizes businesses that strive to operate in an environmentally and socially responsible manner. The program description can be found online at http://energy.hawaii.gov/green-business-program.

[ ] 8. We recommend adopting landscape irrigation conservation best management practices endorsed by the Landscape Industry Council of Hawaii. These practices can be found online at http://www.hawaiiscape.com/wp-content/uploads/2013/04/LICH_Irrigation_Conservation_BMPs.pdf.

☐ 9. There may be the potential for ground or surface water degradation/contamination and recommend that approvals for this project be conditioned upon a review by the State Department of Health and the developer's acceptance of any resulting requirements related to water quality.

☐ 10. The proposed water supply source for the project is located in a designated water management area, and a Water Use Permit is required prior to use of water. The Water Use Permit may be conditioned on the requirement to use dual line water supply systems for new industrial and commercial developments.

☐ 11. A Well Construction Permit(s) is (are) are required before the commencement of any well construction work.

☐ 12. A Pump Installation Permit(s) is (are) required before ground water is developed as a source of supply for the project.

☐ 13. There is (are) well(s) located on or adjacent to this project. If wells are not planned to be used and will be affected by any new construction, they must be properly abandoned and sealed. A permit for well abandonment must be obtained.

☐ 14. Ground-water withdrawals from this project may affect streamflows, which may require an instream flow standard amendment.

☐ 15. A Stream Channel Alteration Permit(s) is (are) required before any alteration can be made to the bed and/or banks of a steam channel.

☐ 16. A Stream Diversion Works Permit(s) is (are) required before any stream diversion works is constructed or altered.

☐ 17. A Petition to Amend the Interim Instream Flow Standard is required for any new or expanded diversion(s) of surface water.

☐ 18. The planned source of water for this project has not been identified in this report. Therefore, we cannot determine what permits or petitions are required from our office, or whether there are potential impacts to water resources.

☒ OTHER: The proposed well sources are located in a designated water management area. The document should discuss the proposed withdrawals necessary to support this project in relation to the area's sustainable yield, the permitted use amounts for the wells, current pumpage levels, and the impact of additional withdrawals on the permitted use.

If you have any questions, please contact Lenore Ohye of the Commission staff at 587-0216.

BAGOYO
DEVELOPMENT
CONSULTING GROUP

January 13, 2016

Mr. Russell Y. Tsuji
Land Administrator
Department of Land and Natural Resources – Land Division
P.O. Box 621
Honolulu, HI 96809

Subject: Proposed Waiale Affordable Housing Project Pursuant to 201H, HRS
Located at Waiale Road, Wailuku, HI
TMK: (2) 3-5-002:012 por

Dear Mr. Tsuji:

We acknowledge receipt of your letter dated January 8, 2016 and for transmitting comments from the Commission on Water Resource Management relative to the above subject project. The applicant concurs with the comments and recommendations from CWRM. For your information, according to the Maui Department of Water Supply in its letter dated January 7, 2016, since the proposed project is 100 percent affordable it is exempt from Chapter 14.12 (Maui County Water Availability Policy), Maui County Code.

Again, thank you for your comments and should you have further questions, please feel free to contact the undersigned at (808) 357-3842.

Sincerely,

Vince Bagoyo

Cc: Ms. Carol Reimann (Director, Dept. of Housing and Human Concerns)
Waiale Road 201, LLC (Mr. Peter Martin
Mr. William Frampton

1500 KILINOE PLACE
WAILUKU, HI 96793
(808)357-3842
VBAGOYO-DEVGROUP@HAWAII.RR.COM

ALAN M. ARAKAWA
Mayor

DAVID TAYLOR, P.E.
Director

PAUL J. MEYER
Deputy Director

DEPARTMENT OF WATER SUPPLY
COUNTY OF MAUI
200 SOUTH HIGH STREET
WAILUKU, MAUI, HAWAII 96793-2155
www.mauiwater.org

January 7, 2016

Mr. Vince Bagoyo
1500 Kilinoe Place
Wailuku, Hawaii 96793

Project Name: Draft Application for Proposed Waiale Affordable Housing Project
TMK: 2-3-5-002:012 por.
Project Type: 201H-38 Hawaii Revised Statutes

Dear Mr. Bagoyo:

Thank you for the opportunity to provide comments on the proposed development of 71 units of single-family residential affordable housing.

Source Availability and Consumption
The project area is served by the Central Maui System. The sources of water for the Central Maui System are the designated Iao Aquifer, Waihee Aquifer, Iao Tunnel, the Iao-Waikapu Ditch, and the Kahului Aquifer. Anticipated water use will be approximately 42,000 gpd ([71 units] [600 gpd/unit]), based on Department of Water Supply (DWS) system standards. The parcel is presently served by one 3/4-inch meter.

System Infrastructure
The nearest DWS waterlines are: 1) a 12-inch line and an 8-inch line south of the project boundary, and 2) an 18-inch line borders the property along the eastern boundary approximately 300 feet away. System improvements will be determined in the subdivision process.

Water Availability Policy, Maui County Code Title 14
The proposed project is subject to the Maui County Water Availability Policy (Maui County Code Chapter 14.12). Section 14.12.030 (F) exempts one hundred percent affordable housing units.

Wellhead Protection Area
One hundred percent of the proposed project lies within DWS wellhead protection areas (see Figure 1), with approximately 763,400 square feet (60%) lying within the 10-year time-of-travel zone where pollutants could enter the aquifer and migrate to the well intake location, and 505,800 square feet (60%) are within the more sensitive 2-year time-of-travel zone. Therefore, construction Best Management Practices (BMPs) should be thoroughly implemented.

Conservation
To alleviate demand on the Central Maui system, and for landscaping suggestions, please refer to the following attachments: *A Checklist of Water Conservation Ideas for Industrial and Large Landscapes*; and our *Maui County's Landscape and Gardening Handbook*. We also recommend that the applicant implement the following conservation measures, where appropriate:

1. Use Brackish or Reclaimed Water: for irrigation and dust control during construction/demolition where available. Reclaimed water is available at the Kahului Sewage Treatment Plant.

2. Use Climate-adapted Plants: We recommend using native climate-adapted plants for landscaping. Native plants adapted to the area conserve water and protect the watershed from degradation due to invasive alien species. The project is located in Plant Zone 4.

3. Prevent Over-Watering By Automated Systems: If an automated watering system will be used, provide rain-sensors on all automated irrigation controllers. Check and reset controllers at least once a month to reflect the monthly changes in evapo-transpiration rates at the site. As an alternative, provide the more automated, soil-moisture sensors on controllers.

4. Maintain Fixtures to Prevent Leaks: A simple, regular program of repair and maintenance can prevent the loss of hundreds or even thousands of gallons a day. The applicant should establish a regular maintenance program.

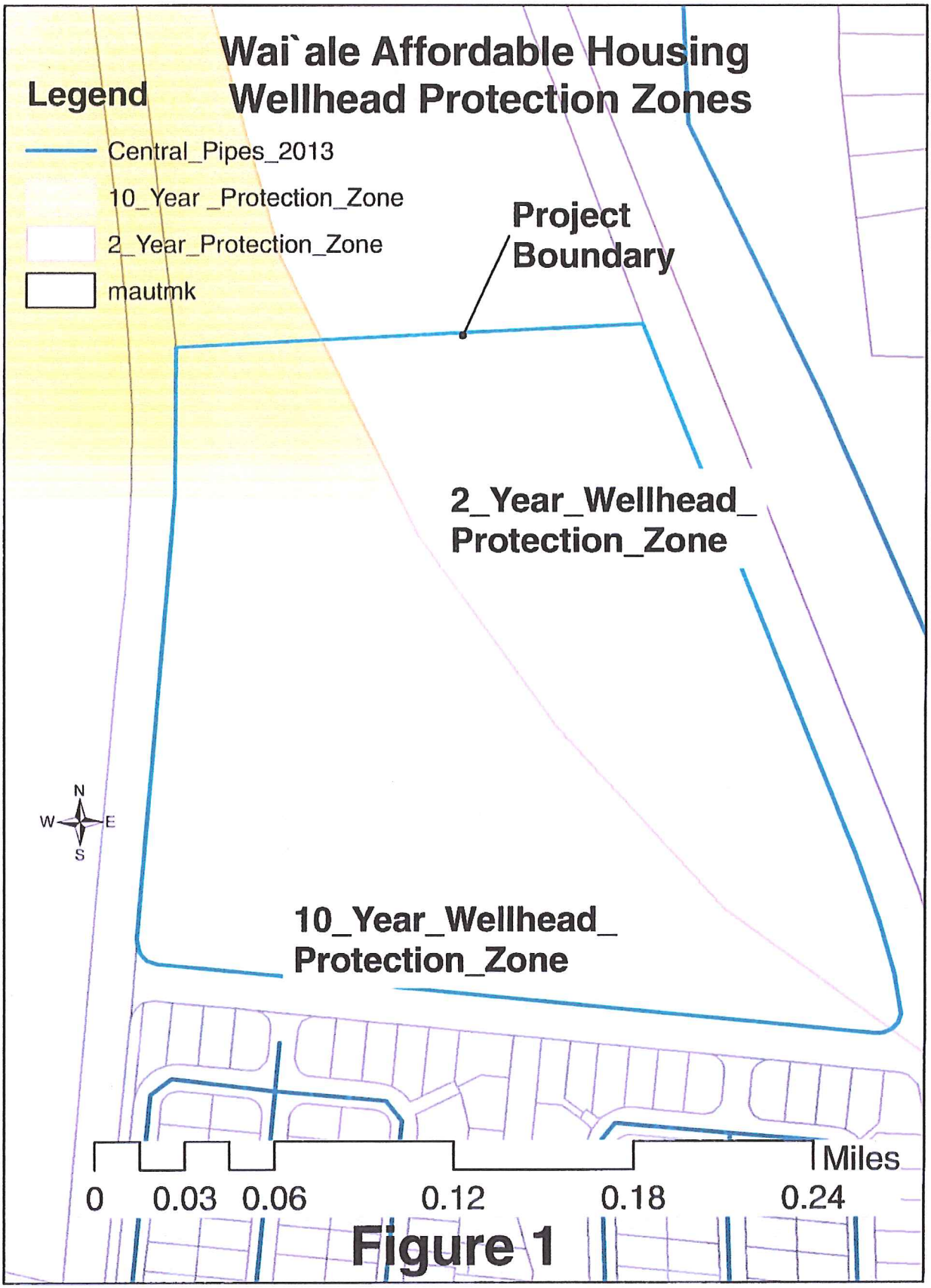
Should you have any questions on system improvements, please contact our Engineering Division at 270-7835. For questions on water resources, please contact Alex Buttaro at our Water Resources and Planning Division at 463-3103, or by email alex.buttaro@mauicounty.gov.

Sincerely,

David Taylor, Director

cc: Engineering Division

Attachments:
1. Figure 1: Wellhead Protection Zones
2. A Checklist of Water Conservation Ideas for Industrial and Large Landscapes
3. Plant Brochure: "Saving Water in the Yard-What and How to Plant in your Area"


Wai`ale Affordable Housing
Wellhead Protection Zones
Legend
Central_Pipes_2013
10_Year _Protection_Zone
2_Year_Protection_Zone
mautmk
Project
Boundary
2_Year_Wellhead_
Protection_Zone
10_Year_Wellhead_
Protection_Zone
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Miles
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0.03
0.06
0.12
0.18
0.24

Figure 1

A Checklist of Water Conservation Ideas For

Industrial & Large Landscapes

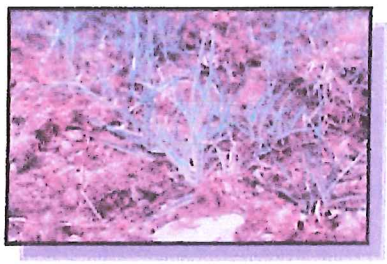
This checklist provides water conservation tips successfully implemented by industrial and commercial users. This list has been revised from the original copy first published and distributed by the Los Angeles Department of Water and Power and the Water Efficiency Manual by the North Carolina Department of Environment and Natural Resources.

START A WATER CONSERVATION PROGRAM

- Increase employee awareness of water conservation.
- Install signs encouraging water conservation in employee and customer restrooms.
- When cleaning with water is necessary, use budgeted amounts.
- Read water meter weekly to monitor success of water conservation efforts.
- Assign an employee to monitor water use and waste.
- Seek employee suggestions on water conservation, put suggestion boxes in prominent areas.
- Determine the quantity and purpose of water being used.
- Determine other methods of water conservation.
- Conduct contests for employees (e.g., posters, slogans, or conservation ideas).

PLANNING AND DESIGN

- Consider the following:
  - Physical conditions (drainage, soil type, sun/shade, etc.) and the use of the site (foot traffic, recreation, viewing, etc.)
  - Creating shade areas, which can be 20 degrees cooler than non-shaded areas, decreasing evaporation.
  - Grass areas only where needed; avoid small areas under 10 feet wide.
  - Permeable materials such as porous concrete or permeable paving methods.



  - Grading and directing surface run-off and rainfall gutters to landscaped areas as opposed to drainageways that exit the property.
- Incorporate high water demanding plants at the bottom of slopes, and maintain the use of existing trees, plants, and wildlife in the area during planning.
- Minimize the use of impermeable surfaces to lessen runoff and resulting stormwater pollution.
- Identify water source points.
- Develop a schematic of all water entry points (know where your faucets, time clocks, solenoids, booster pumps, sprinklers and bubblers are located).

- Identify capacity of each water-carrying unit and frequency of use.
- Determine specific use for each entity source.

ANALYZE AND IMPROVE SOIL CONDITIONS

- Test the soil quality, nutrients and absorptive capacity, and then select plants based on findings. Adjust the pH level if necessary.
- Use organic matter (compost, mulch or manure) to increase the soil's water holding capacity. This helps improve water distribution and lowers levels of evaporation.
- When improving the soil of a given area, remember to treat a larger area around the planting to allow ample space for root systems.
- Prevent heavy construction equipment from compacting soil in areas around trees or other sensitive habitats.

PLANT SELECTION

- Choose native, climate-appropriate species.
- Consider plants' water demand, pest tolerance, soil nutrient and drainage requirements.

INTERIOR AREAS

- Discontinue continuous flow.
- Use ponded water where available.
- Adjust flows to reduce discharge of water.
- Install water-saving devices to decrease water consumption – restrooms (toilet dams and flappers), faucets (aerators), cooling systems.

  - Retrofit toilets with high efficiency models that use 1.28 gallons per flush or less.
  - Retrofit urinals with high efficiency models that use 0.5 gallons per flush.
  - Install showerheads with a flow rate of 1.5 gpm at 60 psi or less in all units.
  - Retrofit bathroom sink faucets with fixtures that do not exceed 1 gpm at 60 psi.
- Use recycling systems for chillers and cooling towers.
- Consider installing energy-and-water-efficient air conditioning equipment.

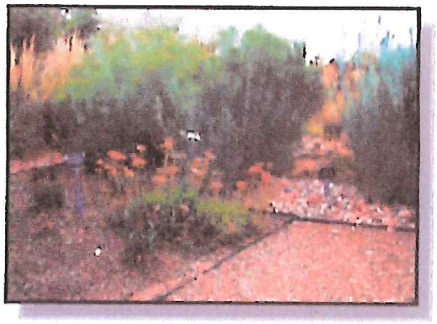
MAINTENANCE PROCEDURES

- Sweep materials from floor instead of washing down whenever possible.
- Instruct clean-up crews to use less water where appropriate.
- Check water supply system for leaks.
- Repair dripping faucets and continuously-running or leaking toilets.

DESIGN CRITERIA FOR TURF AND LANDSCAPE AREAS

- Contact the Department of Water Resources or your local water supplier about possible landscape water auditor classes for managers.
- Hire a landscape architect with water conservation and xeriscape experience.
- Use turf only where actually necessary. Immediate picnic areas/outside lunch areas and gold course target areas (greens, tees, landing areas).
- Turfgrass should be cut to the maximum recommended height for its type (generally a minimum of two inches to a maximum of four inches) for most efficient water use.
- Use only low-water use plant material in non-turf areas.

- Drip irrigation and microsprays place water at the base of the plant. This reduces evaporation and saves water by not soaking the entire ground surface. This works for trees, shrubs, and groundcovers.
- Use automatic irrigation systems monitored by moisture probes (i.e. tensiometers), and rain shut-off devices to cut power off during rain.



- Design dual watering systems with sprinklers for turf and low-volume irrigation for plants, trees, and shrubs. Operate sprinkler system before sunrise and after sunset. Amount of irrigation can be determined by the evapotranspiration rate, which DWR can help you determine.
- Use properly-treated waste water for irrigation where available.

EXTERIOR AREAS

- Regular aeration of clay soils will improve water holding capabilities and prevent runoff.
- Discontinue using water to clean sidewalks, tennis courts, pool decks, driveways, and parking lots.
- Make sure irrigation water does not run onto streets or into alleys. Adjust sprinklers to water only plants and not sidewalks or roads.
- Use the same size nozzle when replacement is needed. Sprinklers should be replaced with the same brand of sprinklers. Spray heads are aligned with grade.
- Replace worn spray nozzles.
- Regulate pressure properly for system demands.

- Make sure rotors or spray heads are mounted correctly. Replace with proper unit for the job.
- Post a current controller schedule inside the door of the controller.
- Check for leaking valves.
- Adjust the operating time (runtimes) of the sprinklers to meet appropriate seasonal or monthly requirements.
- Check plant leaves and take soil samples to confirm proper system functioning.
- Look into alternative sources for irrigation water (i.e. the use of wells as opposed to city water, water reuse operations from air conditioning condensate, storm water retention ponds, or cisterns, non-contact cooling water).
- Use dedicated water meters to monitor landscaping water use.
- Have a catchment/distribution uniformity test performed on-site to determine how evenly water is applied when sprinklers are in use.

For more information, contact:
Maui County Department of Water Supply
Water Resources and Planning Division
59 Kanoa Street Wailuku, HI 96793
Telephone: (808) 244-8550
FAX: (808) 244-6701

BAGOYO
DEVELOPMENT
CONSULTING GROUP

January 12, 2016

Mr. David Taylor
Director
Department of Water Supply
200 S. High Street
Wailuku, HI 96793

Subject: Proposed Waiale Affordable Housing Project Pursuant to 201H, HRS
Located at Waiale Road, Wailuku, HI
TMK: (2) 3-5-002:012 por

Dear Mr. Taylor:

This is to acknowledge receipt of your letter dated January 7, 2016 relative to the proposed Waiale affordable housing project. The applicant concurs with your comments as noted in your letter and the applicant intends to fully comply with your recommendations. Per your letter, since the proposed project is one hundred percent affordable, it is exempt from Chapter 14.12 (Maui County Water Availability Policy), Maui County Code.

Thank you again for your comments and should you have any further questions, please feel free to contact the undersigned at (808) 357-3842.

Sincerely,

Vince Bagoyo

Cc: Ms. Carol Reimann (Director, Dept. of Housing and Human Concerns)
Waiale Road 201, LLC (Mr. Peter Martin)
Mr. William Frampton

1500 KILINOE PLACE
WAILUKU, HI 96793
(808)357-3842
VBAGOYO-DEVGROUP@HAWAII.RR.COM

ALAN M. ARAKAWA
Mayor

STEWART STANT
Director

MICHAEL M. MIYAMOTO
Deputy Director

MICHAEL RATTE
Solid Waste Division

ERIC NAKAGAWA, P.E.
Wastewater Reclamation Division

COUNTY OF MAUI
DEPARTMENT OF
ENVIRONMENTAL MANAGEMENT
2050 MAIN STREET, SUITE 1C
WAILUKU, MAUI, HAWAII 96793

December 31, 2015

Mr. Vince Bagoyo
1500 Kilinoe Place
Wailuku, Hawaii 96793

SUBJECT: WAIALE AFFORDABLE HOUSING PROJECT
DRAFT APPLICATION
TMK (2) 3-5-002:012 POR., WAILUKU

We reviewed the subject application and have the following comments:

1. Solid Waste Division comments:

   a. None.

2. Wastewater Reclamation Division (WWRD) comments:

   a. Although wastewater system capacity is currently available as of the date of this letter, the developer should be informed that wastewater system capacity cannot be ensured until the issuance of the building permit.
   b. Wastewater contribution calculations are required before building permit is issued.
   c. Developer shall pay assessment fees for treatment plant expansion costs in accordance with ordinance setting forth such fees. The property is located in the Wailuku Sewer Service Area.
   d. Developer is required to fund any necessary off-site improvements to collection system and wastewater pump stations.
   e. Show or list minimum slope of new sewer laterals.
   f. Plans should show the installation of a single service lateral and advanced riser for each lot. Any request for waiver of this requirement shall be made submitted in writing for approval by WWRD.
   g. Indicate on the plans the ownership of each easement (in favor of which party). Note: County will not accept sewer easements that traverse private property.
   h. Non-contact cooling water and condensate should not drain to the wastewater system.

i. The proposed sewer system improvements shall remain privately owned and maintained.

If you have any questions regarding this letter, please contact Michael Miyamoto at 270-8230.

Sincerely,

STEWART STANT
Director of Environmental Management

BAGOYO
DEVELOPMENT
CONSULTING GROUP

January 12, 2016

Mr. Stewart Stant
Director
Department of Environmental Management
2050 Main Street, Suite 1C
Wailuku, HI 96793

Subject: Proposed Waiale Affordable Housing Project Pursuant to 201H, HRS
Located at Waiale Road, Wailuku, HI
TMK: 92) 3-5-002:012 por

Dear Mr. Stant:

This is to acknowledge receipt of your letter dated December 31, 2015 regarding the proposed Waiale affordable housing project. In response to your letter, the applicant concurs with your recommendations as noted in said letter. As you know, the proposed affordable housing project will be processed pursuant to 201H-38, Hawaii Revised Statutes, hence, the applicant will be seeking exemptions from Chapter 14.35 (Wastewater Assessment Fees for Facility Expansion) and 18.20.020 (Sewage Disposal, relating to sewer lateral connections), Maui County Codes.

Again, we appreciate your comments and should you have further questions, please feel free to contact the undersigned at (808) 357-3842.

Sincerely,

Vince Bagoyo

Cc: Ms. Carol Reimann (Director, Dept. of Housing and Human Concerns)
Waiale Road 201, LLC (Mr. Peter Martin)
Mr. William Frampton

1500 KILINOE PLACE
WAILUKU, HI 96793
(808)357-3842
VBAGOYO-DEVGROUP@HAWAII.RR.COM

ALAN M. ARAKAWA
Mayor

JO ANNE JOHNSON-WINER
Director
MARC I. TAKAMORI
Deputy Director
Telephone (808) 270-7511

DEPARTMENT OF TRANSPORTATION

COUNTY OF MAUI
200 South High Street
Wailuku, Hawaii, USA 96793-2155

December 29, 2015

Mr. Vince Bagoyo
1500 Kilinoe Place
Wailuku, Hawaii 96793

Subject: Waiale Affordable Housing Project 201 LLC

Mr. Bagoyo,

Thank you for the opportunity to comment on this project. We have no comments to make regarding this project.

Please feel free to contact me if you have any questions.

Sincerely,

Jo Anne J. Winer

Jo Anne Johnson Winer
Director

BAGOYO
DEVELOPMENT
CONSULTING GROUP

January 4, 2016

Ms. Jo Anne Johnson Winer
Director
Dept. of Transportation
200 S. High Street
Wailuku, HI 96793

Subject: Proposed Waiale Affordable Housing Project Pursuant to 201H, HRS
Located at Waiale Road, Wailuku, HI
TMK: (2) 3-5-002:012 por

Dear Ms. Winer:

This is to acknowledge receipt of your letter dated December 29, 2015 regarding the propose Waiale affordable housing project. We appreciate for taking the time to review the draft 201H application, and it is our understanding that your department has no comments to make regarding the project.

Thank you again, and should you have further questions, please do not hesitate to contact the undersigned at (808) 357-3842.

Sincerely,

Vince Bagoyo

Cc: Ms. Carol Reimann (Director, Dept. of Housing and Human Concerns)
Waiale Road 201, LLC (Mr. Peter Martin
Mr. William Frampton

1500 KILINOE PLACE
WAILUKU, HI 96793
(808)357-3842
VBAGOYO-DEVGROUP@HAWAII.RR.COM

ALAN M. ARAKAWA
MAYOR

OUR REFERENCE

YOUR REFERENCE

POLICE DEPARTMENT

COUNTY OF MAUI

55 MAHALANI STREET
WAILUKU, HAWAII 96793
(808) 244-6400
FAX (808) 244-6411

TIVOLI S. FAAUMU
CHIEF OF POLICE

DEAN M. RICKARD
DEPUTY CHIEF OF POLICE

December 23, 2015

Ms. Carol K. Reimann
Director
County of Maui
Dept. of Housing and Human Concerns
2200 Main Street, Suite 546
Wailuku, HI 96793

Dear Ms. Reimann:

SUBJECT: Draft Application for Proposed Waiale Affordable Housing Project
Pursuant to 201H, HRS
TMK: (2) 3-002:012 por.

This is in response to your letter dated December 3, 2015, requesting comments on the above subject.

After reviewing the project information, we have no further recommendations or comments on this project at this time.

Thank you for giving us the opportunity to make comments and recommended

Sincerely,

Acting Assistant Chief Sterling Kiyota
for: TIVOLI S. FAAUMU
Chief of Police

Enclosure

c: William Spence, Planning Department

BAGOYO
DEVELOPMENT
CONSULTING GROUP

January 4, 2016

Mr. Tivoli S. Faaumu
Chief of Police
55 Mahalani Street
Wailuku, HI 96793

Subject: Proposed Waiale Affordable Housing Project Pursuant to 201H, HRS
Located at Waiale Road, Wailuku, HI
TMK: (2) 3-5-002:012 por

Dear Chief Faaumu:

This is to acknowledge receipt of your letter to Ms. Reimann dated December 23, 2015 regarding the proposed Waiale affordable housing project pursuant to 210H, HRS. Per your letter, the Maui Police Department has no comments or recommendations on the proposed project

Thank you again for taking the time to review the propose affordable housing project, and should you have any further questions, please feel free to contact the undersigned at (808) 357-3842.

Sincerely,

Vince Bagoyo

Cc: Ms. Carol Reimann (director, Dept. of Housing and Human Concerns)
Waiale Road 201, LLC (Mr. Peter Martin)
Mr. William Frampton

1500 KILINOE PLACE
WAILUKU, HI 96793
(808)357-3842
VBAGOYO-DEVGROUP@HAWAII.RR.COM

OFFICE OF PLANNING
STATE OF HAWAII

DAVID Y. IGE
GOVERNOR

LEO R. ASUNCION
DIRECTOR
OFFICE OF PLANNING

235 South Beretania Street, 6th Floor, Honolulu, Hawaii 96813
Mailing Address: P.O. Box 2359, Honolulu, Hawaii 96804

Telephone: (808) 587-2846
Fax: (808) 587-2824
Web: http://planning.hawaii.gov/

Ref. No. P-14994

December 29, 2015

Mr. Vince Bagoyo
Bagoyo Development Consulting Group
1500 Kilinoe Place
Wailuku, Hawaii 96793

Dear Mr. Bagoyo:

Subject: Draft Application for Proposed Waiale Affordable Housing Project
Pursuant to 201H, Hawaii Revised Statutes ("HRS")
Located at Waiale Road, Wailuku, Hawaii
TMK: (2) 3-5-002: 012 Por.

Thank you for the opportunity to review and comment upon the draft application for the above referenced project for the development of 71-affordable single-family dwellings on a 10.365 acre lot. The application indicates that the existing 25.355 acre lot will be subdivided into 2 lots, of 10.365 and 14.990 acres each. The lots on the project site will range from 3,900 to 7,000 square feet. The application indicates that the units will be sold as a house and lot package, and the price will be based on the Maui Department of Housing and Human Concerns Affordable Sales guidelines for families earning between 80-140 percent of Maui's median income.

The portion of the site in the State Agricultural District is less than 15 acres, and thus may be processed and approved by the County of Maui. The proposal does not require approval from the State Land Use Commission. As such, the Office of Planning has no further comments at this time.

Thank you for the opportunity to review this application. If you have any questions, please contact Lorene Maki of our Land Use Division at (808) 587-2888.

Sincerely,

Leo Asuncion
Director

BAGOYO
DEVELOPMENT
CONSULTING GROUP

January 4, 2016

Mr. Leo Asuncion
Director
Office of State Planning
P.O. Box 2359
Honolulu, HI 96804

Subject: Proposed Waiale Affordable Housing Project Pursuant to 201H, HRS
Located at Waiale Road, Wailuku, HI
TMK: (2) 3-5-002:012 por

Dear Mr. Asuncion:

This is to acknowledge receipt of your letter dated December 29, 2015 regarding the proposed Waiale affordable housing project pursuant to 210H, HRS. Per your letter, since the proposed project site is less than 15 acres, the project "does not require approval from the State Land Use Commission" and the Office of State Planning has no further comments relative to the proposed project.

Thank you again for taking the time to review the propose affordable housing project, and should you have any further questions, please feel free to contact the undersigned at (808) 357-3842.

Sincerely,

Vince Bagoyo

Cc: Ms. Carol Reimann (director, Dept. of Housing and Human Concerns)
Waiale Road 201, LLC (Mr. Peter Martin)
Mr. William Frampton

1500 KILINOE PLACE
WAILUKU, HI 96793
(808)357-3842
VBAGOYO-DEVGROUP@HAWAII.RR.COM

DAVID Y. IGE
GOVERNOR OF HAWAII

VIRGINIA PRESSLER, M.D.
DIRECTOR OF HEALTH

STATE OF HAWAII
DEPARTMENT OF HEALTH
P. O. BOX 3378
HONOLULU, HI 96801-3378

In reply, please refer to:
File: LUD – 2 3 5 002 012 Draft App
Waiale Affordable Housing –ID2551

December 30, 2015

Mr. Vince Bagoyo
Bagoyo Development Consulting Group
1500 Kilinoe Place
Wailuku, Maui, Hawaii 96793

Dear Mr. Bagoyo:

Subject: Draft Application for Proposed Waiale Affordable Housing Project
Pursuant to 201H, Hawaii Revised Statutes ("HRS")
1033 Waiale Road, Wailuku, Maui
TMK (2) 3-5-002: 012 portion

Thank you for allowing us the opportunity to provide comments on the above subject project. We have no comments to provide at this time since the domestic wastewater from the proposed project will be treated and disposed of at the Kahului Wastewater Treatment Plant. We encourage the developer to work with the County and utilize recycled water for irrigation and other non-potable water purposes such as dust control, open spaces or landscaping areas.

All wastewater plans must conform to applicable provisions of the Hawaii Administrative Rules, Chapter 11-62, "Wastewater Systems."

Should you have any questions, please call Mark Tomomitsu of our office at (808) 586-4294.

Sincerely,

SINA PRUDER, P.E., CHIEF
Wastewater Branch

LM/MST:lmj

c: Ms. Laura McIntyre, DOH-Environmental Planning Office (EPO 15-322), via email
Mr. Roland Tejano, DOH-WWB's Maui Staff, via email
Mr. Kurt Wollenhaupt, County of Maui, Department of Planning, via email

BAGOYO
DEVELOPMENT
CONSULTING GROUP

January 4, 2016

Mr. Sina Pruder, P.E.
Chief, Wastewater Branch
Dept. of Health
P.O. Box 3378
Honolulu, HI 96801-3378

Subject: Proposed Waiale Affordable Housing Project Pursuant to 201H, HRS
Located at Waiale Road, Wailuku, HI
TMK: (2) 3-5-002:012 por

Dear Mr. Pruder:

This is to acknowledge receipt of your letter dated December 30, 2015 regarding the above subject project. Per your letter, it is our understanding that your office does not have any comments since the wastewater system for the proposed project will be connected to the Maui County system. The applicant intends to fully comply with your recommendations as noted in your letter.

Again, thank you for taking the time to review the draft application. Should you have further questions or require additional information, please feel free to contact the undersigned at (808) 357-3842.

Sincerely,

Vince Bagoyo

Cc: Ms. Carol Reimann (Director, Dept. of Housing and Human Concerns)
Waiale Road 201, LLC (Mr. Peter Martin)
Mr. William Frampton

1500 KILINOE PLACE
WAILUKU, HI 96793
(808)357-3842
VBAGOYO-DEVGROUP@HAWAII.RR.COM

DAVID Y. IGE
GOVERNOR OF HAWAII

VIRGINIA PRESSLER, M.D.
DIRECTOR OF HEALTH

LORRIN W. PANG, M.D., M.P.H..
DISTRICT HEALTH OFFICER

STATE OF HAWAII
DEPARTMENT OF HEALTH
MAUI DISTRICT HEALTH OFFICE
54 HIGH STREET
WAILUKU, HAWAII 96793-3378

December 28, 2015

Mr. Vince Bagoyo
Bagoyo Development Consulting Group
1500 Kilinoe Place
Wailuku, Hawaii 96793

Dear Mr. Bagoyo:

Subject: Draft Application for Proposed Waiale Affordable Housing Project
Pursuant to 201H, Hawaii Revised Statues (HRS)
Located at Waiale Road, Wailuku, Hawaii
TMK: (2) 3-5-002:012 por.

Thank you for the opportunity to review this project. We have the following comments to offer:

1. National Pollutant Discharge Elimination System (NPDES) permit coverage may be required for this project. The Clean Water Branch should be contacted at 808 586-4309.

2. The proposed project must tie into the County Sewer system. If you have any questions, please call Roland Tejano, Environmental Engineer, at 808 984-8232.

3. The noise created during the construction phase of the project may exceed the maximum allowable levels as set forth in Hawaii Administrative Rules, Chapter 11-46, "Community Noise Control." A noise permit may be required and should be obtained before the commencement of work. Please call the Indoor & Radiological Health Branch at 808 586-4700.

4. This land was formerly utilized for the production of sugarcane and/or pineapple. Please contact the Department of Health, Hazard Evaluation and Emergency Response Office at 808 586-4249.

It is strongly recommended that the Standard Comments found at the Department's website: http://health.hawaii.gov/epo/home/landuse-planning-review-program/ be reviewed and any comments specifically applicable to this project should be adhered to.

Should you have any questions, please contact me at 808 984-8230.

Sincerely,

Patti Kitkowski

Patti Kitkowski
District Environmental Health Program Chief

c EPO

BAGOYO
DEVELOPMENT
CONSULTING GROUP

December 30, 2015

Ms. Patty Kitkowski
District Environmental Health Program Chief
State Dept. of Health
54 High Street
Wailuku, HI 96793

Subject: Draft Application for proposed Affordable Housing Project Pursuant to 201H, HRS
Located at Waiale Road, Wailuku, HI
TMK: (2) 3-5-002:012 por

Dear Ms. Kitkowski:

This is to acknowledge receipt of your letter dated December 28, 2015 regarding the above subject project. We appreciate your comments and recommendations regarding our proposed affordable housing project. The applicant intends to fully comply with all your recommendations as noted in your letter.

Thank you again for your guidance, and should you have further questions or require additional information, please feel free to contact the undersigned at (808) 357-3842.

Sincerely,

Vince Bagoyo

Cc: Ms. Carol Reimann (Director, Dept. of Housing and Human Concerns)
Waiale Road 201, LLC (Mr. Peter Martin)
Mr. William Frampton

1500 KILINOE PLACE
WAILUKU, HI 96793
(808)357-3842
VBAGOYO-DEVGROUP@HAWAII.RR.COM

DAVID Y. IGE
GOVERNOR OF HAWAII

SUZANNE D. CASE
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE
MANAGEMENT

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

December 28, 2015

Bagoyo Development Consulting Group
Attention: Mr. Vince Bagoyo
1500 Kilinoe Place
Wailuku, Hawaii 96793

via email: vbagoyo-devgroup@hawaii.rr.com

Dear Mr. Bagoyo:

SUBJECT: Wai'ale Affordable Housing Project

Thank you for the opportunity to review and comment on the subject matter. The Department of Land and Natural Resources' (DLNR) Land Division distributed or made available a copy of your report pertaining to the subject matter to DLNR Divisions for their review and comments.

At this time, enclosed are comments from the Engineering Division on the subject matter. Should you have any questions, please feel free to call Lydia Morikawa at 587-0410. Thank you.

Sincerely,

Russell Y. Tsuji
Land Administrator

Enclosure(s)
cc: Central Files

DAVID Y. IGE
GOVERNOR OF HAWAII

SUZANNE D. CASE
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

'15 DEC 11 AM 10:39 ENGINEERING

December 9, 2015

MEMORANDUM

TO: **DLNR Agencies:**
___Div. of Aquatic Resources
___Div. of Boating & Ocean Recreation
X Engineering Division
___Div. of Forestry & Wildlife
___Div. of State Parks
X Commission on Water Resource Management
___Office of Conservation & Coastal Lands
X Land Division – Maui District
X Historic Preservation

FROM: Russell Y. Tsuji, Land Administrator
SUBJECT: Wai'ale Affordable Housing Project
LOCATION: Wailuku, Island of Maui; TMK: (2) 3-5-002:012 (por.)
APPLICANT: Wai'ale Road 201, LLC

Transmitted for your review and comment is information on the above-referenced project. We would appreciate your comments on this document which can be found at:

1. https://sp01.ld.dlnr.hawaii.gov/LD
2. Username: LD/Visitor
3. Password: 0pa$$word0 (first and last characters are zeros, not O's)
4. Click on: Request for Comments, then click on the subject link. Please contact Linda Kawakami at (808) 587-0371 or linda.kawamaki@hawii.gov if there are any issues accessing the document.

Please submit any comments by **December 23, 2015**. If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact Lydia Morikawa at 587-0410. Thank you.

Attachments

( ) We have no objections.
( ) We have no comments.
(✓) Comments are attached.

Signed: _____

Print Name: Carty S. Chang, Chief Engineer
Date: 12/10/15

cc: Central Files

DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

LD/Russell Y. Tsuji
REF: Draft Application for Proposed Waiale Affordable Housing Project Pursuant to 201H Hawaii Revised Statutes, Located at Waiale Road, Wailuku, Maui, HI Maui.004

COMMENTS

(X) **We confirm that the project site, according to the Flood Insurance Rate Map (FIRM), is located in Zone X. The National Flood Insurance Program (NFIP) does not regulate developments within Zone X.**

( ) Please take note that the project site according to the Flood Insurance Rate Map (FIRM), is located in Zone ___.

( ) Please note that the correct Flood Zone Designation for the project site according to the Flood Insurance Rate Map (FIRM) is ___.

( ) Please note that the project must comply with the rules and regulations of the National Flood Insurance Program (NFIP) presented in Title 44 of the Code of Federal Regulations (44CFR), whenever development within a Special Flood Hazard Area is undertaken. If there are any questions, please contact the State NFIP Coordinator, Ms. Carol Tyau-Beam, of the Department of Land and Natural Resources, Engineering Division at (808) 587-0267.

Please be advised that 44CFR indicates the minimum standards set forth by the NFIP. Your Community's local flood ordinance may prove to be more restrictive and thus take precedence over the minimum NFIP standards. If there are questions regarding the local flood ordinances, please contact the applicable County NFIP Coordinators below:

- ( ) Mr. Mario Siu Li at (808) 768-8098 of the City and County of Honolulu, Department of Planning and Permitting.
- ( ) Mr. Carter Romero (Acting) at (808) 961-8943 of the County of Hawaii, Department of Public Works.
- ( ) Mr. Carolyn Cortez at (808) 270-7253 of the County of Maui, Department of Planning.
- ( ) Mr. Stanford Iwamoto at (808) 241-4896 of the County of Kauai, Department of Public Works.

( ) The applicant should include project water demands and infrastructure required to meet water demands. Please note that the implementation of any State-sponsored projects requiring water service from the Honolulu Board of Water Supply system must first obtain water allocation credits from the Engineering Division before it can receive a building permit and/or water meter.

( ) The applicant should provide the water demands and calculations to the Engineering Division so it can be included in the State Water Projects Plan Update.

( ) Additional Comments: _____

_____

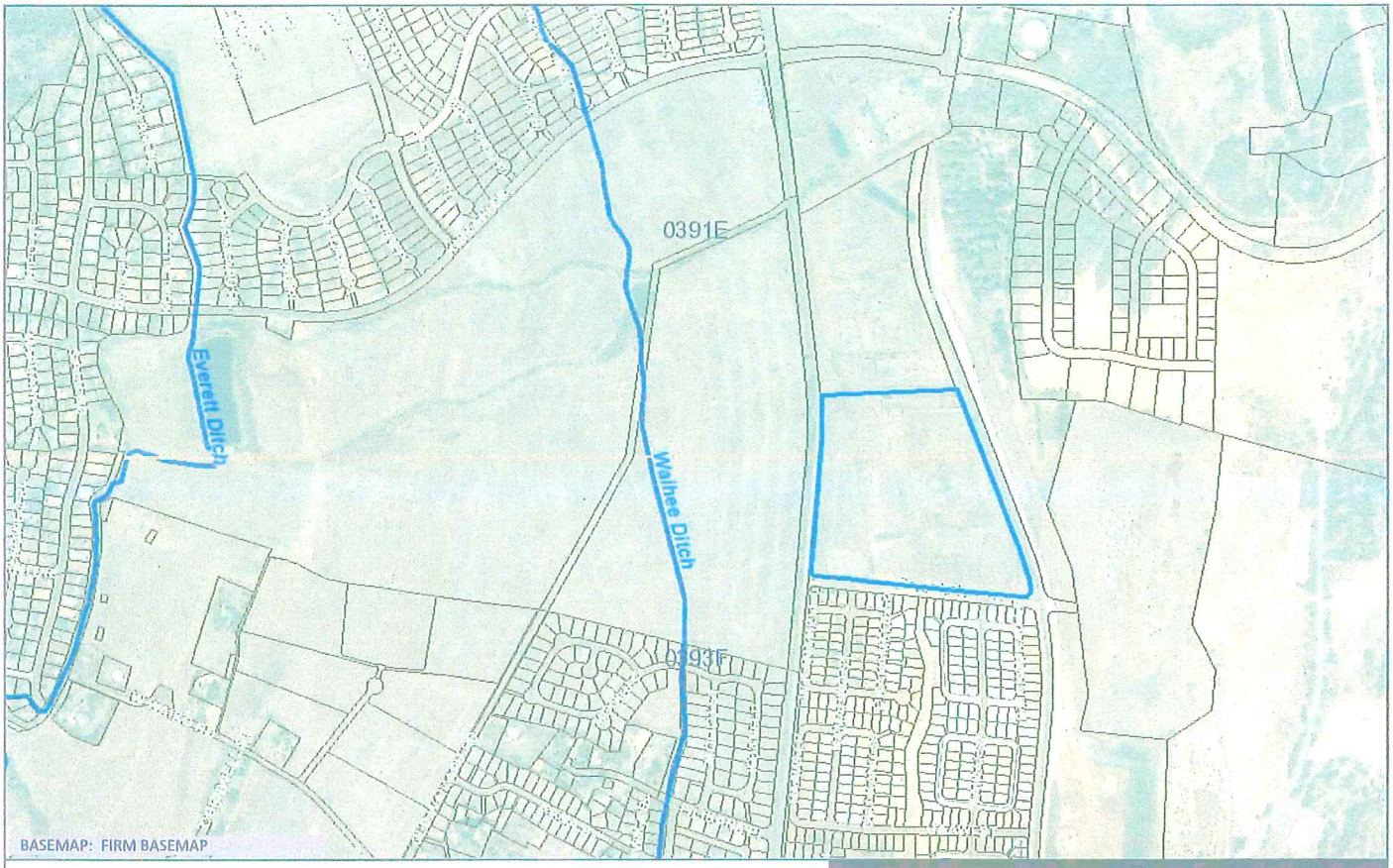
( ) Other: _____

_____

Should you have any questions, please call Mr. Dennis Imada of the Planning Branch at 587-0257.

Signed: _____
CARTY S. CHANG, CHIEF ENGINEER

Date: 12/18/15



Flood Hazard Assessment Report

www.hawaiinfip.org

Property Information

COUNTY:	MAUI
TMK NO:	(2) 3-5-002:012
WATERSHED:	IAO
PARCEL ADDRESS:	HONOAPIILANI HWY WAILUKU, HI 96793

Notes:

Flood Hazard Information

FIRM INDEX DATE:	NOVEMBER 04, 2015
LETTER OF MAP CHANGE(S):	NONE
FEMA FIRM PANEL - EFFECTIVE DATE:	1500030391E - SEPTEMBER 25, 2009 1500030393F - NOVEMBER 04, 2015

THIS PROPERTY IS WITHIN A TSUNAMI EVACUTION ZONE: NO
FOR MORE INFO, VISIT: http://www.scd.hawaii.gov/

THIS PROPERTY IS WITHIN A DAM EVACUATION ZONE: YES (MA-0151)
FOR MORE INFO, VISIT: http://dlnreng.hawaii.gov/dam/

0 400 800 ft

Disclaimer: The Hawaii Department of Land and Natural Resources (DLNR) assumes no responsibility arising from the use, accuracy, completeness, and timeliness of any information contained in this report. Viewers/Users are responsible for verifying the accuracy of the information and agree to indemnify the DLNR, its officers, and employees from any liability which may arise from its use of its data or information.

If this map has been identified as 'PRELIMINARY', please note that it is being provided for informational purposes and is not to be used for flood insurance rating. Contact your county floodplain manager for flood zone determinations to be used for compliance with local floodplain management regulations.

FLOOD HAZARD ASSESSMENT TOOL LAYER LEGEND
(Note: legend does not correspond with NFHL)

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD - The 1% annual chance flood (100-year), also know as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. SFHAs include Zone A, AE, AH, AO, V, and VE. The Base Flood Elevation (BFE) is the water surface elevation of the 1% annual chance flood. Mandatory flood insurance purchase applies in these zones:

	Zone A: No BFE determined.
	Zone AE: BFE determined.
	Zone AH: Flood depths of 1 to 3 feet (usually areas of ponding); BFE determined.
	Zone AO: Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined.
	Zone V: Coastal flood zone with velocity hazard (wave action); no BFE determined.
	Zone VE: Coastal flood zone with velocity hazard (wave action); BFE determined.
	Zone AEF: Floodway areas in Zone AE. The floodway is the channel of stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without increasing the BFE.

NON-SPECIAL FLOOD HAZARD AREA - An area in a low-to-moderate risk flood zone. No mandatory flood insurance purchase requirements apply, but coverage is available in participating communities.

	Zone XS (X shaded): Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.
	Zone X: Areas determined to be outside the 0.2% annual chance floodplain.

OTHER FLOOD AREAS

	Zone D: Unstudied areas where flood hazards are undetermined, but flooding is possible. No mandatory flood insurance purchase apply, but coverage is available in participating communities.

BAGOYO
DEVELOPMENT
CONSULTING GROUP

December 30, 2015

Mr. Russell Y. Tsuji
Land Administrator
Dept. of Land and Natural Resources – Land Division
P.O. Box 621
Honolulu, HI 96809

Subject: Proposed Waiale Affordable Housing Project Pursuant to 201H, HRS
Located at Waiale Road, Wailuku, HI
TMK: (2) 3-5-002:012 por

Dear Mr. Tsuji:

This is to acknowledge receipt of your letter dated December 28, 2015 commenting on the draft application for the proposed Waiale affordable housing project pursuant to 201H, HRS. We appreciate for affirming that the project site per FIRM is located in Zone "X". You further confirm that the National Flood Insurance Program (NFIP) does not regulate developments within Zone "X".

Thank you again for your comments and guidance, and should you have further questions or require additional information, please feel free to contact the undersigned at (808) 357-3842.

Sincerely,

Vince Bagoyo

Cc: Ms. Carol Reimann (Director, Dept. of Housing and Human Concerns)
Waiale Road 201, LLC (Mr. Peter Martin)
Mr. William Frampton

1500 KILINOE PLACE
WAILUKU, HI 96793
(808)357-3842
VBAGOYO-DEVGROUP@HAWAII.RR.COM

ALAN M. ARAKAWA
Mayor

KA'ALA BUENCONSEJO
Director

BRIANNE L. SAVAGE
Deputy Director

(808) 270-7230
FAX (808) 270-7934

DEPARTMENT OF PARKS & RECREATION

700 Hali'a Nakoa Street, Unit 2, Wailuku, Hawaii 96793

December 16, 2015

Mr. Vince Bagoyo, Project Consultant
1500 Kilinoe Pl.
Wailuku, Hawaii 96793

Dear Mr. Bagoyo:

SUBJECT: Draft Application for Proposed Waiale Affordable Housing Project Pursuant to 201H, Hawaii Revised Statutes ("HRS")
Waiale Road, Wailuku Hawaii
TMK: (2) 3-5-002:012 (por.)

The Department of Parks and Recreation (DPR) does not have any comments or objections to the project. Once the applicant provides DPR with a copy of the fully executed 201H HRS affordable housing agreement with the Department of Housing and Human Concerns, DPR will provide exemption from Maui County Code Section 18.16.320 Parks and Playgrounds.

Should you have any questions or concerns, please feel free to call me, or Robert Halvorson, Chief of Parks Planning and Development, at 270-7931.

Sincerely,

KA'ALA BUENCONSEJO
Director of Parks & Recreation

c: Robert Halvorson, Chief of Parks Planning and Development

KB:RH:csa

BAGOYO
DEVELOPMENT
CONSULTING GROUP

December 23, 2015

Mr. Ka`ala Buenconsejo
Director, Dept. of Parks and Recreation
700 Hali`a Nakoa St., Unit 2
Wailuku, HI 96793

Subject: Proposed Waiale Affordable Housing Project Located at Wailuku, Maui
Pursuant to 201H, Hawaii Revised Statutes
TMK: (2) 3-5-002:012 por
Waiale Road, HI

Dear Mr. Buenconseqo:

This is to acknowledge receipt of your letter dated December 16, 2015 regarding the above subject project. We thank you and appreciate your comments of no objection to the draft 201H application regarding the proposed Waiale affordable housing project. Per your letter, once we receive a fully executed 201H affordable housing agreement with the Dept. of Housing and Human Concerns, your department will provide exemption from MC Section 18.16.320 Parks and Playground.

Once again, we appreciate your support and guidance and should you have further questions or require additional information, please feel free to contact me at (8080 357-3842.

Sincerely,

Vince Bagoyo

Cc: Ms. Carol Reimann (Director, Dept. of Housing and Human Concerns)
Wailae Road 201, LLC (Mr. Peter Martin)
Mr. William Frampton

1500 KILINOE PLACE
WAILUKU, HI 96793
(808)357-3842
VBAGOYO-DEVGROUP@HAWAII.RR.COM

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Pacific Islands Fish and Wildlife Office
300 Ala Moana Boulevard, Room 3-122
Honolulu, Hawaii 96850

In Reply Refer To:
01EPIF00-2016-TA-0080

DEC 15 2015

Mr. Vince Bagoyo
Bagoyo Development Consulting Group
1500 Kilinoe Place
Wailuku, Hawaii 96793

Subject: Technical Assistance for the Proposed Waiale Affordable Housing Project, Wailuku, Maui

Dear Mr. Bagoyo:

The U.S. Fish and Wildlife Service (Service) received your correspondence on December 4, 2015, requesting comments on a draft application for the proposed Waiale Affordable Housing Project located in Wailuku, Maui (TMK: (2) 3-5-002:012 por). The proposed action is on a 10.3-acre plot on Waiale Road and will include the construction and sale of 71 affordable single-family residential housing units. Other improvements include construction of internal roadways, drainage systems, and utilities.

Based on information you provided and pertinent information in our files, including data compiled by the Hawaii Biodiversity Program (ECP), there are eight listed species possibly in the vicinity of the project area that are of concern: the federally endangered Hawaiian hoary bat (*Lasiurus cinereus semotus*), Blackburn's sphinx moth (*Manduca blackburni*), Hawaiian stilt (*Himantopus mexicanus knudseni*), Hawaiian coot (*Fulica alai*), Hawaiian goose (*Branta sandvicensis*), and Hawaiian petrel (*Pterodroma sandwichensis*), the federally threatened Newell's shearwater (*Puffinus newelli*), and the federally proposed band-rumped storm petrel (*Oceanodroma castro*).

Hawaiian hoary bat

The Hawaiian hoary bat is known to occur across a broad range of habitats throughout the State of Hawaii. This bat roosts in both exotic and native woody vegetation and, while foraging, leaves young unattended in "nursery" trees and shrubs. If trees or shrubs suitable for bat roosting are cleared during the Hawaiian hoary bat breeding season (June 1 to September 15), there is a risk that young bats that cannot yet fly on their own could inadvertently be harmed or killed. As a result, the Service recommends that woody plants greater than 15 feet tall should not be removed or trimmed during the Hawaiian hoary bat breeding season. Additionally, Hawaiian hoary bats forage for insects from as low as three feet to higher than 500 feet above the ground. When barbed wire is used in fencing, Hawaiian hoary bats can become entangled. The Service, therefore, recommends that barbed wire not be used for fencing as part of this proposed action.

Blackburn's sphinx moth

The Blackburn's sphinx moth could potentially be in the vicinity of the proposed project area. Adult moths feed on nectar from native plants, including beach morning glory (*Ipomoea pes-caprae*), iliee (*Plumbago zeylanica*), and maiapilo (*Capparis sandwichiana*); larvae feed upon non-native tree tobacco (*Nicotiana glauca*) and native aiea (*Nothocestrum latifolium*). To pupate, the larvae burrow into the soil and can remain in a state of torpor for up to a year (or more) before emerging from the soil. Soil disturbance can result in death of the pupae. The Service recommends that a qualified biologist survey areas of proposed construction activities for Blackburn's sphinx moth and its host plants prior to work initiation. We recommend these surveys be conducted during the wettest portion of the year (usually November-April or several weeks after a significant rain) and immediately prior to construction. Surveys should include searches for eggs, larvae, and signs of larval feeding (chewed stems, frass, or leaf damage). Any host plants of Blackburn's sphinx moth identified should not be cut or disturbed.

Hawaiian waterbirds and Hawaiian goose

The Hawaiian stilt, Hawaiian coot (collectively referred to as waterbirds) and Hawaiian goose are known to occur in the vicinity of your project area. If your project results in standing water or creation of open water, it may attract Hawaiian waterbirds and Hawaiian geese to the site. In particular, the Hawaiian stilt is known to nest in sub-optimal locations if water is present (e.g., any ponding water). Hawaiian waterbirds attracted to sub-optimal habitat may suffer adverse impacts, such as predation and reduced reproductive success, and thus the project may create an attractive nuisance. To avoid potential adverse impacts to listed Hawaiian waterbirds and Hawaiian geese, we recommend avoiding creating areas with standing water, or if you are unable to avoid standing water, we recommend construction occur outside of the Hawaiian stilt breeding season (February through August). If the Hawaiian stilt breeding season cannot be avoided, or the project will result in creation of permanent open water, we recommend you work with our office during project planning so that we may assist you in developing measures to avoid impacts to listed species (e.g., fencing, vegetation control, predator management).

Hawaiian Seabirds

Seabirds, including the Newell's shearwater, Hawaiian petrel, and band-rumped storm-petrel, fly at night and are attracted to artificially-lighted areas resulting in disorientation and subsequent fallout due to exhaustion. Seabirds are also susceptible to collision with objects that protrude above the vegetation layer, such as utility lines, guy-wires, and communication towers. Additionally, once grounded, they are vulnerable to predators and are often struck by vehicles along roadways. To reduce potential impacts to seabirds, we recommend the following minimization measures be incorporated into your project description:

- Construction activities should only occur during daylight hours. Any increase in the use of nighttime lighting, particularly during peak fallout period (September 15 through December 15), could result in additional seabird injury or mortality.

- If lights cannot be eliminated due to safety or security concerns, then they should be positioned low to the ground, be motion-triggered, and be shielded and/or full cut-off. Effective light shields should be completely opaque, sufficiently large, and positioned so that the bulb is only visible from below.

Landscape Suggestions – Native Species

Hawaii's native ecosystems are heavily impacted by exotic invasive plants. Whenever possible we recommend using native plants for landscaping purposes. If native plants do not meet the landscaping objectives, we recommend choosing species that are thought to have a low risk of becoming invasive. The following websites are good resources to use when choosing landscaping plants: Pacific Island Ecosystems at Risk (www.hear.org/Pier/), Hawaii-Pacific Weed Risk Assessment (www.botany.hawaii.edu/faculty/daehler/wra/full_table.asp.html) and Global Compendium of Weeds (www.hear.org/gcw).

Implementation of these measures will minimize but does not ensure that take of listed species associated with this proposed action will be fully avoided. Thank you for your efforts to conserve listed species and native habitats. Please contact Fish and Wildlife Biologist Jon Sprague (808-792-9573) if you have any questions or for further guidance.

Sincerely,

for Michelle Bogardus
Island Team Leader
Maui Nui and Hawaii Island

BAGOYO
DEVELOPMENT
CONSULTING GROUP

December 23, 2015

Ms. Michelle Bogardus
Island Team Leader, Maui Nui and Hawaii Island
U.S. Fish and Wildlife Service
300 Ala Moana Blvd., Room 3-122
Honolulu, HI 96850

Subject: Proposed Waiale Affordable Housing Project Located at Wailuku, Maui
Pursuant to 201H, Hawaii Revised Statutes
TMK: (2) 3-5-002:012 por
Waiale Road, HI

Dear Ms. Bogardus:

This is to acknowledge receipt of your letter dated December 15, 2015 regarding the above subject project. We thank you and appreciate your comments to the draft 201H application regarding the proposed Waiale affordable housing project. Please be assured that the applicant intends to fully comply with your recommendations as noted in your said letter.

Again, we appreciate your guidance and should you have further questions or require additional information, please feel free to contact me at (8080 357-3842.

Sincerely,

Vince Bagoyo

Cc: Ms. Carol Reimann (Director, Dept. of Housing and Human Concerns)
Wailae Road 201, LLC (Mr. Peter Martin)
Mr. William Frampton

1500 KILINOE PLACE
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ALAN M. ARAKAWA
MAYOR

JEFFREY A. MURRAY
FIRE CHIEF

ROBERT M. SHIMADA
DEPUTY FIRE CHIEF

COUNTY OF MAUI
DEPARTMENT OF FIRE AND PUBLIC SAFETY
FIRE PREVENTION BUREAU

313 MANEA PLACE . WAILUKU, HAWAII 96793
(808) 876-4690 . FAX (808) 244-1363

Dec. 23, 2015

Bagoyo Development Group
Attn: Vince Bagoyo
1500 Kilinoe Place
Wailuku, HI 96793

Re: Proposed Wai'ale Affordable Housing Project
Draft Application
Wailuku, Maui, HI
(2) 3-5-002: 012 por.

Dear Mr. Bagoyo:

Thank you for the opportunity to comment on this subject. At this time, our office provides the following comments:

- The proposed project has a single access off of Wai'ale Road; it is recommended that a second emergency egress road be provided out of the subdivision as required by MCC 16.04C.440. This road may be designed for emergency-use only. The code section has been included.
- Our office also reserves the right to comment during the building permit review process when detailed plans for the project are submitted. At that time, fire department access, water supply for fire protection, and fire and life safety requirements will be addressed.

If there are any questions or comments, please feel free to contact me at (808) 876-4693.

Sincerely,

Paul Haake
Captain, Fire Prevention Bureau

BAGOYO
DEVELOPMENT
CONSULTING GROUP

January 7, 2016

Mr. Paul Haake
Captain, Fire Prevention Bureau
Dept. of Fire and Public Safety
313 Manea Place
Wailuku, HI 96793

Subject: Proposed Waiale Affordable Housing Project Pursuant to 201H, HRS
Located at Waiale road, Wailuku, HI
TMK: (2) 3-5-002:012 por

Dear Mr. Haake:

Following below is in response to your comments dated December 23, 2015 regarding the proposed Waiale affordable housing project:

1. A second emergency access only lane (20' min. width) is proposed between lots 29 and 30.

2. The intent of the subdivision design is to meet all applicable requirements for fire access and water supply and the applicant understands that review and comments will be made during the building permit process.

Thank you again for your comments and should you have any further questions or require additional information, please feel free to contact the undersigned at (808) 357-3842.

Sincerely,

Vince Bagoyo

Cc: Ms. Carol Reimann (Director, Dept. of Housing and Human Concerns)
Waiale Road 201, LLC Mr. Peter Martin)
Mr. William Frampton

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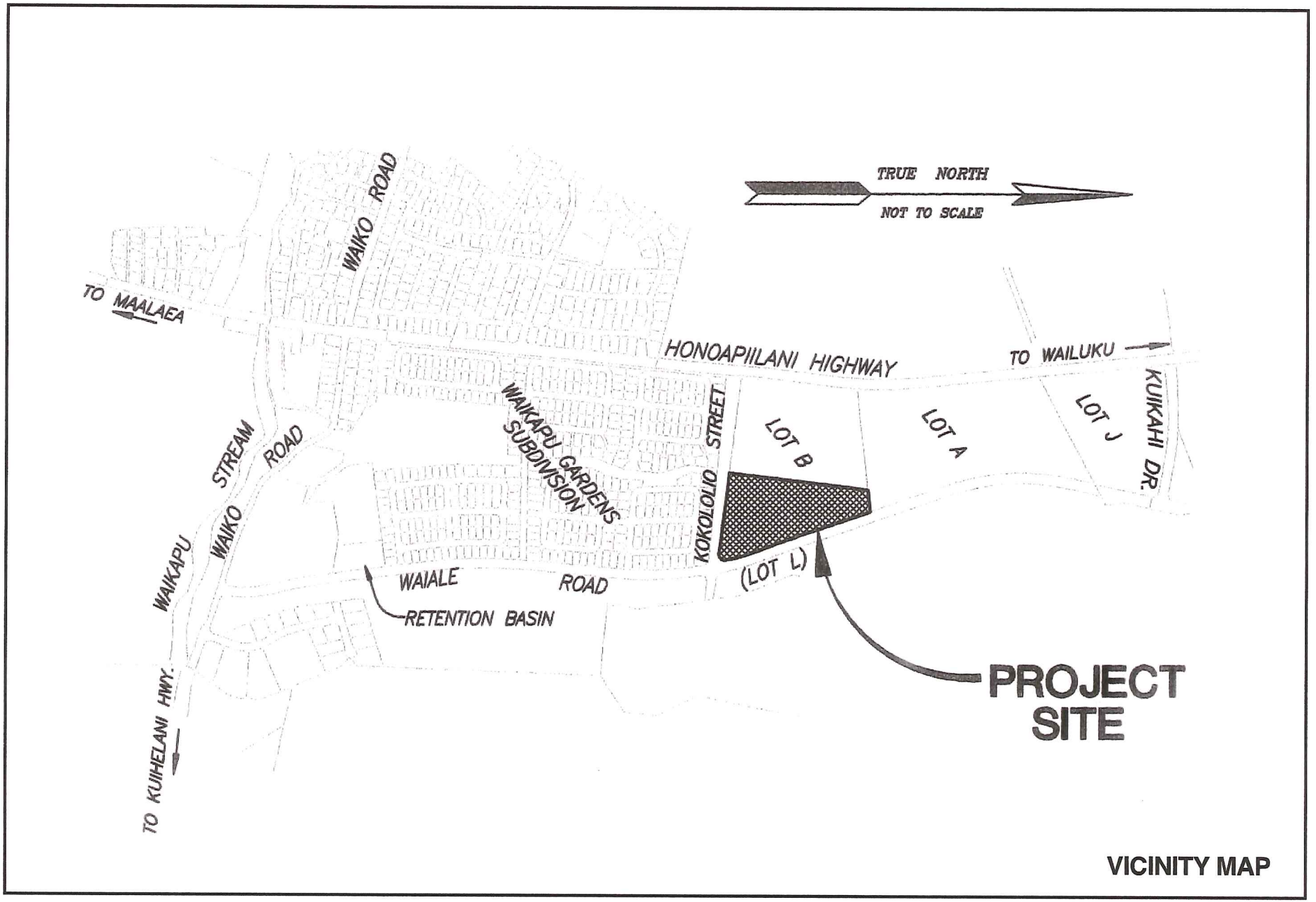
VIII. Appendices

Appendix A

Vicinity Map



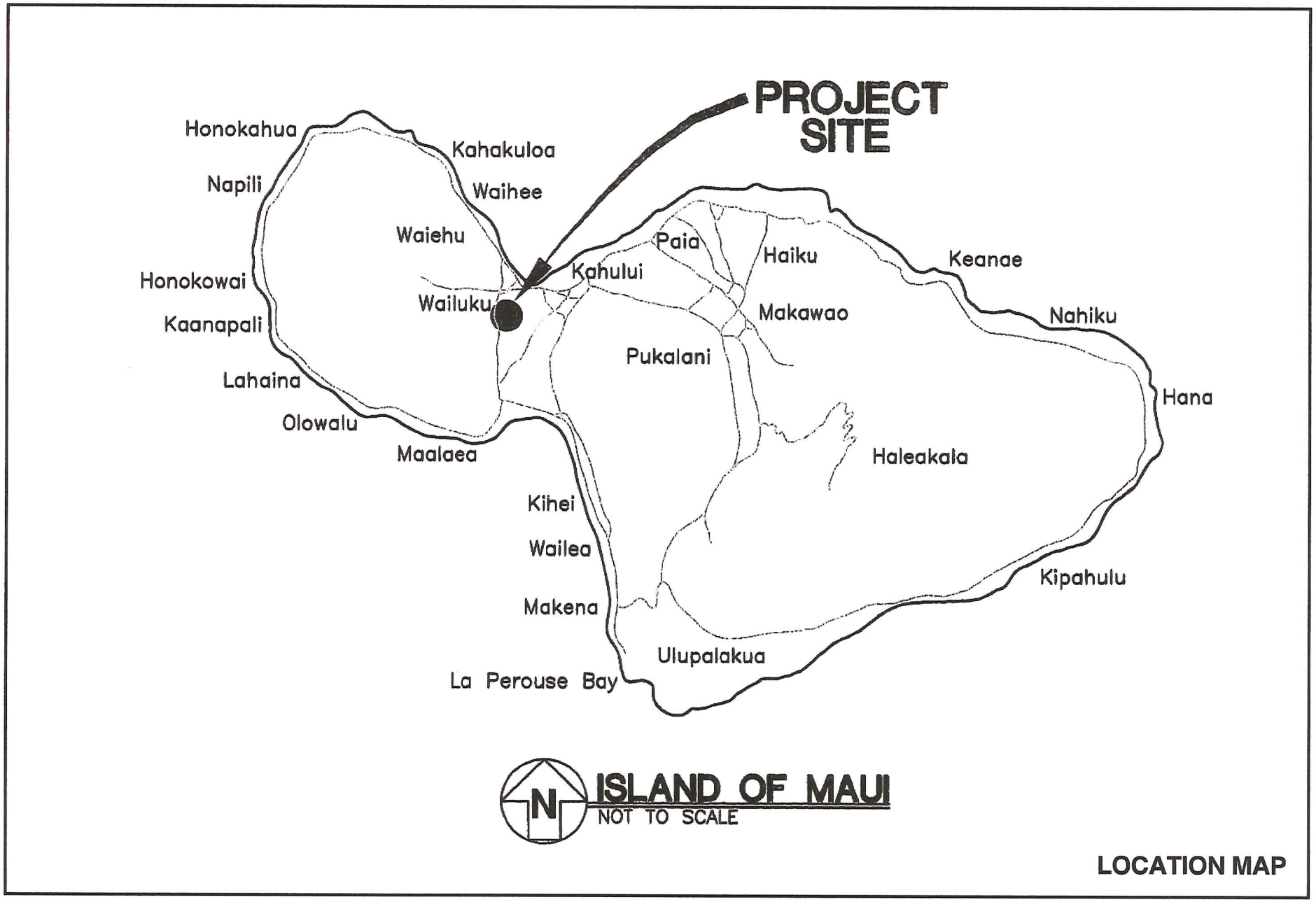
VICINITY MAP

Proposed Wai'ale Affordable Housing Project

BAGOYO DEVELOPMENT CONSULTING GROUP

Appendix B

Location Map



LOCATION MAP

Proposed Wai'ale
Affordable Housing Project

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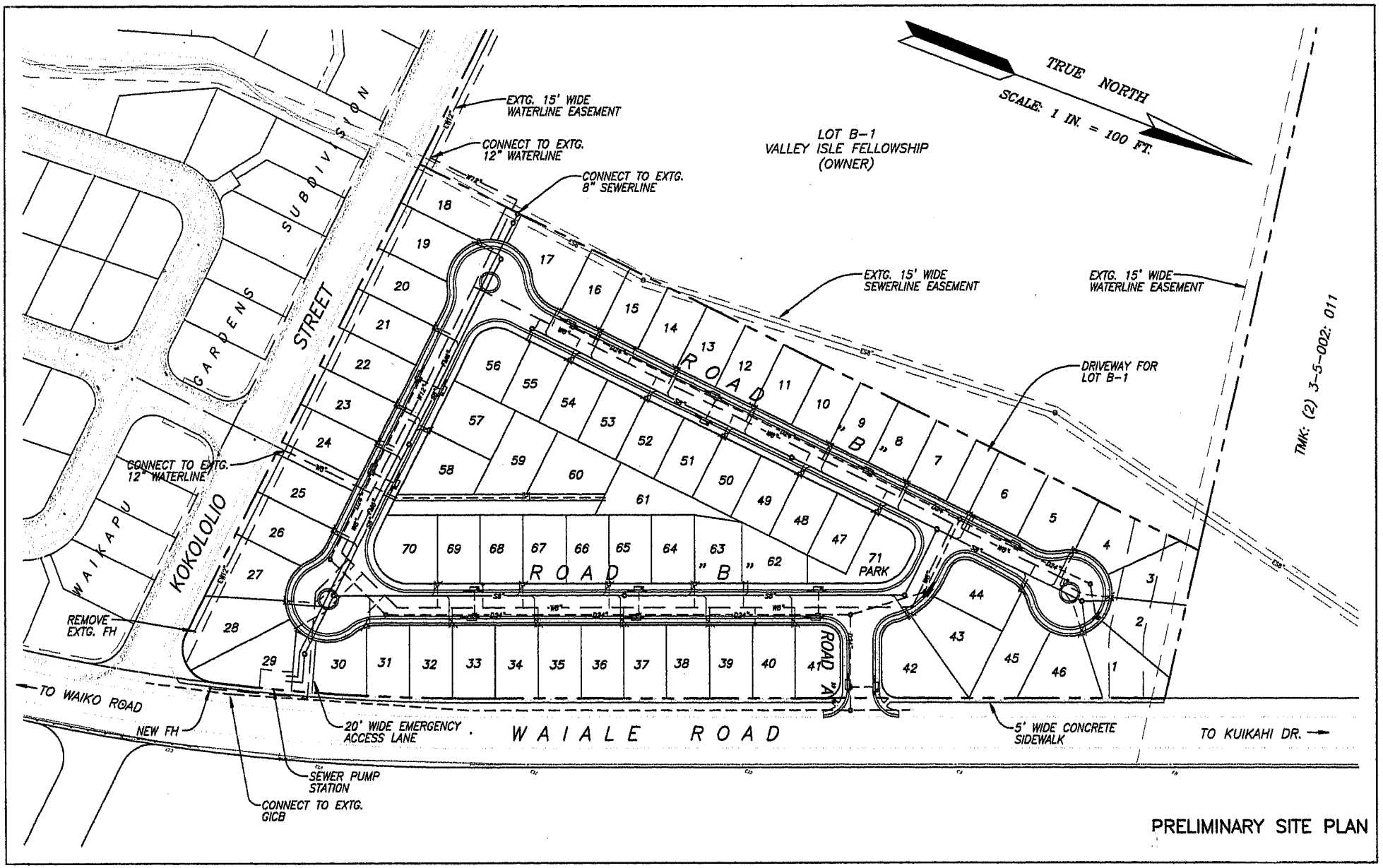
Appendix C

Preliminary Site Plan



PRELIMINARY SITE PLAN

C:\2015 PROJECTS\2015-50\dwg\Exhibits\SITE-00.dwg

Appendix D

Archaeological Inventory Survey

ASH

ARCHAEOLOGICAL INVENTORY SURVEY OF A 50-ACRE PARCEL OF LAND WAIKAPU AND WAILUKU *AHUPUA'A*, WAILUKU DISTRICT MAUI ISLAND TMK [2] 3-5-002:011 and 012 (formerly 3-5-002:001 pors.)

by
Diane Guerriero, B.A., Lisa Rotunno-Hazuka
and Jeffrey Pantaleo, M.A.

for
The Emmanuel Lutheran Church and Valley Isle Fellowship
One Main Plaza Ste 400
Wailuku, HI 96793

REVISED 2016

July 2004

Archaeological Services Hawaii, LLC
16 South Market Street, Suite G
Wailuku, Hawaii 96793

ABSTRACT

Archaeological Services Hawaii, LLC, of Wailuku, conducted an archaeological inventory survey (AIS) within a 50-acre parcel of land in Wailuku and Waikapū *ahupua'a*, Wailuku District, Maui Island, TMK [2] 3-5-002:001 pors. The AIS field work was conducted from 4-7 May 2004 during due diligence procedures as the Emmanuel Lutheran Church (ELC) and the Valley Isle Fellowship (VIF) were in the process of purchasing the project area from Wailuku Agribusiness. Upon completion of the field work, a post-field summary letter was provided to ELC and VIF and the property was subsequently purchased. Due to the proposed plans to subdivide and develop the parcel, the AIS report was prepared and submitted to the State Historic Preservation Division (SHPD) in 2004. The parcels were subsequently subdivided into two approximate 25.0 acre parcels and assigned TMK's [2] 3-5-002:011 for the north and [2] 3-5-002:012 for the south. Approximately 12-years later, the development plans for the parcels were re-vitalized; however it was determined that the AIS report was never reviewed. Thus, in February 2016, another copy of the report was provided to the SHPD.

The proposed development consists of the construction of two churches, the Emmanuel Lutheran Church (ELC) and the Valley Isle Fellowship (VIF), as well as an affordable residential subdivision. The ELC and residential subdivision are planned for the northern section, Parcel 11, and the VIF will be constructed in the southern half, Parcel 12. The purpose of the investigation was to determine the presence/absence, nature, extent, and significance of cultural resources (if applicable) in the project area that could be adversely affected by proposed development.

The scope of work for the current investigation included a pedestrian survey with subsurface backhoe testing. Results of the pedestrian survey identified one historic property, a disturbed segment of State Site 50-50-04-5474, the Kama Ditch, situated within the southwestern portion of the project area. Also noted was a metal sluice gate, designated Feature 1 of Site 5474. The ditch, constructed around 1905 to 1907, provided water to the sugarcane and subsequent pineapple fields and was supposedly abandoned approximately 30 years ago. Site 5474 was assessed as significant under Criterion "a" because of its association with the plantation era and Criterion "d" for its information content under the Federal and State historic preservation guidelines.

A total of 25 backhoe trenches (TR1-25) were selectively placed in areas that contained no active farming. Trenches ranging in length from 5 to 7 meters were excavated until sterile subsoil was

reached. No significant cultural remains were encountered during trenching and representative stratigraphic profiles were recorded.

Based on the negative results of fieldwork, no further inventory level work is recommended prior to commencing construction activities. However, due to the presence of numerous archaeological sites and Native Hawaiian burials in neighboring parcels, archaeological monitoring during all ground-altering activities is recommended. Prior to the commencement of construction, Archaeological Monitoring Plans (AMP) will be prepared and submitted to SHPD for review and approval. An AMP for the proposed affordable residential subdivision in Parcel 11 was recently submitted to the SHPD; however review of the AMP is pending approval of this AIS report.

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INTRODUCTION

At the request of potential landowners, the Emmanuel Lutheran Church (ELC) of 520 One St. Kahului, Hi. 96732 and Valley Isle Fellowship (VIF) of 473 S. High St. of Wailuku, Hi. 96793, and through an agreement with current landowner, Wailuku Agribusiness; Archaeological Services Hawaii, LLC (ASH) conducted an archaeological inventory survey (AIS) according to the rules and regulations set for Hawaii Administrative Rules (HAR) §13-276. The AIS was performed of an approximate 50-acre parcel of land slated for subdivision and development in Wailuku, Waikapū and Wailuku *ahupua'a*, Wailuku District, Maui Island, TMK [2] 3-5-002:011 and 012 (formerly a portion of Parcel 1-TMK 3-5-002:001) (Figs. 1 and 2).

The purpose of this investigation was to determine the presence/absence, extent, and significance of cultural resources in the project area. The AIS was comprised of a pedestrian survey and mechanical trench excavations (n=25). The survey was conducted from May 4-7, 2004, by Mr. Paul Titchenal, (M.A.) and supervisor Ms. Diane Guerriero, (B.A.) and one historic property, Site 50-50-04-5474, a portion of Waihe`e Ditch, along with a metal sluice gate, Feature 1 of site 5474 was documented along the southwestern/western side of the parcels (see Figure 1).

PROJECT AREA

The project area is located along the northeastern alluvial slopes of the West Maui mountains in Waikapū and Wailuku *ahupua`a*. It is bounded by Honoapi`ilani Highway to the west, Waiale Road to the east, a cane haul road and retention basin to the north, and a recent residential housing project to the south, constructed after the AIS procedures (Fig. 2).

The project area consists of two adjoining 25-acre parcels within a portion of the former Wailuku Agribusiness landholdings (TMK [2] 3-5-002:001 pors.) and contains numerous individual farm plots with bananas, sweet potatoes, and fallow sugar cane and a sod farm. The northern 25.0 acre parcel is owned by Emmanuel Lutheran Church (ELC) and the southern acreage is the Valley Isle Fellowship (VIF) parcel.

The south-eastern and eastern portions of the project area have been impacted by previous sand-mining and agricultural activities, the western portion by agricultural activities and the central portions are actively under agricultural production. The Kama Ditch (State Site 50-50-04-5474) bisects a portion of the southwestern section of the project area and is oriented roughly north-

south (see Figures 2 and 3). The County of Maui sewer line easement bisects the central south section and a portion of the central, east section.

ENVIRONMENT

The project area is situated along the northwestern margin of the isthmus of Maui Island, located below Waikapū Valley on the southwest and Iao Valley on the northwest. The terrain of the project area, altered by commercial agricultural production and previous sand-mining activities, is relatively flat along the western and eastern peripheries with a slope to the east in the central portion. Elevation ranges from 300 feet above mean sea level (AMSL) along the eastern boundary to 400 feet above mean sea level along the western boundary. Rainfall averages between 20-30 inches a year, predominantly occurring during the winter months between November and February (Armstrong 1973).

Vegetation in the project area is dominated by non-native plant species, these include: *koa haole* (*Leucaena glauca*), *kiawe* (*Prosopis pallida*), *wilelaiki* or Christmasberry (*Schinus terebinithifolius*), cane grass (*Setaria sp.)* growing in areas formerly cultivated with sugarcane, fallow pineapple (*Ananas sp.),* active and fallow sweet-potato (*Ipomoea sp.*), banana (*Musa sp.*), papaya (*Carica sp.*), various vegetables and non-native grasses and weeds. Native plant species observed include *`ilima* (*Sida fallax*), *`uhaloa* (*Waltheria americana*), and *popolo* (*Solanum nelsonii*).

Soils in the project area include Iao clay (Icb), 3-7% slopes, and Pu`uone sand (PZUE) 7-30% slopes. The Iao clay, occur on slopes between 3-7degrees, on smooth alluvial fans and valley fill. Permeability is moderately slow, runoff is medium, and erosion hazard is slight to moderate. This soil is used for sugarcane and home sites. The Pu`uone sands, occur on slopes between 7-30 degrees, on mid coastal plains near the ocean, and developed in material derived from marine coral and shells. This type of sand is transported and deposited by both alluvial and aeolian forces. Permeability is rapid above the cemented layer, runoff is slow, and erosion hazard is moderate to severe. This soil is used for pasture and home sites (Foote et al. 1972).

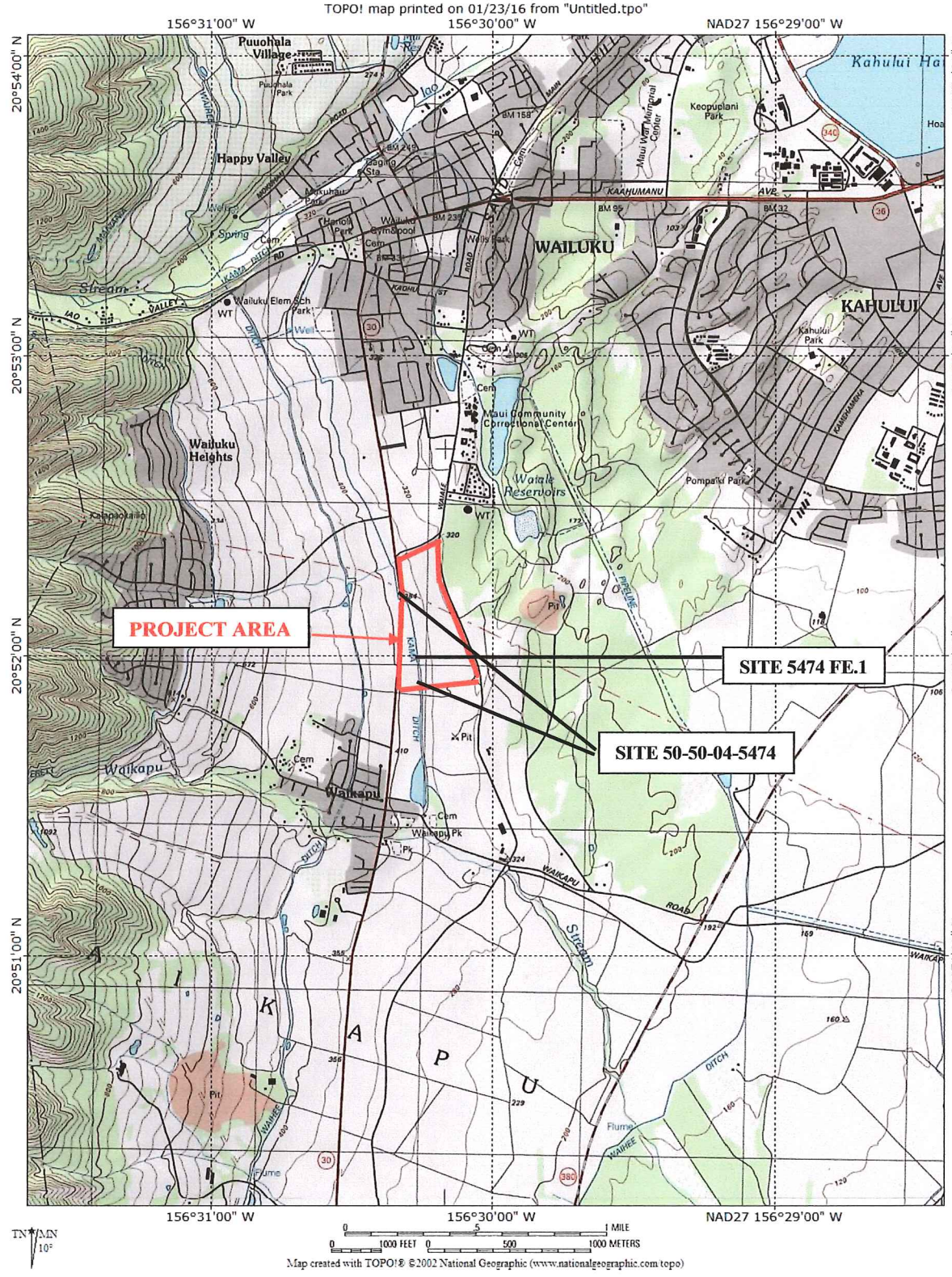

Figure 1. Location of Project Area on U.S.G.S. Quadrangle

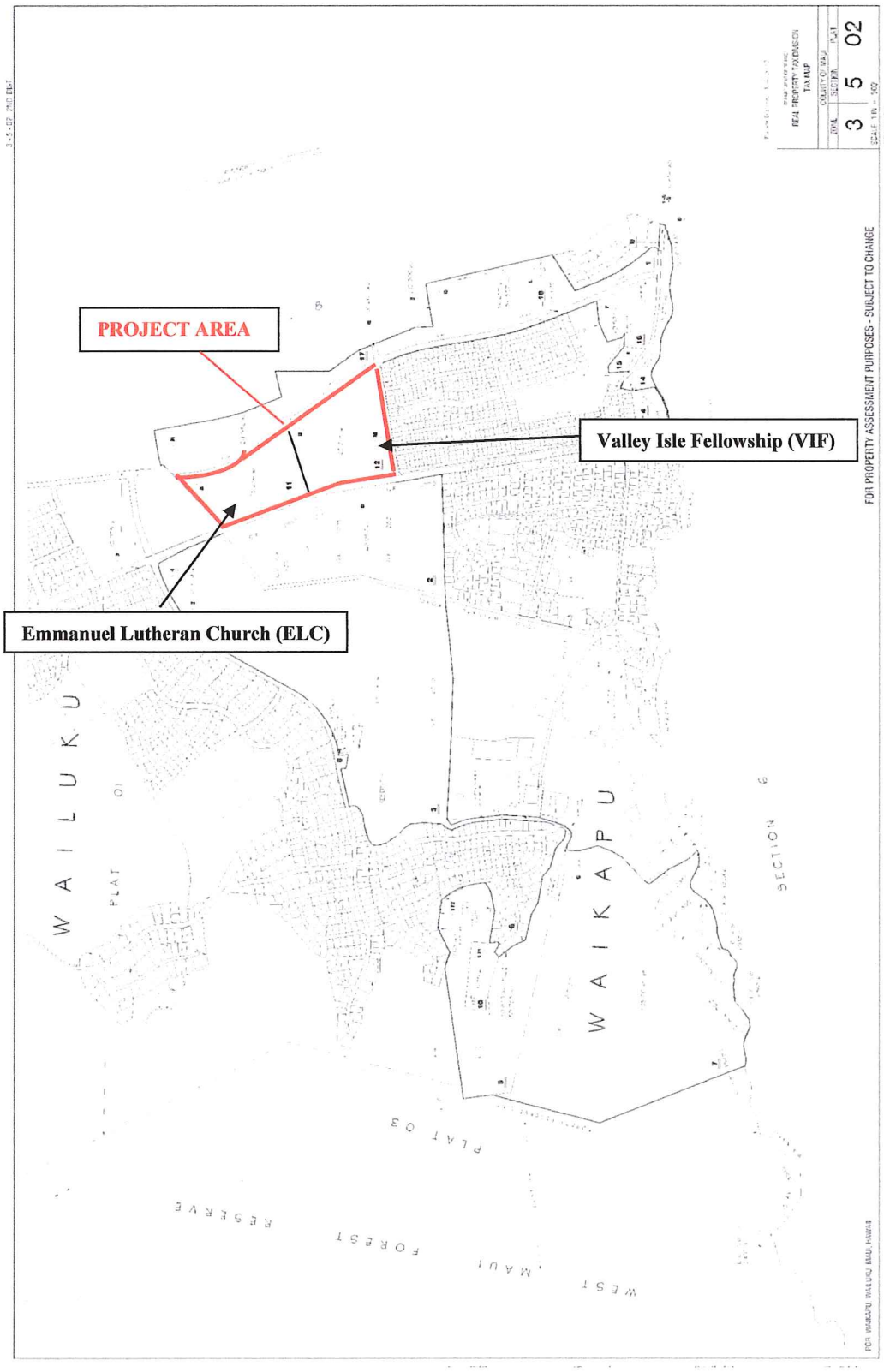

Figure 2. Tax Map Key 3-5-002 Showing Project Area and Locations for Proposed ELC and VIF

Figure 3. Overview of Project Area (top) View to East-Northeast; (bottom) View to Northwest

HISTORICAL SUMMARY

Traditionally, the division of Maui's lands into districts or *moku* and subdistricts were said to have been "performed by a *kahuna* named Kalaiha`ohia, during the time of the *ali`i* Kaka`alaneo (Beckwith 1970:383). Further land divisions within the *moku* were *ahupua`a*, which ideally incorporated all the natural resources necessary for traditional subsistence strategies.

`Ahupua`a boundaries were said to have been established about 500 years ago and remain largely unchanged (Sterling 1998:3); thus, it is expected that the current boundaries of Waikapū approximate its prehistoric ones.

The district of Wailuku contains the other *ahupua'a* of Waiehu, Waihe'e, and Kahakuloa to the north, and Waikapū and Pulehunui to the south.

The Wailuku District is considered one of Hawai`i's *wahi pana*, legendary places. Specific to Waikapū are many important legendary and traditional accounts.

The island of Maui was named for the demigod Maui (Pukui et al. 1974), a trickster hero known throughout Polynesia. The Hawaiian creation chant Kumulopo described Maui an ancestor of the Hawaiian people and descendant of Wakea, the mythical ancestor of all Hawaiians (Beckwith 1970:227, Pukui and Elbert 1986:381). Kamakau (1991:129) says that the island was originally called *`Ihi-kapalau-maewa*, and that it was called Maui only after Maui became famous for his exploits.

Historical research of Waikapū *ahupua`a* was summarized in Smith (in Brisbin et al. 1991), and Titchenal (1996). Creed (1993) has written extensively on the settle pattern and traditional background of the Waikapū *ahupua`a.* The reader is referred to these studies for detailed information. A brief summary of the history and land use of the subject area is included here.

The current project area is located in Waikapū *ahupua`a*, in an area which is referred to as Waikapū Commons, in the district of Wailuku. The literal meaning of Waikapū is "water of the conch" (Pukui et al. 1974:223). Legends and oral traditions of Waikapū *ahupua`a* include the story describing the origin and meaning of Waikapū. During ancient times a great conch shell (*pu*) was hidden in a cave on the south side of the stream, about a mile inland. Hence the name *Wai-ka-pu*, "water-of-the-conch" (Handy and Handy 1972:497-498). Another account places the

cave in the valley, a mile or more above the village. The conch was heard in the valley frequently, but never witnessed by the people. A dog, named Puapualenalena, coveted the conch and finally succeeded in stealing it after which its sound was not heard again.

Another interpretation comes from Stoddard (1894, in Wong-Smith, 1992), who says the name comes from a *kapu* Kamehameha I put on the stream during the battle of `Iao Valley in 1790 (Fredericksen 2004:5).

> " It was at Kalepolepo that Kamehameha the Conqueror beached his canoes. If the oldest inhabitant of Ma`alaea claims this distinction for his port, believe him not. I have the facts, from an eye-witness. The sea was dark with victorious canoes; Kamehameha landed at Kalepolepo, and a kapu was put upon the nearest stream. It became sacred to royality, as was the custom and is known as Waikapū to this hour – that is forbidden water."

A number of battles took place in the Waikapū region, including Fornander's (1969:153) account of the battle of the Waikapū Commons or the *Ahulau ka pi`ipi`I I Kakanilua.* The following account describes the battle on the sand hills southeast of Wailuku:

> ...The detachment or regiment known as the Alapa, mustering 800 men, was selected for this hazardous expedition, and with high courage they started across the isthmus of Kamaomao, now known as the Waikapū common, as the legend says, "to drink the waters of Wailuku that day. "...Little did this gallant troop apprehend the terrible fate that awaited them...Kahekili distributed his forces in various directions on the Wailuku side of the common, and fell upon the Hawaii corps d`armee as it was entering among the sandhills southeast of Kalua, near Wailuku. After one of the most sanguinary battles recorded in Hawaiian legends,...the gallant and devoted alapa was literally annihilated; only two out of the 800 escaped alive to tell Kalaniopuu of this Hawaiian Balaclava (Fornander 1969:153).

Early Historical Accounts

Since Hawaiians had no formal written language, early historical accounts of Hawaii were recorded by early Hawaiian historians and foreigners to the islands. These descriptions are invaluable as they provide vivid representations of the area and its use.

This area, called *Na Wai `Eha*, fed by the four streams of Waikapū, Waihe`e, Waiehu, and Wailuku, prospered with the abundance of water. This valuable resource contributed to the population concentration of Wailuku and its surrounding area, which evolved into a substantial

Hawaiian settlement and central place of religious and political power on Maui during the pre-contact period and post contact period.

Foreigners visiting Maui in the early 1800's provided several descriptions of the region of Waikapū. The reader is referred to Wong-Smith (1991: Appendix A, in Brisbin et al. 1991) noteworthy summary of historic references to Waikapū for a more complete treatment of the subject.

Early historical references to Waikapū indicated that the valleys of Waikapū and Wailuku supported substantial populations in the 17th century:

> The first village of any note on the way to Wai-lu-ku is Wai-ka-pu. It contains a population of about 500. Here the forces of Kamehameha the Great once assembled for battle at the sounding of the conch shell. Hence the name, Wai-ka-pu (water of the conch or trumpet)(Bates 1854:309).

Historic Land Use

With the arrival of the missionaries in Hawaii in 1820 every aspect of Hawaiian society was influenced. A Western-style government began to take form. In 1839, Kamehameha III (Kauikeaouli) promulgated a declaration of rights known as Hawaii's Magna Carta and, just a year later, Hawaii's first constitution was written.

The Wailuku District was utilized in historic times for many ventures. These included fishing, cultivation of taro, sweet potatoes, sugar cane, and cattle ranching.

According to Kame'eleihiwa (1992) by the mid-1800s, foreign demand for land was so great and the political power of chiefs so weak that the government privatized land ownership, first by distributing large tracts of lands to chiefs through a process called the Mahele and smaller parcels to *maka`ainana* as Land Commission Awards, and later by sale of mostly small parcels as Royal Patent Grants. Privatization opened the door to the transfer of Hawaiian lands to foreigners.

During the Mahele in 1848, Hawai`i was divided into thirds and distributed in three categories. Under the conditions of the Mahele together with the Kuleana Act of 1850: 24% of lands (1 million acres) went to King Kamehameha III; 39% (1.6 million acres) was divided between 251

chiefs; and 36% (1.9 million acres) was identified as government lands (Farber 1997:21). The amount of lands offered to *ali`i* were determined through genealogical rank.

Under the Land Commission Guidelines, for *Maka`ainana* to claim land, the claimant must have lived on the land before 1839 and could only claim it under cultivation and/or house lot. "At the time, the term *Maka`ainana* included foreigners who had sworn an oath of allegiance to the *Mo`i*" (Kame`eleihiwa 1992:295). According to Pickett, the process was as follows: *Maka`ainana* were required to give statements themselves, as well as submit evidence from witnesses defined as Native and Foreign testimonies. Lands were to be surveyed that were only accomplished by 'qualified' non-native surveyors. *Kanaka Maoli* (full blooded Hawaiians) were expected to pay for their individual surveys. Each claim was issued a Land Commission Award (L.C.A.) number, commutation fees were required, and another number called a Royal Patent (R.P.) was also issued (Pickett 2003).

"In 1848, there were approximately 88,000 Hawaiians, but only 14,195 applications were made...of the 14,195 *kuleana* claims, only 8,421 were actually awarded" (Kame`eleihiwa 1992:295). The *Maka`ainana* received less than 1% of the land.

Within a short time, large tracts of land were turned over to commercial agriculture, primarily sugarcane cultivation.

Countless Native Hawaiians lost their land use rights as a result of the Great Mahele of 1848, with the establishment of a system of private land ownership. Many landless Native Hawaiians signed on as laborers in the emerging sugar industry, which began on Maui in the 1820s.

According to Creed (1993, Vol. I, 1993, p.vii) the Mahele became a significant period because it was the first extensive written record on how land was being, and had been used. And accordingly the majority of LCAs in Waikapū were awarded to Hawaiians.

> There are many indications in the LCAs that Waikapū was well on its path into "foreign" ways, nevertheless indications are still rife that that it is still a thriving traditional community as well. People are still growing hala, raising *wauke* for clothing of tapa (*kapa*), and have small fish ponds, but the most telling traditional feature of the landscape is its taro (Ibid., p.47).

Creed also suggests the possible and the documented site types of Waikapū *ahupua`a.* Creed extracted the previous land use information from the Mahele records. These are: traditional agricultural sites, habitation sites, burials, boundary walls and markers, canoe landings at Ma`alaea, caves, springs and waterways, traditional activity areas, roads, trails, religious structures and areas (Ibid., p.19-21).

Handy and Handy (1972:497) provided descriptions of native Hawaiian planting techniques in Waikapū during the 1930s:

> ...Spreading north and south from the base of Waikapū to a considerable distance below the valley are the vestiges of extensive wet-taro plantings, now almost obliterated by sugar-cane cultivation; a few here and there are preserved in plantation camps and under house and garden sites along the roads. Among these gardens there there were in 1934, a few patches of dry Japanese taro. Far on the north, just above the main road and at least half a mile below the entrance to the main canyon, an extensive truck garden on old terrace ground showed the large area and the distance below and away from the valley that was anciently developed in terraced taro culture. (Handy and Handy, 1972:497)

The traditional waterway of the Kama Ditch, also referred to as *Kamaauwai* ditch or Kama *`auwai* became an issue of great controversy of water rights (Sterling 1998:86). Two ancient *`auwai*, *Kamaauwai* and *Kalaniauwai* and the Wailuku mill water courses were all mentioned by Chief Justice Allen during the water court case in 1967 (Ibid).

The 1867 landmark court case, Peck vs. Bailey, set the precedent for ownership of water rights. Peck (Wailuku Sugar) argued that their water rights were paramount over the rights of Bailey's heirs. The judge ruled, "Each owner held the right to the water used on their portion of land". This decision greatly impacted traditional Hawaiian customs by breaking the traditional connection between the shared use of water and growing taro. Under customary Hawaiian law, the chiefs controlled and parceled out the use of water. Water was one of the most important aspects of traditional law, as Hawaii's staple crop, taro, depended on the stable delivery of water.

By the nineteenth century, however, sugar replaced taro as Hawai`i's dominant crop. This decision made possible the rapid expansion of the sugar industry and the subsequent growth of population in central Maui.

Sugarcane cultivation was introduced to the region in the early historic period by a Spaniard named Antone Catalina, who manufactured cane syrup at Waikapū in 1828, thus establishing the

beginning of the commericial sugar industry in the Wailuku District. Antone Catalina was granted LCA 205, a 13.61 acre parcel in the *ili* of Halipalahalaha in 1846 by Hoapili-wahine (Maui's Governing Chiefess). Catalina along with James Louzada were partners in the Waikapū sugar industry.

James Louzada from Waimea, Hawaii established the Waikapū Sugar Plantation in 1863 and introduced cattle production to the Waikapū area. "Mahele records state that Louzada was allowed to take over *konohiki* land that had not been worked for some time, and turned the taro patches and house in productive and livable condition. For this hard work, the 26 acres of land (LCA 225) were granted to him and his Hawaiian heirs by Puuaphoehoe" (Creed, Vol. II, 1993, p.6 in Fredericksen, 2004).

During the Mahele of 1848-1851, the Wailuku District was declared Crown Lands and numerous Land Commission Awards and Grants were awarded in Waikapū *ahupua`a* (Table 2.)(Fig. 6). According to Wai`hona data base a total of 104 out of 132 claims were awarded in Waikapū.

After the Mahele, government land in Waikapū was put under the Ministry of Instruction. "On November 15, 1875, the secretary of the Board of Education informed the Minister of Public Instruction that he was directing that a royal patent be made (Grant 3152) to Henry Cornwell (Kapu Louzada, the sister of James Louzada married Henry Cornwell), for the remainder of property belonging to the Board of Education, which had been sold to him at auction for $15,050. (Creed, Vol. I, p.68).

In 1889, ½ interest in Waikapū sugar lands was bought by Claus Spreckles. The remaining acres continued to be held y G.W. Macfarlane & Co., the previous partner of Louzada and Catalena in Waikapū Sugar Mill (Fredericksen, 2004:13).

It was at this time that the Spreckels Ditch also referred to as the "Waihee Ditch" was built across the Waikapū *ahupua`a* in order to provide needed water for sugar production (Creed, v. I, p. 68, in Fredericksen, 2004:13).

In 1882, Princess Ruth sold one-half of the Crown Lands of Hawai`i to Claus Spreckels in order to settle her debts with him. Spreckels already held a lease (purchased from Henry Cornwell) for 16,000 acres of Wailuku *ahupua`a* (Waikapū Commons), dating from 1878 (R.P. 3152). Worried

about what Spreckels might do with half of the Crown Lands, King Kalakaua gave him (Grant 3343) in 1882, a 24,000 acre portion of the southeastern section of Wailuku *ahupua`a,* in return for the surrender of his claim Claus Spreckles established the Hawaiian Commercial and Sugar Company 1882. In 1898, control of HC&S passed from Claus Spreckels to that of S.T. Alexander and H.P. Baldwin.

After several changes in ownership the Waikapū Sugar Plantation passed into the control of Wailuku Sugar Company in 1894 (Maui News, February 3, 1926). The present project area was held by the Waikapū Sugar Company, (Grant 3152), that was awarded to H. Cromwell. These lands eventually passed into control of Wailuku Sugar Company.

Another water system utilized in the sugar production is the Kama Ditch system. This system crosses the present project area in the western portion. According to Fredericksen (2004), "this system was probably rebuilt by the Wailuku Sugar Company following their takeover of Waikapū Sugar Company in 1894, and followed an ancient route called *Kamaauawai.*"

Originally, the *Kamaauawai* or Kama Ditch system served mostly *kuleana* lands (Wilcox, 1996, p.125 in Fredericksen, 2004:13). The source of this water system originates in Iao Valley, which lies northwest of the present project area, and travels southeast towards Waikapū Stream. This system became a controversial issue of water rights in the 1867 Peck vs. Bailey case as previously mentioned.

Table I. lists the awarded Land Grant (3152) where the present project area is located and selected LCA claims that are located in close proximity to the present project area. Figure 5 is a map of selected LCA claims in close proximity to the project area.

Table I. LIST OF LCAs AND GRANTS IN WAIKAPŪ (Source: Waihona `Aina Corp. 2004)

NAME	L.C.A.	R.P.	GRANT	COMMENTS	ACREAGE
H. Cornwell			3152	Present project area within awarded land	256.113
Wm. McLane	3201			Land given in 1822 by Puupahoehoe	3.85
Keliolelo	3525			Taro land and houselot	1.77
Wm. Crowningburg	433			Houselot; 14 patches (son-in-law of *konohiki* Puupahoehoe	5.93
C. Louzada / H. Cornwell			2951	No land use indicated	17
Spreckles		3152		Waikapū Commons	16,000

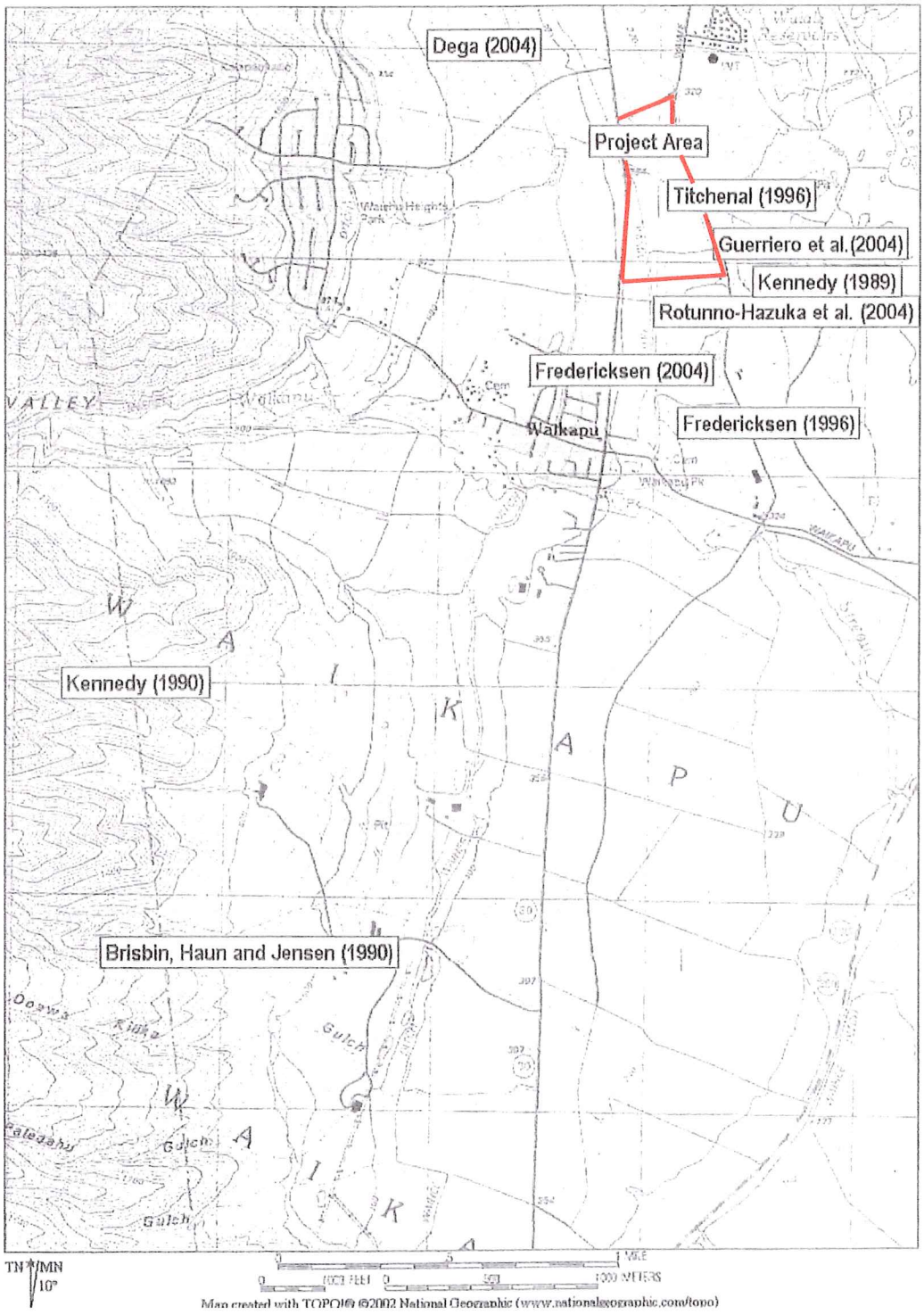

Figure 4. USGS Map Showing Project Area (Red) and Previous Archaeological Studies in Close Proximity to Subject Parcel

PREVIOUS ARCHAEOLOGY

Thomas Thrum and John Stokes explored ancient sacred sites on Maui during the early 1900's. Later, Winslow Walker compiled their information to conduct the earliest island wide archaeological survey where sites were re-visited and documented in a rough draft manual (1931). Thrum's study indicated that there were four *heiau* in the *ahupua`a* of Waikapū. Two *heiau* were reported to be in Waikapū village, located below the road "abreast of T. Everett's", and one below the Catholic Church, which had been both destroyed, and the names forgotten (Thrum, 1909-1918:59, in Creed, vol.I:22). Many ancient sites have been destroyed with the introduction of sugarcane and pineapple cultivation and as well as modern development.

Winslow M. Walker who recorded prominent sites in 1931 for the Bishop Museum, is considered to be another pioneer of early archaeology. Walker reported an unnamed *heiau* and c. 60 petroglyphs on 11 boulders, located 0.25 miles from the village of Maalaea at the base of the foothills of the West Mountains. He also notes an ancient village, with house and shelter sites. During the State wide inventory of historic sites, these were numbered Site 1441 (McGregor Point C-shapes) and Site 1287 (Maalaea Complex). He wrote that along the coast between Ma`alaea and McGregor Point (above the Highway):

> ...at least 45 (shelters) were noted. The shelters are low walled semi-circular of oval enclosures built against some large rock or group of rocks. Shells and pebbles are found around these sites (Walker unpublished)

Also during the State wide inventory near Ma`alaea Bay, in front of what is currently known as "Buzz's Wharf restaurant", Site 1440, a *piko* stone and Site 1286, and a grindstone were recorded.

In 1994, Archaeological Consultants of the Pacific conducted an archaeological inventory survey for the proposed Maui Ocean Center (TMK 3-6-01:1 & 19) at Ma`alaea Harbor (Kennedy 1994). Initially, a surface survey was performed in 1986 and noted one historic property (State Site 50-50-09-1604) the "Ebisu Jinja" fishing shrine. During the subsequent subsurface testing, human burials were identified and designated Sites 50-50-04-3553 and 3554) (Kennedy 1994).

No previous archaeological investigations have been conducted within the subject project area; however, several studies have been conducted in the vicinity (Dega 2004, Donham 1991, 1995; Fredericksen 2004, Kennedy 1988, 1989; Pantaleo 2003, Titchenal 1996).

In 1988, Archaeological Consultants of Hawaii conducted a preliminary archaeological survey of Phase Ia of the Waikapū Master Plan (TMK 3-4-04:25 por.). No surface cultural remains were identified. The entire parcel was previously disturbed by pineapple cultivation. Due to the presence of numerous L.C.A.'s within the project area, subsurface testing was recommended near the eastern boundary of L.C.A. 5280 to determine presence/absence of subsurface cultural remains associated with house clusters that were once located in this area. These house sites may have been associated with high ranking individuals and taro cultivation.

Archaeological subsurface testing was subsequently undertaken at Phase Ia of the Waikapū Master Plan (Kennedy 1989). A total of six backhoe trenches were excavated in the vicinity of the eastern boundary of L.C.A. 5280 (TMK 3-5-02: por.1) . No subsurface cultural remains were encountered in all of the trenches. Kennedy (1989:4) concluded that sugarcane and other recent activities destroyed any subsurface deposits that may have once existed.

Aki Sinoto Consulting (Titchenal 1996) conducted an archaeological inventory survey of the proposed retention basin and adjoining lands in Waikapū and Wailuku *ahupua'a*, Wailuku District, Maui Island (TMK 3-5-01:17, por.: 3-5-02:1, por.), located east of the current project area. No surface cultural remains were located during the surface survey, and no subsurface cultural remains or deposits were identified in the thirteen backhoe trenches excavated in selected localities throughout the project area.

Xamanek Researches (Fredericksen 2004) recently conducted an archaeological inventory survey for the Waikapū affordable housing subdivision (TMK 3-5-02: por. 01 and 3-8-07:101), located adjacent to; south of the present project area. One previously identified historic property was noted during the inventory survey. State Site 50-50-04-5474 consists of a approximate 2000- foot portion of the Kama Ditch and a substantial reservoir (Reservoir No. 6). No other cultural remains were identified during the survey, it was estimated that approximately 40% of the project area was previously impacted by sand mining activities in the last 20 or so years and that much of the remainder of the 100-acre study area was most recently planted in pineapple. Determination by the SHPD architecture branch that sufficient information was collected at Site 5474 Kama

Ditch to document the site and that the proposed demolition of the bulk of Site 5474 for proposed development was approved.

Scientific Consultants (Dega 2004) conducted an archaeological inventory on 348.613-acre parcel in Wailuku near Waikapū, Wailuku *Ahupua`a*, Wailuku District, Maui Island (TMK 3-5-001: por. of 001). Eight historic sites were documented during the survey, two of which were recorded during a previous project. State Site 50-50-04-5473 represents Hopoi Reservoir, this reservoir predates Hopoi Camp and was present at least by 1922. Hopoi camp was not identified during the survey. State Site 50-50-04-5474, the Kama Ditch, was identified east of the Hopoi reservoir running in a north-south direction to Waikapū. State Site 50-50-04-5493 was designated for another unnamed ditch running in a north-south direction occurring along the western flank of the parcel. State Site 50-50-04-5197 represents the Waihe`e Ditch, constructed between 1905 and 1907. The four other sites consist of a combination of historic-modern roadways (Site 5489), a system of smaller historic ditches (Site 5490), a historic artifact scatter on the surface (Site 5491), and several clearing mounds likely created during the plantation era (Site 5492). Twenty-seven subsurface testing trenches revealed homogenous soil matrices across the project area.

SHPD (Donham 1991) conducted a field inspection of the water pipeline easement across Waikapū stream, Waikapū, Maui Island (TMK 3-5-4:14; 3-6-4:2). No surface structural remains were identified in the easement corridor; however, terraces were noted west of the easement and cattle pens and probable former terraces were noted east of the easement. Donham stated that extensive earthmoving activities that previously occurred within the pipeline easement on both sides of the stream destroyed any agricultural features.

SHPD (Donham 1995) conducted a field inspection of the Richardson family in Kukuialamaka, Waikapū, Wailuku District, Maui Island (TMK 3-5-4:22). State site number 50-50-04-4001 was assigned to the cemetery.

The Waikapū sand mining project by Wailuku Agribusiness, Ltd. has also been undergoing archaeological monitoring by Archaeological Services Hawaii, LLC, and Aki Sinoto Consulting since 1999. The project area is located along Waiale Road to the south of the present project area. Scattered human remains were recently found in a previous deposited spoil pile (Rotunno-Hazuka et al., in prep.).

The Ameron sand mining operations located within the Maui Lani acreage (3-6-07: 130 pors), located east of the present project area in the adjoining Wailuku *ahupua`a* has been ongoing since 1990. The Bishop Museum conducted archaeological monitoring from 1990-1992. In 1992, monitoring procedures were undertaken by Aki Sinoto Consulting and Archaeological Services Hawaii, LLC. To date, four area with human remains have been identified. The remains, designated SIHP 50-50-04-5556-Features 1-4, were disturbed prior to sand mining activities (Guerriero 2004).

The Hawaiian Cement sand borrow site, (TMK 3-9-07: 101) located in Wailuku and Waikapū *ahupua`a*, adjoining the Ameron borrow site to the south and southeast, have also been monitored by Archaeological Services Hawaii, LLC, since 1999. To date, remains representing fifty pre-Contact native Hawaiian burials, have been encountered (SIHP 50-50-04-4200, 4201, and 4202). No other cultural remains have been discovered (Rotunno-Hazuka and Pantaleo 2004).

In 1998, Archaeological Consultants of the Pacific, Inc., performed inventory procedures at the above referenced project area. During these procedures, three historic properties were identified which consisted of Native Hawaiian burials (SIHP 4200, 4201) and a three-tier rock terrace (4202). All historic properties were identified in Phase A and consisted of SIHP 4200 (4 individual burial features), and 4201 (solitary individual burial feature) adjacent to Site 4202 (the tiered terrace). Due to these findings, archaeological monitoring was recommended "during initial grubbing and grading as well as the beginning stages of mining (Kennedy and Moore 1999: 39).

Another series of burials was encountered at a sand mining operation located south of the Hawaiian Cement sand burrow site and southeast of the present project area, at the Maui Scrap Metal Company in Waikapū (Fredericksen 1996). Sand from the site transported to Lahaina for use at the Sewer Plant was found to contain human remains. From November 1994 to March of 1995, a mechanical sifter was used to screen the sand and recover the human remains. A minimum of 22 individuals was disturbed during sand mining activities. The origin of the burial site was established and designated (Site 3525).

An archaeological inventory survey was conducted by Aki Sinoto Consulting, in association with Archaeological Services Hawaii for the proposed Village Mixed Use (VMX) Industrial Park, located east and northeast of the project area at TMK 3-8-07:89 and 102 pors. (Sinoto et. al. 2000). No surface cultural materials were identified during the pedestrian survey, and no buried

cultural remains or deposits were recovered in the eight backhoe trenches. The survey also noted that roughly 75% of the surface area had been previously disturbed through vegetation clearing, and mass grading.

SETTLEMENT PATTERN

Early prehistoric settlement in Waikapū *ahupua`a* was situated along the coastal areas where the majority of known *heiau* were situated. Settlements probably concentrated around these religious structures overlooking fishponds, sheltered bays, and other coastal areas rich in marine resources. During the late prehistoric period, populations expanded into the upland valleys of West Maui, including Waikapū and Iao Valley, where irrigated pond fields existed. These upland settlements were characterized as "extensive terrace and pond field agricultural systems with dispersed, rather than centralized, residential structures throughout and on the margins of these agricultural complexes (Titchenal 1996:11).

Archaeological studies and oral traditions suggest that the intermediate areas, such as the Wailuku sand dunes and the open *kula* lands between the Waikapū Stream and Iao Stream Valley, were less desirable areas for traditional habitation. However, recent results of archaeological studies suggest that other activities such as human interment took place in the dune areas. The open *kula* lands although historical impacted from over a hundred year use in sugar cane cultivation may have supported large agricultural dryland taro fields with associated habitation settlements utilizing the traditional watercourse from the *Kamaauwai* (Kama Ditch).

SITE EXPECTABILITY

Due to extensive previous disturbances from sand-mining activities, from sugarcane and pineapple cultivation, and with current active agriculture production, the probability of encountering cultural remains through inventory level testing is low. Based on the results of previous archaeological investigations in the vicinity, and the presence of LCA's in the area, isolated artifacts associated with pre-Contact occupation and buried architecture or cultural layers associated with historic plantation activities and habitation may be present in the project area.

Based on the results of previous and recent archaeological investigations in the vicinity of the Wailuku sand dune areas and the Wailale / Lower Main corridor, the potential for human burials

is present, however the degree of surface alteration in the subject area may minimize the potential for intact remains in primary context.

METHODS

Archaeological and historical background researches were undertaken to determine the nature and extent of potential cultural resources in the project area. A review of previous archaeological investigations in the vicinity was conducted at the State Historic Preservation Division (SHPD) libraries of the Department of Land and Natural Resources (DLNR) at both the Maui and O'ahu offices. Additional references were researched at the Hamilton Library and the Hawaii State Library. Historic land tenure records were researched at the Bureau of Conveyances and Land Management Branch of DLNR, and at the Survey Division of the State Department of Accounting and General Services.

The fieldwork for the current survey was conducted from 5-7, May 2004 by Mr. Paul Titchenal (M.A.), under the supervision of Ms. Diane Guerriero (B.A.), and under the overall direction of Ms. Lisa Rotunno-Hazuka (B.A.) and Principal Investigator, Mr. Jeffrey Pantaleo (M.A.).

The survey entailed initially conducting a pedestrian surface survey of the entire parcel. Since portions of the parcel had been previously disturbed, subsurface testing through backhoe trenching was deemed appropriate. Excavations were conducted by Goodfellow Brothers Inc., utilizing a backhoe with a 2.5 feet wide bucket. The trenches were selectively located to permit a representative sampling of the subject area. A total of twenty-five backhoe trenches were selectively placed in areas that contained no active farming. Trenches ranging in length from 5 to 7 meters. The backhoe excavation was undertaken with the supervision of the archaeologist and terminated when sterile subsoil or bedrock was reached. Representative profiles were recorded and soils were described. Locations of trenches were plotted on a base map provided by the client. Color photographs on 35mm format were taken of project area and trench overviews. During the course of this project, all accepted standard archaeological procedures and practices were followed. Field notes, maps, and photographs, are being curated by Archaeological Services Hawaii, LLC, in Wailuku.

SCOPE OF WORK

Based on DLNR-SHPD rules for inventory survey, the following specific tasks were determined to constitute an appropriate scope of work for the project:

1. Conduct background review and research of existing archaeological and historical documentary literature relating to the project area and its immediate vicinity—including examination of Land Commission Awards, ahupua'a records, historic maps, archival materials, archaeological reports, and other historical sources;

2. Undertake thorough surface examination of the project area to locate all extant surface features;

3. Conduct detailed recording of all potentially significant sites including scaled plan drawings, written descriptions, and photographs, as appropriate; and clear vegetation where needed for adequate visibility;

4. Complete a location map of the project area showing identified surface features;

5. Conduct limited subsurface testing at selected features to determine the presence or absence of potentially significant buried cultural deposits or features, and to obtain suitable samples for radiocarbon age determinations;

6. Conduct processing and analysis of recovered materials, as warranted; and

7. Synthesize data, prepare, and submit a draft report to SHPD for review, and revise and submit final report.

RESULTS OF FIELDWORK

A total of 25 backhoe test trenches were executed at selected localities for subsurface sampling within the two parcels in areas that would not disrupt active farming. Table II presents descriptive summaries of TR1-25. Trenches 1-6, 15, 16, and 23-25 were excavated within the northern parcel, and trenches 7-14 and, 17-22 were excavated in the southern parcel. Test trenching was not conducted within the extreme central portion of the project area, due to dense active farming (Fig. 5). Representative stratigraphic profiles and photographs for TR1-25 are depicted on Figures 7-20. Descriptive summaries for Trenches 1-25 are presented below.

Test trenches were orientated either north-south or east-west and averaged 6.0 meters in length by 2.0 meters in depth, and were placed approximately 100 meters apart. A three layer stratigraphic sequence was identified within the trenches, where Layer I was usually disturbed at least 50 centimeters below surface. Within the south central portion, remnant sand dune matrices were identified along the 350 to 400 foot elevation contour within TR's 10, 17-23 (see Fig. 5). Also noted was the segment of the Kama Ditch, Site 5474 situated within the southwestern portion of the project area and is further discussed at the end of the trench descriptions

Table II. Backhoe Trench Stratigraphic Summary Table TR's 1-10

TRENCH (TR)	LOCATION	ORIENT.	DIMENSION	STRATIGRAPHY	COMMENTS
1	Located in the extreme northwest portion of project area. East of Honoapiilani Highway.	80 / 260 Az.	6.6 m (L) x .80 cm (W) x 1.5 m (H)	Layer I - Fine, Silt; Dark Brown, (10YR3/3); agricultural layer. Layer II - Very Fine, Silt; Dark Grayish Brown (10YR 3/2); Layer III - Fine, Silt; Dark Grayish Brown (!0YR 3/2), colluviial deposited with water affected pebbles, cobbles and small boulders.	Previous surface disturbance with past and present agriculture farming. Level surface area. North Profile. No cultural remains identified.
2	South of TR 1. East of Honoapiilani Highway.	90 / 270 Az.	7 m (L) x .80 m (W) x1.5 m (H)	Layer I - Fine, Silt; Dark Brown, (10YR3/3); agricultural layer. Layer II - Very Fine, Silt; Dark Grayish Brown (10YR 3/2) with gravel inclusions; Layer III - Fine, Silt; Dark Grayish Brwn.(!0YR 3/2), colluviial deposit with water affected pebbles and cobbles.	Previous surface disturbance with past and present agriculture farming. On level surface area. East Profile. No cultural remains identified.
3	Southeast of TR 2 and TR1 . East of Honapiilani Highway.	70 / 250 Az.	5 m (L) x .80m (W) x 1.4 m (H)	Layer I - Fine, Silt; Dark Brown, (10YR3/3); agricultural layer. Layer II - Very Fine, Silt; Dark Grayish Brown (10YR 3/2); Layer III - Fine, Silt; Dark Grayish Brown (!0YR 3/2); gravelly.	Previous surface disturbance with past and present agriculture farming. On slight slope towards east. North Profile. No cultural remains identified.
4	East of TR 3. East of Honapiilani Highway and west of exisiting sugar cane hauling road.	80 / 260 Az.	6.2 m (L) x .80 m (W) x 1.3 - 1.6 m (H)	Layer I - Fine, Silt; with sand inclusions, Dark Brown to Dark Yellowish Brown (10YR 3/3-3/4); agricultural layer. Layer II - Fine, Silt; Dark Brown (10YR 3/3).	Previous surface disturbance with past and present agriculture farming. On level surface area. South Profile. No cultural remains identified.
5	Located in the extreme northeast portion of the project area. North of TR 4 and east of TR-6.	70 / 250 Az.	6 m (L) x .80 m (W) x 1.5 m (H)	Same as TR-4 without sand inclusions identified in TR-4 Layer I.	Previous surface disturbance with past and present agriculture farming. On level surface area. North Profile. No cultural remains identified.
6	Located along the northern project area boundary, west of TR-5 and east of TR-1.	90 / 270 Az.	4.8 m (L) x .80 cm (W) x 1.6 (H)	Same as TR-3	Previous surface disturbance with past and present agriculture farming. On slight slope towards east. South Profile. No cultural remains identified. No cultural remains identified.
7	Located in the extreme southern portion of project area. East of Honoapiilani Highwayand adjacent to; east of the exisiting sewerline easement.	100 / 280 Az.	5.5 m (L) x .80 cm (W) x 1.4 (H)	Layer I - Fine, Silt; with sand inclusions, Dark Brown to Dark Yellowish Brown (10YR 3/3-3/4); agricultural layer. Layer II - Fine, Silt; with sand and gravel inclusion, river bed inclusions noted in North and South Profiles, Dark Brown (10YR 3/3). Layer III - Fine, Silt; Dark Brown to Dark Yellowish Brown (10YR 3/3 - 3/4).	Previous surface disturbance with past sand mining activities and agriculture farming. Historic debris noted within area. Level surface area. South Profile. No cultural remains identified.
8	Located in the extreme southeastern portion of project area. East of Honoapiilani Highway and TR-7	60 / 240 AZ.	5.5 m (L) x .80 cm m (W) x 1.5 m (H)	Layer I - Fine, Silt; with sand inclusions, Dark Brown to Dark Yellowish Brown (10YR 3/3-3/4); agricultural layer. Layer II - Fine, Silt; Dark Brown (10YR 3/3). Layer II same as Layer II with many water affected and sub-angular cobbles and pebbles.	Level ground surface. North Profile. No cultural remains identified.
9	North of TR 8 and west of sugar cane hauling road.	90 / 270 Az.	6 m (L) x .80 cm (W) x 1.5 m (H)	Layer I - mottled Silt; with sand inclusions, Brown (7.5 3/2); agricultural layer. Layer II - remnant Aeolian Sand; (10YR 5/4); Yellowish Brown. Layer II / III - Transitional Layer, Sandy Silt; Brown (10YR 5/3), Layer III - Silt; Dark Brown (10YR 3/3.	Level ground surface in open fallow field of sweet potatoes. South Profile. No cultural remains identified.
10	West of TR 9. Adjacent to; east of the existing sewerline easement.	180 / 360 Az.	6 m (L) x .80cm (W) x 1.5 m (H)	Layer I - Mottled Silty Sand, Very Dark Grayish Brown; (10YR 3/2) with charcaol flecks. Layer II - Sand Silt, Brown to Dark Brown (10YR 5/3-4/3) ; Layer III - Aeolian SandSilt Vry Drk Graysh Brwn (10YR 3/2); Layer IV - Very Fine Grain Sand Pale Brwn (10YR 6/3); Layer V - BOE- Coarse Sand Light Brwn Gray(10YR 6/2).	Previous surface disturbance with past and present agriculture farming. West Profile. No cultural remains identified.
11	East of TR 10. Adjacent to ; east of the existing sewerline easement.	180 / 360 Az.	6 m (L) x .80cm (W) x 1.5 (H)	Layer I - Silty Loam; Very Dark Grayish Brown (10YR 3/2); Layer II - Silt; Dark Brown, (10YR 3/3); Layer III - Silt; Dark Brown (10YR 3/3).	Previous surface disturbance with past and present agriculture farming. Level ground surface area. South Profile. No cultural remains identified.

Table III. (cont) Backhoe Trench Stratigraphic Summary Table TR's 12-25

TRENCH (TR)	LOCATION	ORIENT.	DIMENSION	STRATIGRAPHY	COMMENTS
12	Located in the extreme southeast portion of project area. . Adjacent to ; east of, Honapiilani Highway.	110 / 290 Az.	6 m (L) x .80cm (W) x 1.8 (H)	Layer I - Silty Loam; Very Dark Grayish Brown (10YR 3/2); Layer II - Silt; Dark Brown, (10YR 3/3); Layer III - Silt; Dark Brown (10YR 3/3), with many water affected basalt cobbles and pebbles.	Level ground surface area on upper slope. North Previous surface disturbance with past agricultural farming. North Profile. No cultural remains identified.
13	North of TR. 12. Adjacent to; east of, Honoapiilani Highway.	100 / 280 Az.	5.5 m (L) x .80 cm (W) x 1.8 (H)	Same as TR - 12	Level ground surface area on upper slope. North Previous surface disturbance with past agricultural farming. East Profile. No cultural remains identified.
14	North of TR. 13. Adjacent to;east of, Honoapiilani Highway.	100 / 280 Az.	5 m (L) x .80 cm (W) x 1.7 m (H)	Same as TR - 12, and 13	Level ground surface area on upper slope. North Previous surface disturbance with past agricultural farming. North Profile. No cultural remains identified.
15	North of TR. 14. Adjacent to; east of, Honoapiilani Highway.	100 / 280 Az.	6 m (L) x .80cm (W) x 2 m (H)	Same as TR - 12, 13, 14	Level ground surface area on upper slope. North Previous surface disturbance with past agricultural farming. East Profile. No cultural remains identified.
16	North of TR. 15. Adjacent to; east of, Honoapiilani Highway.	180 / 360 Az.	5 m (L) x .80cm (W) x 1.6 m (H)	Same as TR - 12, 13, 14 and 15	Level ground surface area on upper slope. North Previous surface disturbance with past agricultural farming. Profile. No cultural remains identified.
17	West of TR. 10. Adjacent to; west of, the sewerline easement and east Honoapiilani Highway.	170 / 350 Az.	6 m (L) x .80 cm (W) x 1.7 m (H)	Layer I - Silty Sand, Grayish Brown (10YR 3/4); Layer II - Aeolian Sand, Yellowish Brown (10YR 5/6); Layer III - Silt, Very Dark Brown.	On slope surface area, below a field of agricultural farming of sweet potatoes. East Profile.No cultural remains identified.
18	South of TR.17 and east of TR. 7 Adjacent to; east of, Honoapiilani Highway and the exisiting sewerline..	180 / 360 Az.	5 m (L) x .80 m (W) x 1.8 m (H)	Same as TR - 17 with the exception of a disturbed sand layer below Layer I.	On slope surface area. East Profile. No cultural remains identified.
19	West of TR. 18. and east of TR - 12. Adjacent to; east of the Kama Ditch.	180 / 360 Az.	5 m (L) x .80cm (W) x 2.2 m (H)	Same as TR - 18	Level ground surface on farm access road along upper slope. East Profile. No cultural remains identified.
20	North of TR. 19. Adjacent to; east of the Kama Ditch.	180 / 360 Az.	5.6 m (L) x.80 cm (W) x 2.8 m (H)	Same as TR - 18 and 19.	On slope surface area along upper slope. West Profile. No cultural remains identified.
21	East of 22. Adjacent to; West of the sewerline easement.	120 / 300 Az.	5.5 m (L) x 1.6 m (W) x 2.5 m (H)	Same as TR - 18, 19 and 20.	Level ground surface. West Profile. No cultural remains identified.
22	West of TR. 21. Adjacent to; east of the Kama Ditch.	90 / 270 Az.	6 m (L) x .80 cm (W) x 2.5 m (H)	Same as TR - 18 thru 21	Level ground surface. East Profile. No cultural remains identified.
23	North of TR. 21. Adjacent to; west of the sewerline easement	90 / 270 Az.	6.5 m (L) x .80 cm (W) x 3.5 m (H)	Same as TR - 18 thru 22	Level ground surface. East Profile. No cultural remains identified.
24	Norhtwest of TR. 23. Placed in an open unplanted agricultural field. West of exisiting sewerline easement	180 / 360 Az.	4 m (L) x 2 m (W) x 2 m (H)	Same as TR - 4 and 5	Level ground surface. West Profile. No cultural remains identified.
25	East of TR. 24. Adjacent to; east of exisiting sewerline easement. Placed in a fallow sweet potatoe field.	90 / 270 Az.	4.6 m (L) x 1.2 m (W) x 1.9 m (H)	Same as TR - 4 and 5	Level ground surface. North / northwest Profile. No cultural remains identified.

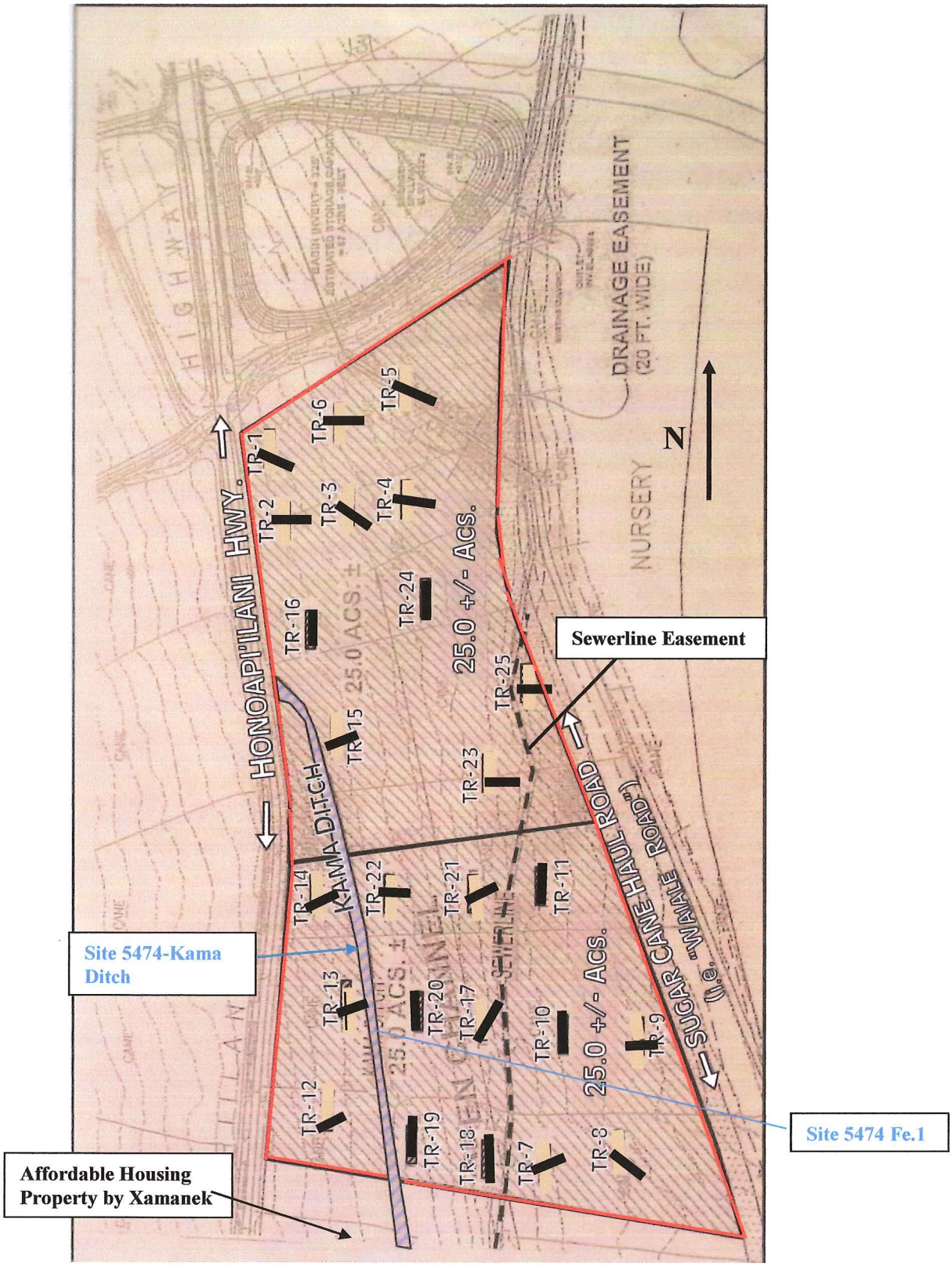

Figure 5. Topographic Map Showing TR's 1-25, Site 50-50-04-5474 and Waiale Housing to South

Backhoe Trench 1 and Backhoe Trench 2

Backhoe Trench 1 (TR1) and Backhoe Trench 2 (TR2), were placed in the northwest portion of the project area, and placed east of Honoapi`ilani Highway (Fig. 5). Trench 1 measured 6.6 m long by .8 m wide and 1.5 m deep, and orientated east / west. Trench 2 was placed c. 100 m south of Trench 1, measured 7.0 m long by .8 m wide and 1.5 m deep, and orientated east / west. Layer I in both trenches contained the plow zone with evidence of past and recent agricultural disturbance. Three stratigraphic layers were revealed in TR1 and TR2 (Fig.7).

> **Layer I** contained the plow zone, was a dark brown (10YR 3/3), fine silty loam, and contained a high content of rootlets. It ranged from 0/40-50 cmbs, and was non-cultural. Layer I was found directly overlying Layer II, and had an abrupt, smooth lower boundary.
>
> **Layer II** was a dark grayish brown (10YR 3/2), very fine silt, with gravel inclusions. Layer II ranged from .4-.5 / 1.0-1.5 mbs directly overlying Layer III and had an abrupt, smooth lower boundary.
>
> **Layer III** was a dark grayish brown (10YR 3/2), very fine silt, with colluvial deposited water affected pebbles, cobbles and small boulders; and was non-cultural. Layer III ranged from 1.0 / 1.5 mbs. BOE was terminated at eroding bedrock.

Backhoe Trench 3

Backhoe Trench 3 (TR3), was placed centrally in the northwest portion of the project area, and placed c. 100 m east of Trench 2 and Honoapi`ilani Highway. Trench 3 measured 5.0 m long by .8 m wide and 1.4 m deep, and orientated east / west on a slight slope towards the east. Layer I contained the plow zone with evidence of past and recent agricultural disturbance. Three stratigraphic layers were revealed in TR3 (Fig. 6).

> **Layer I** contained the plow zone, was a dark brown (10YR 3/3), fine silty loam, and contained a high content of rootlets. It ranged from 0/40-50 cmbs, and was non-cultural. Layer I was found directly overlying Layer II, and had an abrupt, smooth lower boundary.
>
> **Layer II** was a dark grayish brown (10YR 3/2), very fine silt. Layer II ranged from .4-.5 / 1.3 mbs directly overlying Layer III and had an abrupt, smooth lower boundary.
>
> **Layer III** was a dark grayish brown (10YR 3/2), very fine gravelly silt; and was non-cultural. Layer III ranged from 1.0 / 1.4 mbs. BOE was terminated at eroding bedrock.

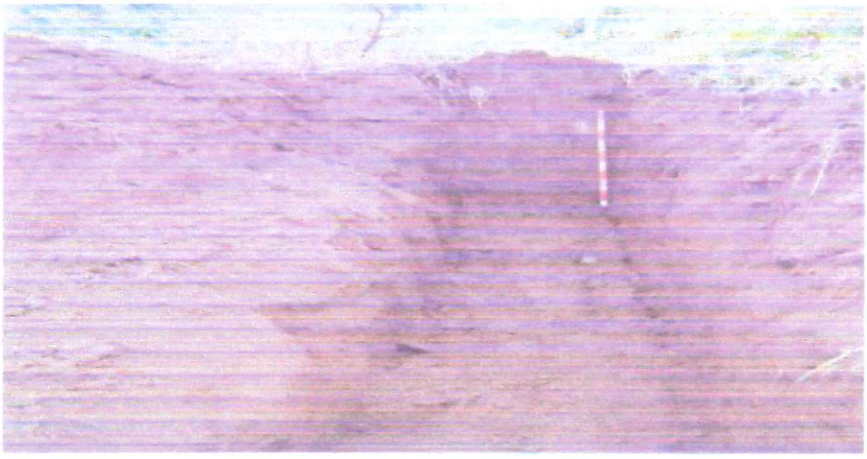

Figure 6. Overview of Trench 3, View to West

Backhoe Trench 4

Backhoe Trench 4 (TR4), was placed in the northwest portion of the project area along the lower slope, and placed c. 100 m east of Trench 3. Trench 4 measured 6.2 m long by .8 m wide and 1.3 – 1.6 m deep, and orientated east / west on a slight slope towards the east. Layer I contained the plow zone with evidence of past and recent agricultural disturbance. Two stratigraphic layers were revealed in TR4 (Fig. 7).

> **Layer I** contained the plow zone, was a dark brown to dark yellowish brown (10YR 3/3-3/4), fine silty loam with sand inclusions, contained a high content of rootlets and scattered pieces of cement. It ranged from 0/-50 cmbs, and was non-cultural. Layer I was found directly overlying Layer II, and had an abrupt, smooth lower boundary.
>
> **Layer II** was a dark brown (10YR 3/2), homogenous fine silt. Layer II ranged from .5 / 1.6 mbs and was non-cultural. BOE was terminated in sterile subsoil.

Backhoe Trench 5

Backhoe Trench 5 (TR5), was placed in the northeast portion of the project area along the lower slope, and placed c. 100 m east of Trench 4. Trench 5 measured 6.2 m long by .8 m wide and 1.5 deep, and orientated east/west on a slight slope towards the east. Layer I contained the plow zone with evidence of past and recent agricultural disturbance, fallow vegetables and fruit were noted in the area. Two stratigraphic layers were revealed in TR5 same as Trench 4 (Fig. 8).

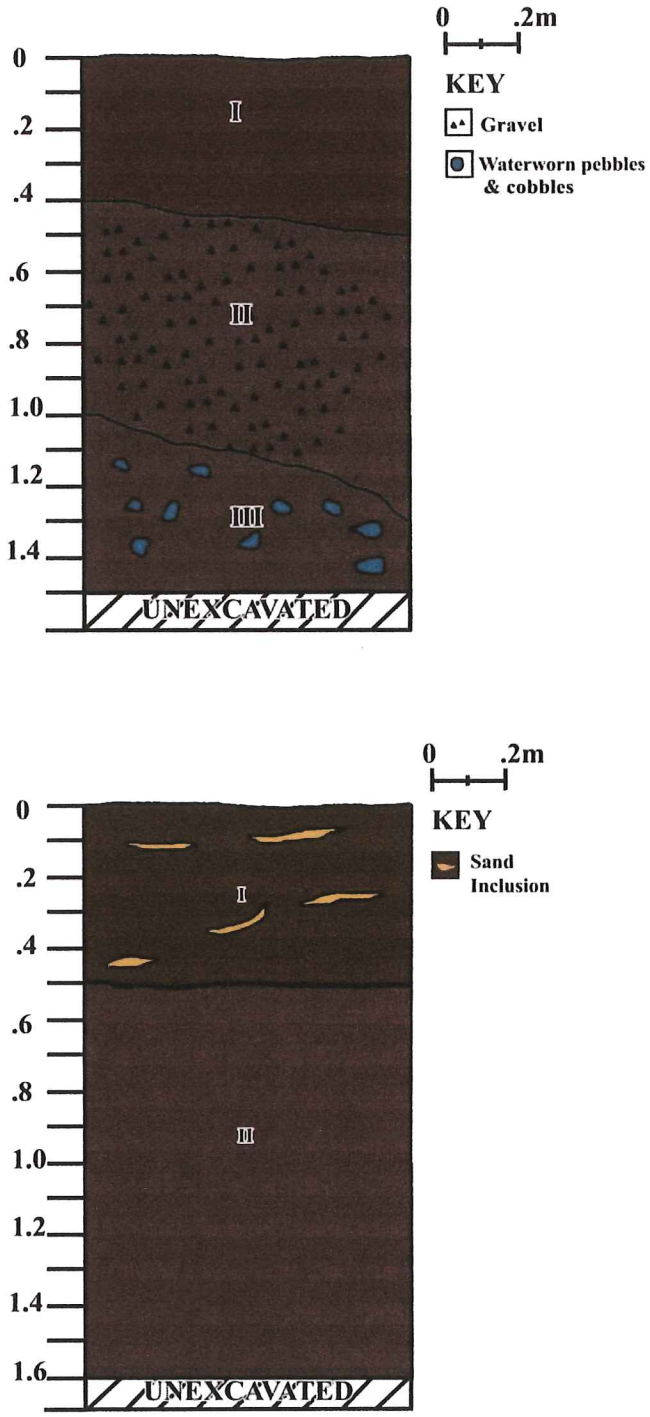

Figure 7. Representative Stratigraphic Profiles for Trenches 1-5, (top) TR2 North Wall (bottom) TR4 South Wall

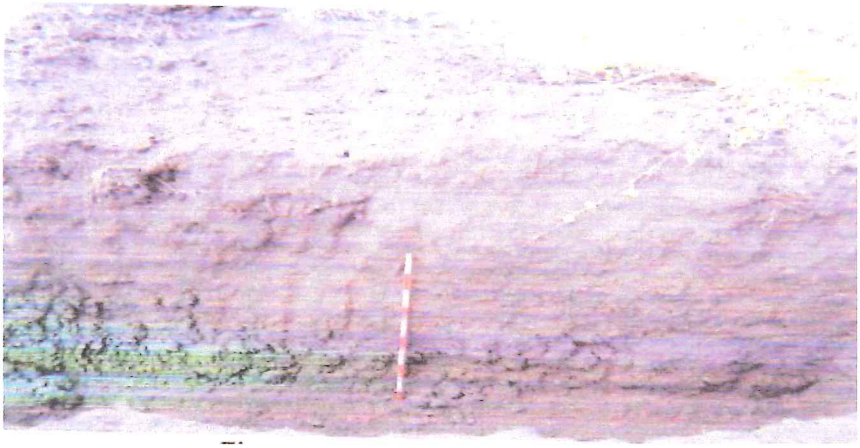

Figure 8. Trench 5, View to North

Backhoe Trench 6

Backhoe Trench 6 (TR6), was placed along the northern boundary of the project area, situated centrally along a slight slope to the east, and placed c. 100 m east of Trench 1 and c. 100 m north of Trench 3. Trench 6 measured 4.8 m long by .8 m wide and 1.6 deep, and orientated east / west. Layer I contained the plow zone with evidence of past and recent agricultural disturbance, fallow vegetables and fruit were noted in the area. Three stratigraphic layers were revealed in TR6 same as Trench 3.

Backhoe Trench 7

Backhoe Trench 7 (TR7), was placed in the southeast portion of the project area, along the southern boundary, east of the existing sewerline easement in an area previously sand mined. Trench 7 measured 5.5 m long by .8 m wide and 1.4 deep, and orientated east / west. Surface area was relatively flat with scattered modern historic debris. Three stratigraphic layers were revealed in TR7, and a concentration of riverbed pebbles and cobbles were noted in the north face (Fig. 11).

> **Layer I** was a dark brown to dark yellowish brown (10YR 3/4), silt with sand inclusions, and contained a high content of rootlets. It ranged from 0/45 cmbs, and was non-cultural. Layer I was found directly overlying Layer II, and had an abrupt, smooth lower boundary.
>
> **Layer II** was a dark brown (10YR 3/3), fine silt, with sand and gravel inclusions Layer II ranged from .45 / 1.25 mbs directly overlying Layer III and had an abrupt, smooth lower boundary.
>
> **Layer III** was a dark brown to dark yellowish brown (10YR 3/3-3/4), homogenous fine silt; and was non-cultural. Layer III ranged from 1.25 / 1.4 mbs. BOE was terminated in sterile subsoil.

Backhoe Trench 8

Backhoe Trench 8 (TR8), was placed in the southeast portion of the project area, along the southern boundary, east of the existing sewerline easement, and east of TR7, in an area previously sand mined. Trench 8 measured 5.5 m long by .8 m wide and 1.5 m deep, and orientated east / west. Surface area was relatively flat with scattered modern historic debris. Three stratigraphic layers were revealed in TR8 (Fig. 9).

Layer I was a dark brown to dark yellowish brown (10YR 3/4), mottled silty sand with sand inclusions, and contained a high content of rootlets. It ranged from 0 / 50 cmbs, and was non-cultural. Layer I was found directly overlying Layer II, and had an abrupt, smooth lower boundary.

Layer II was a dark brown (10YR 3/3), fine silt, Layer II ranged from .50 / 1.0 mbs directly overlying Layer III and had an abrupt, smooth lower boundary.

Layer III was a dark brown (10YR 3/3), fine silt; with subangular and water affected cobbles and was non-cultural. Layer III ranged from 1.0 / 1.5 mbs. BOE was terminated in sterile subsoil.

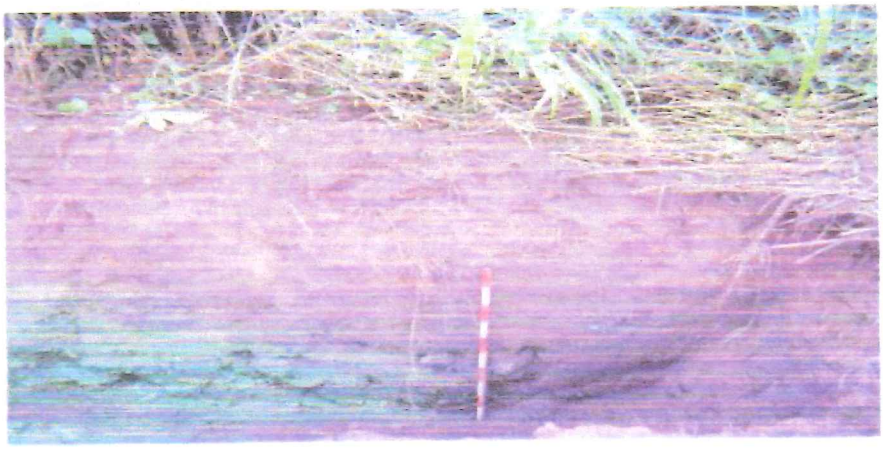

Figure 9. Trench 8, View to North

Backhoe Trench 9

Backhoe Trench 9 (TR9), was placed in the southeast portion of the project area, along the southern boundary, east of the existing sewerline easement, and north of TR8 and the cane road (Waiale Road), in an area previously used for sweet potato cultivation. Trench 9 measured 6 m long by .8 m wide and 1.5 m deep, and orientated east / west. Surface area was relatively flat with fallow sweet potato vines. Four stratigraphic layers were revealed in TR9 (Fig. 10 and 11).

Layer I was a brown (7.5YR 3/2), mottled silty sand with sand inclusions, and contained a high content of sweet potato rootlets. It ranged from 0 /40-50 cmbs, and was non-cultural. Layer I was found directly overlying Layer II, and had a wavy, smooth lower boundary.
Layer II was a pale brown, brown (10YR 6/3-5/3), sand, Layer II ranged from .40-.50 / .70 cmbs, was found directly overlying Layer III and had a wavy, smooth lower boundary.
Layer III was a dark brown (10YR 3/3), fine silt; cultural. Layer III ranged from .40 / 1.5 mbs. BOE was terminated in Layer IV lithified sand.

Figure 10. Trench 9, View to South

Backhoe Trench 10

Backhoe Trench 10 (TR10), was placed in the southeast portion of the project area, along the southern boundary, east of the existing sewerline easement, and west of Trench 9 and the cane road (Waiale Road), in an area previously used for sweet potato cultivation. Trench 10 measured 6 m long by .8 m wide and 1.5 m deep, and orientated north / south. Surface area was relatively flat with fallow sweet potato vines. Five stratigraphic layers were revealed in TR10.

Layer I was a very dark grayish brown (10YR 3/2), mottled silty sand with charcoal flecks, irrigation driplines and contained a high content of sweet potato rootlets. It ranged from 0 / 50-80 cmbs, and was non-cultural. Layer I was found directly overlying Layer II, and had a wavy, smooth lower boundary.
Layer II was a brown to dark brown (10YR 5/3-4/3), sandy silt, Layer II ranged from .50-.80 / 1.0 mbs directly overlying Layer III and had an abrupt, smooth lower boundary.
Layer III was a pale brown, (10YR 6/3), fine grain sand; and was non-cultural. Layer III ranged from 1.0 / 1.2mbs and had an abrupt, smooth lower boundary.
Layer IV was a very dark grayish brown, (10YR 3/2), silt; and was non-cultural. Layer IV ranged from 1.2 / 1.3 mbs. Abrupt, smooth boundary.
Layer V was a light brown grey, (10YR 6/2), coarse lithified sand; non-cultural. Layer V from 1.3 / 1.5 mbs. BOE was terminated lithified sand.

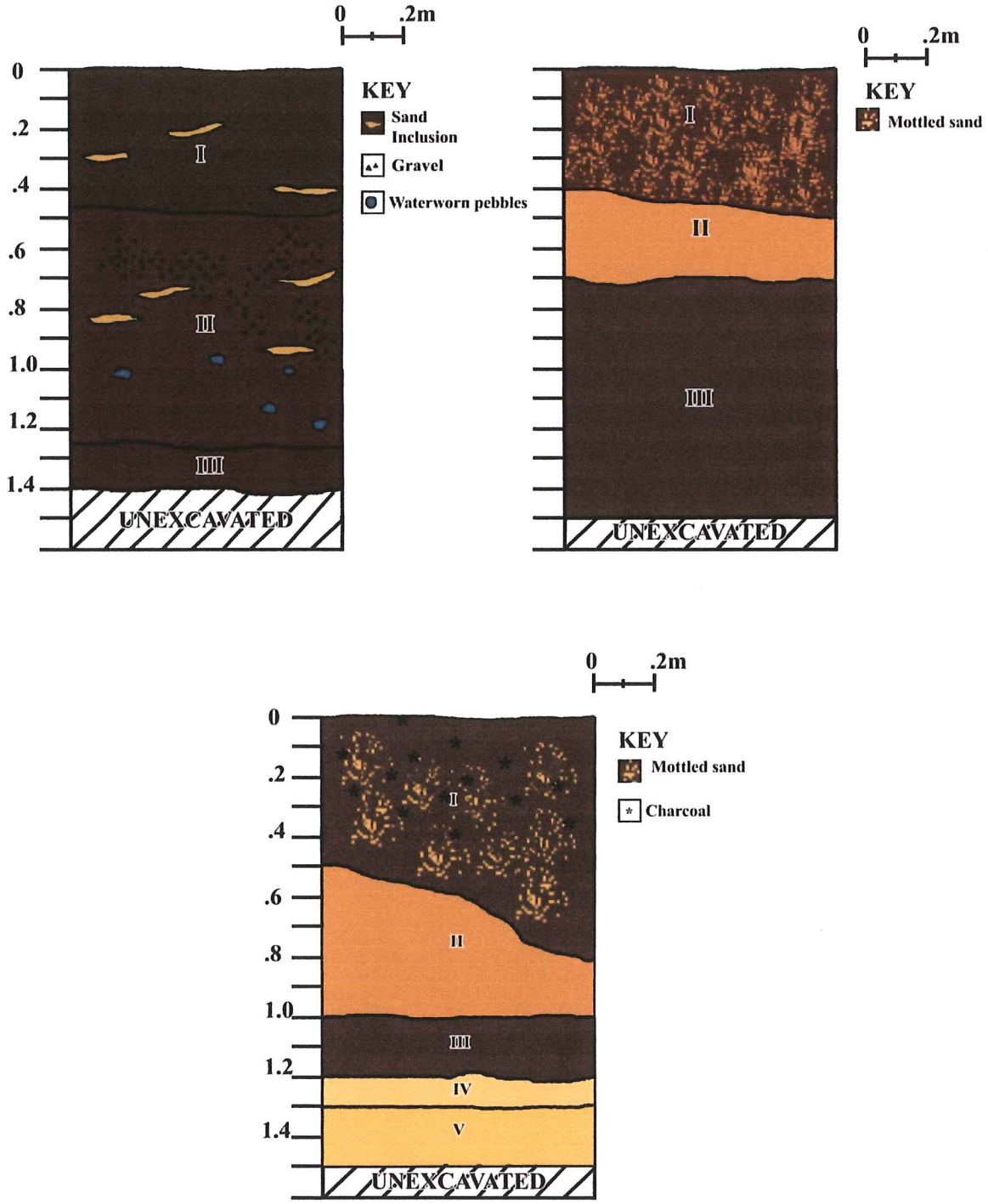

Figure 11. Representative Stratigraphic Profiles for Trenches 6 through 10, (top left) TR7 South Wall, (top right) TR9 South Wall and (bottom) TR10 West Wall

Backhoe Trench 11

Backhoe Trench 11 (TR11), was placed in the southeast portion of the project area, along the southern boundary, east of; adjacent to, the existing sewerline easement, and north of Trench 10 and south of a farming access road, in an area previously used for sweet potato cultivation. Trench 11 measured 6 m long by .8 m wide and 1.5 m deep, and orientated north / south. Surface area was relatively flat with fallow sweet potato vines. Three stratigraphic layers were revealed in TR11 (Figs. 11 and 13).

> **Layer I** was a very dark grayish brown (10YR 3/2), silty loam, and contained a high content of sweet potato rootlets. It ranged from 0 / 40 cmbs, and was non-cultural. Layer I was found directly overlying Layer II, and had an abrupt, smooth lower boundary.
> **Layer II** was a dark brown (10YR 5/3-4/3), silt, Layer II ranged from .40 / 1.2 mbs directly overlying Layer III and had an abrupt, smooth lower boundary.
> **Layer III** was a dark brown, (10YR 3/3), silt; and was non-cultural. Layer IV ranged from 1.2 / 1.5 mbs. BOE was terminated in sterile subsoil.

Backhoe Trenches 12 through 14

These three trenches were placed west of the Kama Ditch (Site5474), in the southwestern portion of the project area, east of Honoapi`ilani Highway, and excavated in the abandoned pineapple fields. All three trenches contained the plow zone – Layer I and all revealed a three layer substratum (Figs. 12 and 13).

> **Layer I** was a very dark grayish brown (10YR 3/2), silt; with scattered subangular cobbles. It ranged from 0 / 80 cmbs directly overlying Layer II and had an abrupt lower boundary.
>
> **Layer II** was a dark brown (10YR 3/3), silt. It ranged from .80 / 1.5 directly overlying Layer III and had an abrupt lower boundary
>
> **Layer III** was a dark brown (10YR 3/3), silt with many water affected cobbles and pebbles. 1.50 to 1.80 mbs. BOE was terminated in sterile subsoil.

Figure 12. Trench 14, View to North

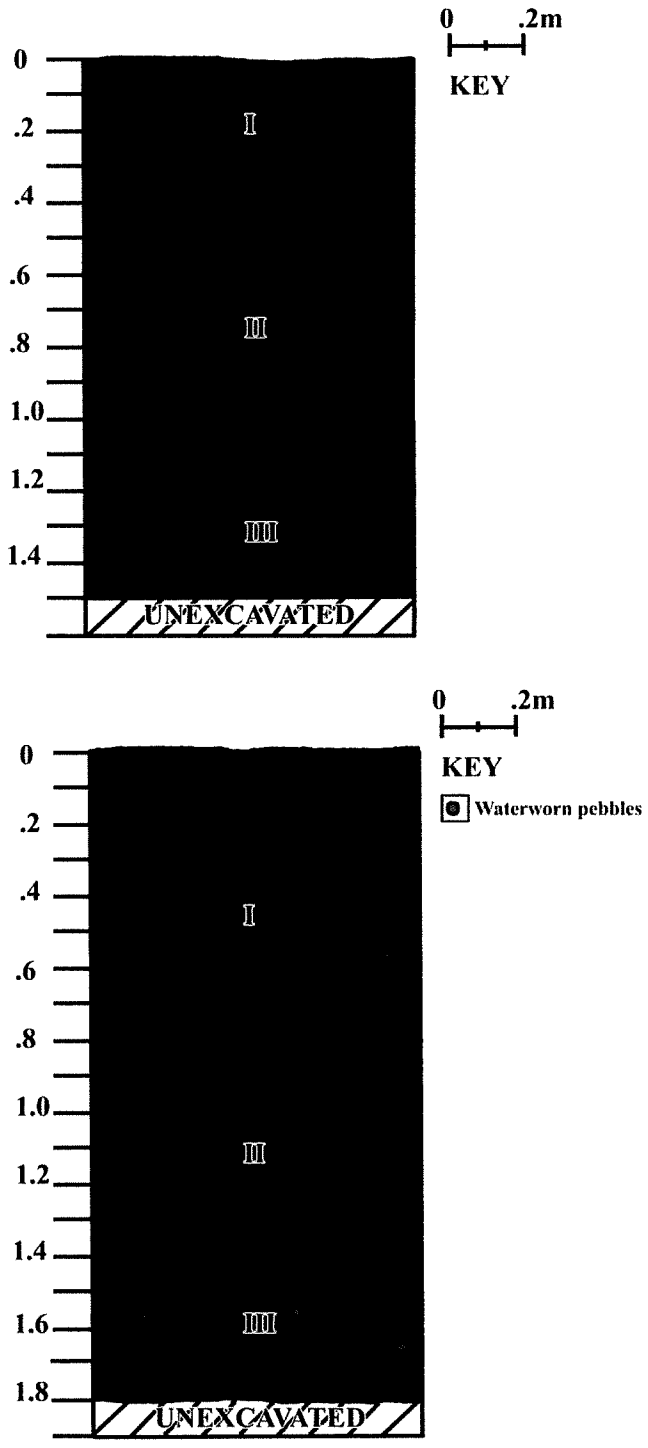

Figure 13. Representative Stratigraphic Profiles for Trenches 11-15 (top) TR11 South Wall and (bottom) TR12 North Wall

Backhoe Trenches 15 and 16

These two trenches were placed east of the Kama Ditch (Site5474), in the western portion of the project area, east of Honoapi`ilani Highway, and excavated in the abandoned pineapple fields. Both of these trenches contained the plow zone – Layer I, and all revealed a three layer substratum such as identified in Trenches 12 through 14.

Backhoe Trench 17

Backhoe Trench 17 (TR17), was placed centrally in the south portion of the project area, along the southern boundary, west of; adjacent to, the existing sewerline easement, and east of the Kama Ditch (Site 5474), along a farming access road, in an area used for active sweet potato cultivation. Trench 17 measured 6 m long by .8 m wide and 1.65 m deep, and was orientated north / south. Surface area was on a slight slope towards the east. Three stratigraphic layers were revealed in TR17 (Figs. 14 and 16).

Layer I was a grayish brown (10YR 3/4), mottled silty sand with sand inclusions, and contained a high content of sweet potato rootlets. It ranged from 0 / 40-50 cmbs, and was non-cultural. Layer I was found directly overlying Layer II, and had an abrupt, smooth lower boundary.

Layer II was a yellowish brown, (10YR 5/6), Aeolian sand, Layer II ranged from .40-50 / 1.0 mbs, was non-cultural. Layer II was found directly overlying Layer III and had an abrupt, smooth lower boundary.

Layer III was a very dark brown (10YR 2/2), silt; was non-cultural. Layer III ranged from 1.0 / 1.65 mbs. BOE was terminated in Layer IV lithified sand.

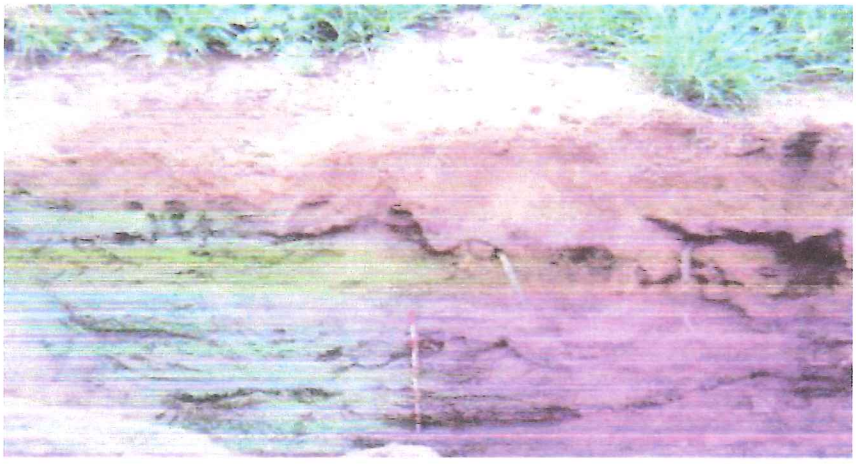

Figure 14. Trench 17, View to East

Backhoe Trench 18

Backhoe Trench 18 (TR18), was placed centrally in the south portion of the project area, along the southern boundary, west of; adjacent to, the existing sewerline easement, and east of the

Kama Ditch (Site 5474), along a farming access road, in an area used for active sweet potato cultivation. Trench 18 measured 5 m long by .8 m wide and 1.8 m deep, and was orientated north / south. Surface area was on a slight slope towards the east. Three stratigraphic layers were revealed similar to TR's 17, 19-22 with the exception of a disturbed sand layer with lithified dune inclusions located below Layer I and above the original dune layer of layer III (Fig. 16).

Backhoe Trench 19

Backhoe Trench 19 (TR19), was placed along the southern boundary of the project area, west of the existing sewerline easement, and east of; adjacent to; the Kama Ditch (Site 5474), along a farming access road, in an area used for active sweet potato cultivation. Trench 19 measured 5 m long by .8 m wide and 2.2 m deep, and was orientated north / south. Surface area was on a level roadbed. Three stratigraphic layers were revealed in TR19 similar to TR17 through TR 22.

Backhoe Trench 20

Backhoe Trench 20 (TR20), was placed in the southern portion of the project area, approximately 50 m north of TR19, west of the existing sewerline easement, and adjacent, east to Kama Ditch (Site 5474), along a farming access road, in an area used for active sweet potato cultivation. TR20 measured 5.5 m long (N/S) by .8m wide by 2.8m deep. Surface area was on a level roadbed. Three stratigraphic layers similar to TR's 17 through 22 were documented and culturally sterile (Fig. 15).

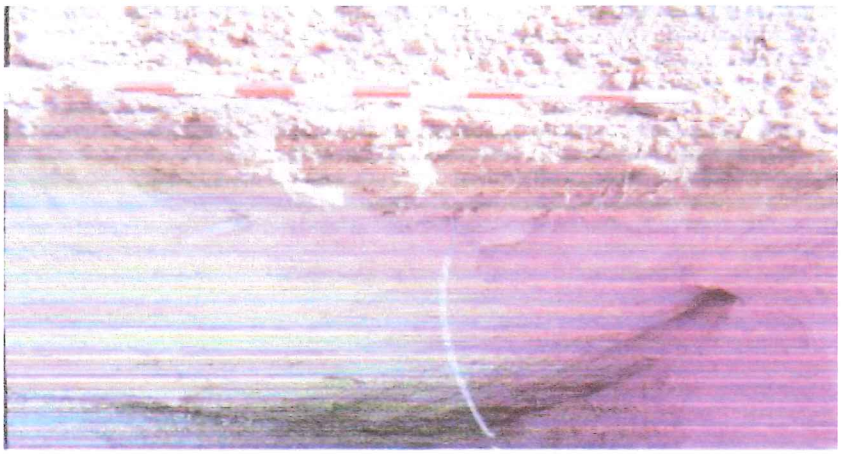

Figure 15. Trench 20, View to West

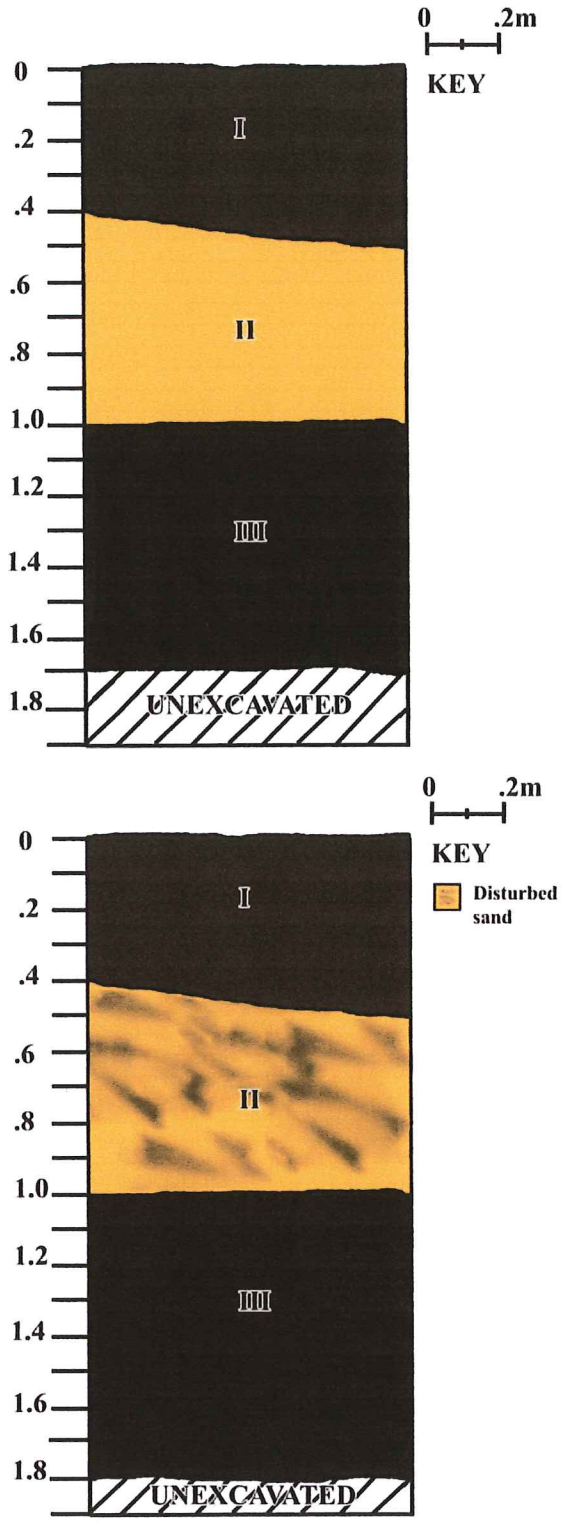

Figure 16. Representative Stratigraphic Profiles for Trenches 16 through 20, (top) TR17 East Wall, (bottom) TR18 East Wall

Backhoe Trench 21

Backhoe Trench 21 (TR21), was placed in the southern portion of the project area, approximately 100m west of TR19, west of the existing sewerline easement, east of Kama Ditch (Site 5474), along an access road, mid-slope in an area of active sweet potato at the base of a lithified dune. TR21 measured 6 m long by .8 m wide by 2.5 m deep, oriented north/south. The surface area was on a slight slope towards the east. Three stratigraphic layers similar to TR's 17-20 and 22 were documented and negative for cultural remains (Fig. 17).

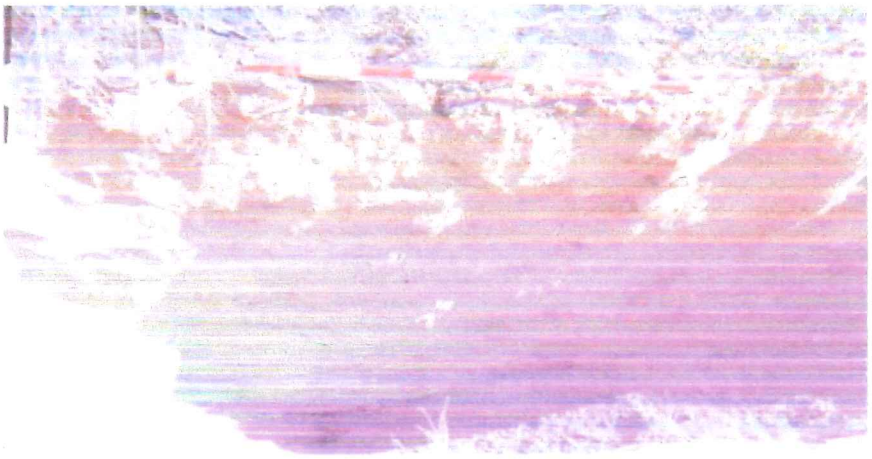

Figure 17. Trench 21, View to North

Backhoe Trench 22

Backhoe Trench 22 (TR22), was situated in the southern portion, approximately 50 m west of TR21, west of the existing sewerline easement, and adjacent and east of Kama Ditch (Site 5474), along the access road and in the active sweet potato area. Trench 22 measured 5 m long by .8 m wide and 2.5 m deep, and oriented north/south. Surface area was a level road bed. Three stratigraphic layers similar to TR's 17-21 were documented.

Backhoe Trench 23

Backhoe Trench 23 (TR23) was placed along the same elevation contour as Trenches 17, 18, and 21, in the central portion of the project area, located west of the existing sewer easement. Backhoe Trench 23 (TR23), measured 6.5 m long by .8 m wide and 2.5 deep. A two stratigraphic sequence was revealed in Trench 23, the same Layer I and Layer II as found in TR's 17 through 22 (Figs. 18 and 19). BOE was terminated in sterile substratum Layer II (Aeolian dune).

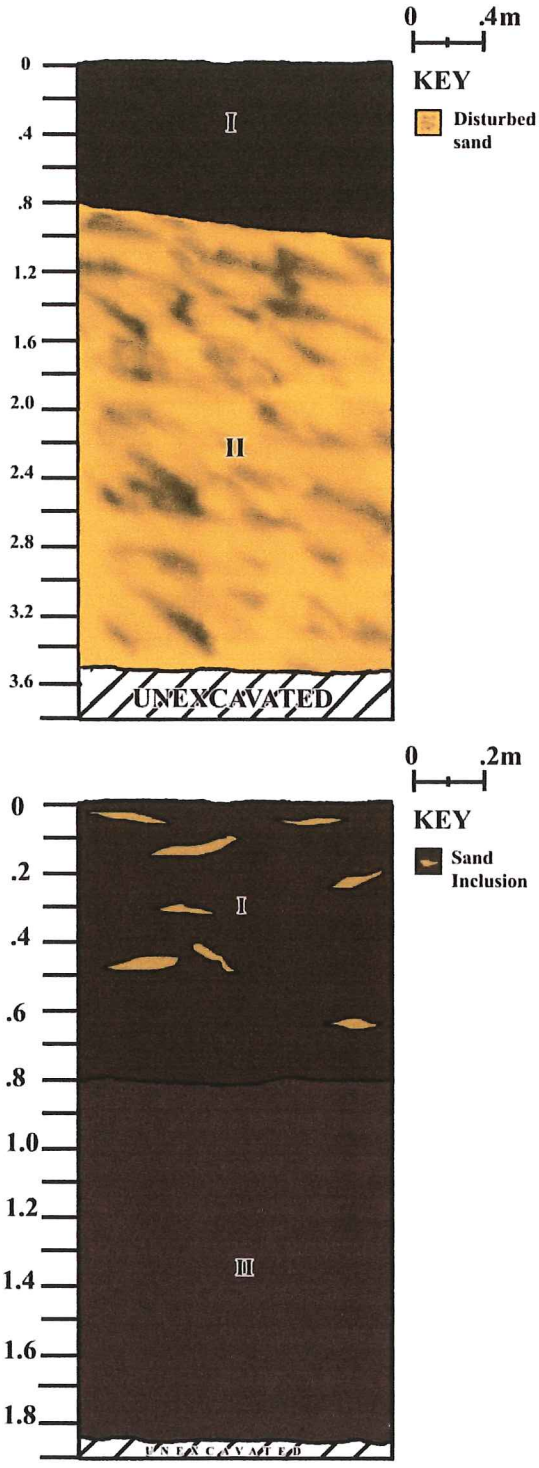

Figure 18. Representative Stratigraphic Profiles for Trenches 21-25 (top) TR23 East Wall (bottom) TR25 North Wall

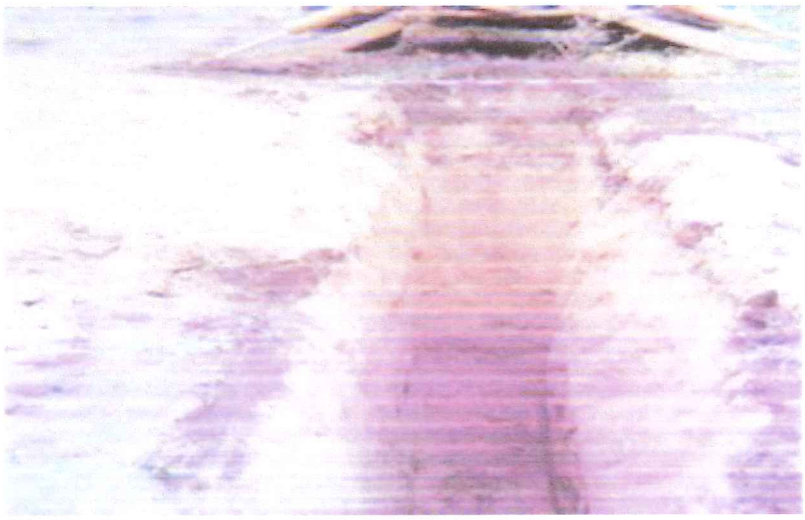

Figure 19. Trench 23, View to East

Backhoe Trench 24

Backhoe Trench 24 (TR24) was placed along the same elevation contour as Trenches 4, and 5, in the central portion of the project area, in an open, recently tilled, unplanted agricultural field, located west of the existing sewer easement. Backhoe Trench 24 (TR24), measured 4 m long by .8 m wide and 2 m deep. The same three stratigraphic sequence was revealed in Trench 24, as those found in Trenches 4 and 5. BOE was terminated in sterile substratum.

Backhoe Trench 25

Backhoe Trench 25 (TR25) was placed in the central portion of the project area, in an open, fallow sweet potato agricultural field, located east of; adjacent to, the existing sewer easement. Backhoe Trench 25 (TR25), measured 4.6 m long by 1.2 m wide and 1.9 m deep. The same three stratigraphic sequence was revealed in Trench 24, as those found in Trench 9 (Fig. 20). BOE was terminated in sterile substratum.

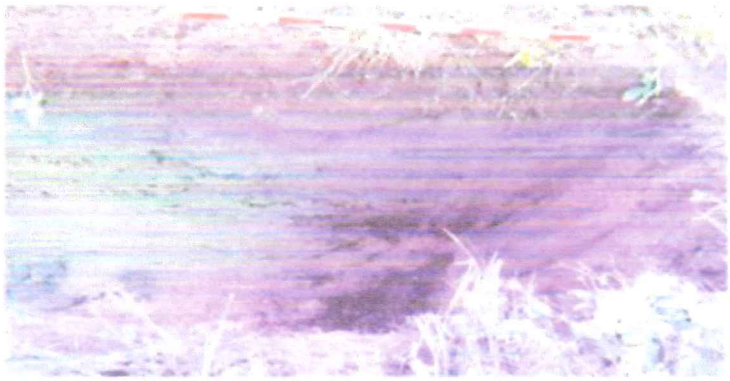

Figure 20. Trench 25, View to East

SITE 50-50-04-5474

Results of the current investigation identified a segment of historic property State Site 50-50-04-5474, the Kama Ditch, as well as a metal sluice gate designated Feature 1 (see Fig. 1). The ditch was constructed around 1905-1907 and similar to other ditches, Waihe`e, Spreckels and etc., as well as reservoirs provided water to the sugarcane and subsequent pineapple fields. It is estimated that Site 5474 was abandoned approximately 30 years ago.

This system crosses the present project area in the southwestern portion. According to Fredericksen (2004), "this system was probably rebuilt by the Wailuku Sugar Company, following their takeover of Waikapū Sugar Company in 1894, and followed an ancient route called *Kamaauawai*."

Originally the (*Kamaauawai*), Kama Ditch system served mostly *kuleana* lands (Wilcox, 1996, p.125 in Fredericksen, 2004:13). The source of this water system originates in Iao Valley, which lies northwest of the present project area, and travels southeast towards Reservoir #6 in the adjoining parcel to the south. This system became a controversial issue of water rights in the 1867 Peck vs. Bailey case as previously mentioned in the historical summary.

The condition of Site 5474 ranges from good to poor, and is either a dirt lined ditch or concrete lined; however the overwhelming majority is either pushed up or removed by prior grading, or infilled with vegetation and or soil (Figs. 21-23). The concrete lined portion when extant is only present along the east side. It averages 2.80 m wide by 0.60 m (top of silt) to 1.5 m deep. A metal sluice gate, designated Feature 1 was noted along the eastern side of the ditch approximately 60 m north of the southern boundary. The sluice gate is constructed of sheet metal and measures 0.43 m to 1.0 m long by 0.58 m wide by 0.04 m thick. When Feature 1 is opened, water would overflow and irrigate the fields below or *makai*. Unfortunately, Site 5474 has been severely damaged through prior grubbing and grading activities of the former cultivated fields and natural erosional forces. Site 5474 has been adequately documented at the inventory level and requires no further work beyond construction monitoring during removal.

Figure 21. Photograph of Site 5474 Kama Ditch (View to North)

Figure 22. Overview Photograph of Project Area and Site 5474 (Kama Ditch) Feature 1 (Sluice Gate) along Southwest Side (View to South)

Figure 23. Photograph of Site 5474 Feature 1 Metal Sluice Gate of Kama Ditch-Note infill of Silt (View to East)

INITIAL SIGNIFICANCE EVALUATION

The following significance evaluations are based on the Rules Governing Procedures for Historic Preservation Review (DLNR 1996; Chapter 275). According to these rules, a site must possess integrity of a location, design, setting, materials, workmanship, feeling and association and shall meet one or more of the following criteria:

> **Criterion "a":** Be associated with events that have made an important contribution to the broad patterns of our history;
>
> **Criterion "b":** Be associated with the lives of persons important in our past;
>
> **Criterion "c":** Embody the distinctive characteristics of a type, period, or method of construction; represent the work of a master; or possess high artistic value;
>
> **Criterion "d":** Have yielded, or is likely to yield, important information for research on prehistory or history;
>
> **Criterion "e":** Have an important traditional cultural value to the native Hawaiian people or to another ethnic group of the state due to associations with traditional cultural practices once carried out, or still carried out, at the property of due to associations with traditional beliefs, events or oral accounts.

State Site 50-50-04-5474 is considered to be significant under Criterion "a" and Criterion "d" of the Hawaii Register of Historic Places. Criterion "a" has been assigned based on its association with the Sugar Plantation and Pineapple industry. The sugar industry had significant impacts and contributions to the island for over a century. Criterion "d" is based on the fact that the ditch has yielded important information to the understanding of the pre-history and history of the Wailuku and Waikapū *ahupua`a*.

DISCUSSION

Archaeological Inventory Survey (AIS) procedures comprised of a pedestrian survey and subsurface testing through mechanical excavations was undertaken within the approximate 50-acre project area. A total of 25 backhoe trenches, negative for buried cultural remains, were executed during the current AIS procedures. During the pedestrian survey, a disturbed segment of the Kama Ditch (Site 50-50-04-5474) and an associated sluice gate, Feature 1, was documented in fair to poor condition within the southwestern portion of the project area and evaluated as significant under Criteria A and D. Site 5474, along with numerous ditches and reservoirs constructed during the Plantation Era have greatly contributed to, and impacted the cultural landscape during the historic period. Site 5474 ditch continues to the north and south outside the subject parcel. To the south, outside the project area, a 1000 ft. section of Site 5474 was slated for removal within the proposed affordable subdivision by Spencer Homes at TMK's 3-5-002:001 pors. and 3-8-007: 101 pors.(Fredericksen and Fredericksen 2004). During the review process for the southern subdivision, the SHPD Architecture Branch determined that sufficient information was collected at Site 5474 and the proposed demolition was approved. Similar to the above situation, the section of Site 5474 within the current project area shall be removed during proposed development.

No other significant surface or subsurface cultural remains were encountered during the inventory survey. The project area has undergone extensive compounded disturbances from sugar cane cultivation, a sewer line easement, farming plots and sand mining activities. The backhoe testing and pedestrian survey exemplified that the entire surface consisted of the agricultural till zone designated as Layer I. The central section of the southern half, primarily in between the sewer line easement and the Kama Ditch, contains disturbed and un-disturbed sand within TR's 10, 17 through 23. The remaining two-thirds contained a cobbly, silt including the sections along Honoapi'ilani Highway, and a silty sand along Waiale Road. Stratigraphic analysis revealed a primarily three layer sequence consisting of silty matrices, Aeolian and lithified sand layers overlying an alluvium base.

The results of the current investigations produced no evidence for sedentary cultural activities during the prehistoric and early historic periods in the subject area. These negative results are likely due to the prior disturbances across the parcel and the inherent bias in random sampling. Regardless of the negative results, previous archaeological investigations and archival research have documented traditional and historic burials in the vicinity of the subject parcel. Furthermore, based on the number of LCA's and Grants in the vicinity, together with the historical background research, Waikapū and Wailuku would have supported substantial populations.

RECOMMENDATIONS

Based on the negative results of fieldwork, no further inventory level work is recommended prior to commencing construction activities. However, due to the presence of sand dune remnants in the project area, as well as the proximity of archaeological sites and Native Hawaiian burials in neighboring parcels, archaeological monitoring is recommended during all ground-altering activities such as base yards, dust and silt fences, grubbing, grading and etc. Additionally, although Site 5474 has been documented during the current procedures; the removal of the intact portion of Site 5474 shall be closely monitored to assess and document subsurface construction if applicable.

Prior to the commencement of construction, and Archaeological Monitoring Plan (AMP) will be prepared and submitted for review and approval by the SHPD.

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11 May 04

Mr. Richard Sudheimer
Mr. Dick Drayson
Mr. Nathan Kwee
C/o Mr. Tom Leuteneker
Carlsmith Ball LLP
One Main Plaza Ste 400
Wailuku, Hi 96793

Subject: Post Field Summary Letter During Due Diligence at Wailuku Agribusiness, TMK 3-5-02: 01 pors.

Dear Sirs:

Per your request, Archaeological Services Hawaii, LLC., conducted a pedestrian survey with subsurface backhoe testing within 50 acres at the above referenced project area (Figure 1). The work was performed from 5-7 May 04 by Mr. Paul Titchenal (M.A.), and supervisor Ms. Diane Guerriero (B.A.), under the overall direction of Ms. Lisa Rotunno-Hazuka (B.A.) and Mr. Jeffrey Pantaleo (M.A.). A total of 25 backhoe trenches were selectively placed in areas that contained no active farming. No subsurface cultural remains were recovered in any of the trenches, however one surface site, the Kama Ditch, was identified. The ditch is from the historic period sugar cane era and consists of a concrete line ditch that is oriented north-south.

The project area is located between Honoapiilani Highway and Waiale Road within a highly sensitive area for traditional Native Hawaiian sites. The Wailale/Lower Main corridor from Kahului Harbor to Waiko Road, has contained numerous sand dune burials, habitation layers as well as some clay pit burials. Thus, the parcels within the project area had the potential to contain significant subsurface sites; unfortunately the project area has been heavily impacted by compounded surface disturbances from sugar cane, sand mining and farming tenements, and as such, contains little of its original landscape. Due to these compounded disturbances, the likelihood of recovering intact pre-Contact deposits was minimal.

Details of the parcels conditions, the findings of the archaeological investigation, and recommendations are presented below.

Project Area

The project area consists of two adjoining 25-acre parcels within a portion of Wailuku Agribusiness landholdings at TMK 3-5-02: 01 pors in Wailuku *ahupua'a* and District, in the isthmus of Maui. The parcels are bounded by Honoapiilani Highway to the northwest, Waiale Road to the southeast and the proposed retention basin along Kuikahi Avenue to the north. A sewer easement and the Kama ditch run north-south within the central portions of the project area (See Figure 1). The parcel closest to the northern boundary is owned by Emmanuel Lutheran Church and contains numerous individual farm plots with bananas, papayas and sweet potatoes. The southern parcel owned by Valley Isle Fellowship consists of bananas, sweet potatoes, and fallow sugar cane and a sod farm. Both parcels have undergone substantial surface disturbances, where most of the sand dune has been removed. An elongate portion (approximately one-third of the project area) between the sewer line easement and the Kama ditch consisted of a thick deposit of alluvial sand (highlighted in yellow). The remaining two-thirds of the parcel contained a cobbly, silt along Honoapiilani Highway, and a silty sand along Waiale Road. Again, all areas were tested by backhoe trenching, were no subsurface cultural deposits were identified.

Results

A total of 25 backhoe test trenches were executed within the two parcels in areas that would not disrupt active farming (See attached Table I). Trenches 1-6, 15,16 and 23-25 were excavated within the northern parcel, and trenches 7-14 and, 17 –22 were excavated within the southern parcel. Trenching was not conducted within the extreme central portion of the project area, due to dense active farming.

The trenches were oriented either north-south or east-west and averaged 6.0 meters in length by 2.0 meters in depth. No subsurface cultural deposits or features were identified within the trenches. In general, a three layer stratigraphic sequence was identified within the trenches, where Layer I was usually disturbed at least 2.0 ft. below the surface.

The pedestrian survey, coupled with the test excavations results, exemplified that the project area has been severely altered in historic times.

Discussion

The project area, located within the isthmus of Maui, would have contained high knolls and ridges and undulating inland sand dunes in the past. Traditionally, Native Hawaiian habitation sites and burial grounds have been documented within this type of landscape. The project area, though located within the isthmus, has undergone a substantial amount of clearing, grubbing and grading, resulting in the removal of the former sand dune ridge system (recall sand was present at the surface in the elongate portion and continues to a depth of 9.0 ft. below the surface). Due to these disturbances, the potential for identifying subsurface features consisting of burials has been reduced.

Recommendation

For the project area, no further archaeological testing is warranted, however archaeological monitoring is recommended during all construction related activities. Archaeological monitoring is the standard protocol in areas with the potential for subsurface sites (even though the probability of subsurface features has been reduced, the potential does exist). Monitoring is currently being conducted within adjoining parcels to the project area (Wailuku Agribusiness, Kehalani off sites, Hawaiian Cement, Waiko Baseyard LLC, Consolidated Baseyard LLC, Ameron and Maui Lani).

The testing conducted to date is intended to fulfill the requirements for an Inventory Survey under the guidelines set forth in Chapter 13-276, Hawaii Administrative Rules, Rules Governing Standards for Inventory Surveys and Reports. The testing and other pertinent data will be presented in an Inventory Survey report which will be submitted to the State Historic Preservation Division (SHPD) for their review.

Thank you very much for giving ASH the opportunity to conduct work in this area, if you should have any questions and or comments, please do not hesitate to call me. The Inventory Survey Report shall be submitted within 60 days to SHPD.

Respectfully,

Lisa Rotunno-Hazuka

Consulting Archaeologist

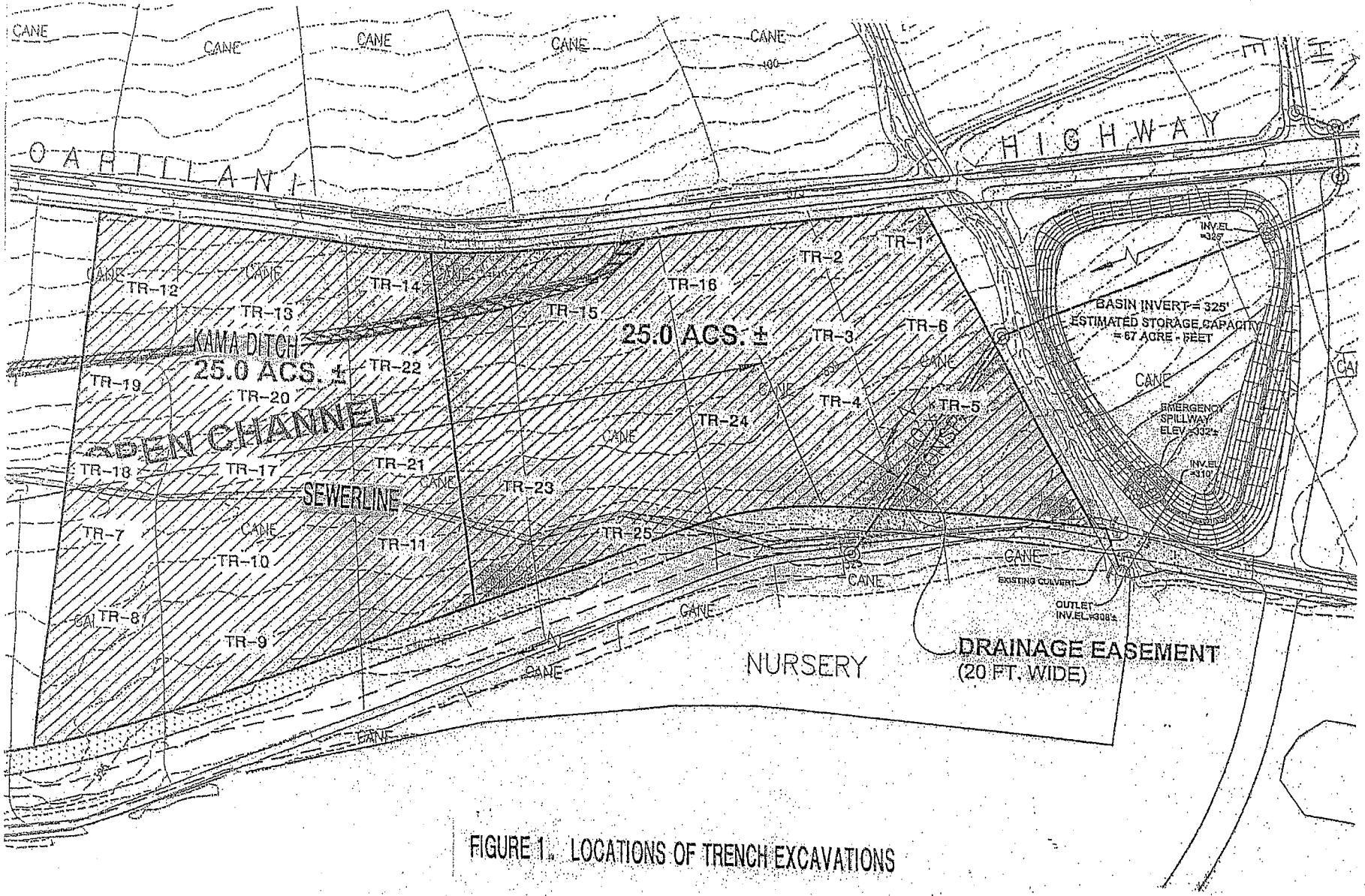


FIGURE 1. LOCATIONS OF TRENCH EXCAVATIONS

STRATIGRAPHIC SUMMARY TABLE

TRENCH (TR)	LOCATION	ORIENT.	DIMENSION	STRATIGRAPHY	COMMENTS
1	Located in the extreme northwest portion of project area. East of Honoapiilani Highway.	80 / 260 Az.	6.6 m (L) x .80 cm (W) x 1.5 m (H)	Layer I - Fine, Silt; Dark Brown, (10YR3/3); agricultural layer. Layer II - Very Fine, Silt; Dark Grayish Brown (10YR 3/2); Layer III - Fine, Silt; Dark Grayish Brown (!0YR 3/2), colluviial deposited with water affected pebbles, cobbles and small boulders.	Previous surface disturbance with past and present agriculture farming. Level surface area. North Profile. No cultural remains identified.
2	South of TR. 1. East of Honoapiilani Highway.	90 / 270 Az.	7 m (L) x .80 m (W) x1.5 m (H)	Layer I - Fine, Silt; Dark Brown, (10YR3/3); agricultural layer. Layer II - Very Fine, Silt; Dark Grayish Brown (10YR 3/2) with gravel inclusions; Layer III - Fine, Silt; Dark Grayish Brwn.(!0YR 3/2), colluviial deposit with water affected pebbles and cobbles.	Previous surface disturbance with past and present agriculture farming. On level surface area. East Profile. No cultural remains identified.
3	Southeast of TR. 2 and TR.1 . East of Honapiilani Highway.	70 / 250 Az.	5 m (L) x .80m (W) x 1.4 m (H)	Layer I - Fine, Silt; Dark Brown, (10YR3/3); agricultural layer. Layer II - Very Fine, Silt; Dark Grayish Brown (10YR 3/2); Layer III - Fine, Silt; Dark Grayish Brown (!0YR 3/2); gravelly.	Previous surface disturbance with past and present agriculture farming. On slight slope towards east. North Profile. No cultural remains identified.
4	East of TR. 3. East of Honapiilani Highway and west of exisiting sugar cane hauling road.	80 / 260 Az.	6.2 m (L) x .80 m (W) x 1.3 - 1.6 m (H)	Layer I - Fine, Silt; with sand inclusions, Dark Brown to Dark Yellowish Brown (10YR 3/3-3/4); agricultural layer. Layer II - Fine, Silt; Dark Brown (10YR 3/3).	Previous surface disturbance with past and present agriculture farming. On level surface area. South Profile. No cultural remains identified.
5	Located in the extreme northeast portion of the project area. North of TR. 4 and east of TR-6.	70 / 250 Az.	6 m (L) x .80 m (W) x 1.5 m (H)	Same as TR-4 without sand inclusions identified in TR 4 Layer I.	Previous surface disturbance with past and present agriculture farming. On level surface area. North Profile. No cultural remains identified.
6	Located along the northern project area boundary, west of TR-5 and east of TR-1.	90 / 270 Az.	4.8 m (L) x .80 cm (W) x 1.6 (H)	Same as TR-3	Previous surface disturbance with past and present agriculture farming. On slight slope towards east. South Profile. No cultural remains identified. No cultural remains identified.
7	Located in the extreme southern portion of project area. East of Honoapiilani Highwayand adjacent to; east of the exisiting sewerline easement.	100 / 280 Az.	5.5 m (L) x .80 cm (W) x 1.4 (H)	Layer I - Fine, Silt; with sand inclusions, Dark Brown to Dark Yellowish Brown (10YR 3/3-3/4); agricultural layer. Layer II - Fine, Silt; with sand and gravel inclusion, river bed inclusions noted in North and South Profiles, Dark Brown (10YR 3/3). Layer III - Fine, Silt; Dark Brown to Dark Yellowish Brown (10YR 3/3 - 3/4).	Previous surface disturbance with past sand mining activities and agriculture farming. Historic debris noted within area. Level surface area. South Profile. No cultural remains identified.
8	Located in the extreme southeastern portion of project area. East of Honoapiilani Highway and TR-7	60 / 240 AZ.	5.5 m (L) x .80 cm m (W) x 1.5 m (H)	Layer I - Fine, Silt; with sand inclusions, Dark Brown to Dark Yellowish Brown (10YR 3/3-3/4); agricultural layer. Layer II - Fine, Silt; Dark Brown (10YR 3/3). Layer II same as Layer II with many water affected and sub-angular cobbles and pebbles.	Level ground surface. North Profile. No cultural remains identified.
9	North of TR. 8 and west of sugar cane hauling road.	90 / 270 Az.	6 m (L) x .80 cm (W) x 1.5 m (H)	Layer I - mottled Silt; with sand inclusions, Brown (7.5 3/2); agricultural layer. Layer II - remnant Aeolian Sand; (10YR 5/4); Yellowish Brown. Layer II / III - Transitional Layer, Sandy Silt; Brown (10YR 5/3), Layer III - Silt; Dark Brown (10YR 3/3.	Level ground surface in open fallow field of sweet potatoes. South Profile. No cultural remains identified.
10	West of TR. 9. Adjacent to; east of the existing sewerline easement.	180 / 360 Az.	6 m (L) x .80cm (W) x 1.5 m (H)	Layer I - Mottled Silty Sand, Very Dark Grayish Brown; (10YR 3/2) with charcaol flecks. Layer II - Sand Silt, Brown to Dark Brown (10YR 5/3-4/3) ; Layer III - Aeolian SandSilt Vry Drk Graysh Brwn (10YR 3/2); Layer IV - Very Fine Grain Sand Pale Brwn (10YR 6/3); Layer V - BOE- Coarse Sand Light Brwn Gray(10YR 6/2).	Previous surface disturbance with past and present agriculture farming. West Profile. No cultural remains identified.
11	East of TR. 10. Adjacent to ; east of the existing sewerline easement.	180 / 360 Az.	6 m (L) x .80cm (W) x 1.5 (H)	Layer I - Silty Loam; Very Dark Grayish Brown (10YR 3/2); Layer II - Silt; Dark Brown, (10YR 3/3); Layer III - Silt; Dark Brown (10YR 3/3).	Previous surface disturbance with past and present agriculture farming. Level ground surface area. South Profile. No cultural remains identified.

STRATIGRAPHIC SUMMARY TABLE

TRENCH (TR)	LOCATION	ORIENT.	DIMENSION	STRATIGRAPHY	COMMENTS
12	Located in the extreme southeast portion of project area. . Adjacent to ; east of, Honapiilani Highway.	110 / 290 Az.	6 m (L) x .80cm (W) x 1.8 (H)	Layer I - Silty Loam; Very Dark Grayish Brown (10YR 3/2); Layer II - Silt; Dark Brown, (10YR 3/3); Layer III - Silt; Dark Brown (10YR 3/3), with many water affected basalt cobbles and pebbles.	Level ground surface area on upper slope. North Previous surface disturbance with past agricultural farming. North Profile. No cultural remains identified.
13	North of TR. 12. Adjacent to; east of, Honoapiilani Highway.	100 / 280 Az.	5.5 m (L) x .80 cm (W) x 1.8 (H)	Same as TR - 12	Level ground surface area on upper slope. North Previous surface disturbance with past agricultural farming. East Profile. No cultural remains identified.
14	North of TR. 13. Adjacent to;east of, Honoapiilani Highway.	100 / 280 Az.	5 m (L) x .80 cm (W) x 1.7 m (H)	Same as TR - 12, and 13	Level ground surface area on upper slope. North Previous surface disturbance with past agricultural farming. North Profile. No cultural remains identified.
15	North of TR. 14. Adjacent to; east of, Honoapiilani Highway.	100 / 280 Az.	6 m (L) x .80cm (W) x 2 m (H)	Same as TR - 12, 13, 14	Level ground surface area on upper slope. North Previous surface disturbance with past agricultural farming. East Profile. No cultural remains identified.
16	North of TR. 15. Adjacent to; east of, Honoapiilani Highway.	180 / 360 Az.	5 m (L) x .80cm (W) x 1.6 m (H)	Same as TR - 12, 13, 14 and 15	Level ground surface area on upper slope. North Previous surface disturbance with past agricultural farming. Profile. No cultural remains identified.
17	West of TR. 10. Adjacent to; west of, the sewerline easement and east Honoapiilani Highway.	170 / 350 Az.	6 m (L) x .80 cm (W) x 1.7 m (H)	Layer I - Silty Sand, Grayish Brown (10YR 3/4); Layer II - Aeolian Sand, Yellowish Brown (10YR 5/6); Layer III - Silt, Very Dark Brown.	On slope surface area, below a field of agricultural farming of sweet potatoes. East Profile.No cultural remains identified.
18	South of TR.17 and east of TR. 7 Adjacent to; east of, Honoapiilani Highway and the exisiting sewerline..	180 / 360 Az.	5 m (L) x .80 m (W) x 1.8 m (H)	Same as TR - 17 with the exception of a disturbed sand layer below Layer I.	On slope surface area. East Profile. No cultural remains identified.
19	West of TR. 18. and east of TR - 12. Adjacent to; east of the Kama Ditch.	180 / 360 Az.	5 m (L) x .80cm (W) x 2.2 m (H)	Same as TR - 18	Level ground surface on farm access road along upper slope. East Profile. No cultural remains identified.
20	North of TR. 19. Adjacent to; east of the Kama Ditch.	180 / 360 Az.	5.6 m (L) x.80 cm (W) x 2.8 m (H)	Same as TR - 18 and 19.	On slope surface area along upper slope. West Profile. No cultural remains identified.
21	East of 22. Adjacent to; West of the sewerline easement.	120 / 300 Az.	5.5 m (L) x 1.6 m (W) x 2.5 m (H)	Same as TR - 18, 19 and 20.	Level ground surface. West Profile. No cultural remains identified.
22	West of TR. 21. Adjacent to; east of the Kama Ditch.	90 / 270 Az.	6 m (L) x .80 cm (W) x 2.5 m (H)	Same as TR - 18 thru 21	Level ground surface. East Profile. No cultural remains identified.
23	North of TR. 21. Adjacent to; west of the sewerline easement	90 / 270 Az.	6.5 m (L) x .80 cm (W) x 3.5 m (H)	Same as TR - 18 thru 22	Level ground surface. East Profile. No cultural remains identified.
24	Northwest of TR. 23. Placed in an open unplanted agricultural field. West of exisiting sewerline easement	180 / 360 Az.	4 m (L) x 2 m (W) x 2 m (H)	Same as TR - 4 and 5	Level ground surface. West Profile. No cultural remains identified.
25	East of TR. 24. Adjacent to; east of exisiting sewerline easement. Placed in a fallow sweet potatoe field.	90 / 270 Az.	4.6 m (L) x 1.2 m (W) x 1.9 m (H)	Same as TR - 4 and 5	Level ground surface. North / northwest Profile. No cultural remains identified.

Appendix E

Preliminary Engineering Report

PRELIMINARY ENGINEERING REPORT

FOR

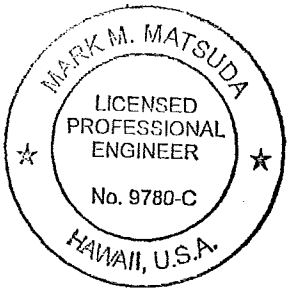
WAIALE ROAD
AFFORDABLE HOUSING PROJECT

Wailuku, Maui, Hawaii

T.M.K.: (2) 3-5-002: por. of 012

Prepared For:

Waiale Road 201, LLC
2035 Main Street, Suite 1
Wailuku, Maui, Hawaii 96793



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PRELIMINARY ENGINEERING REPORT
FOR
WAIALE ROAD
AFFORDABLE HOUSING PROJECT
T.M.K.: (2) 3-5-002: por. of 012

1.0 INTRODUCTION

The purpose of this report is to provide information on the existing infrastructure which will be servicing the proposed project. It will also evaluate the adequacy of the existing infrastructure and anticipated improvements which may be required for the proposed project.

The subject parcel is identified as T.M.K.: (2) 3-5-002: 012. It is also known as Lot B of the Waikapu East (Large Lot) Subdivision. The proposed project will encompass the eastern 10.365 acres of the 25.355 acre parcel. The remaining western portion of the property is owned and utilized by Valley Isle Fellowship. The property is bordered by the undeveloped Lot A of the Waikapu East (Large Lot) Subdivision to the north, Waiale Road to the east; Honoapiilani Highway to the west, and Kokololio Street and the Waikapu Gardens Subdivision to the south.

The proposed project consists of developing 70 single family residences, with lot sizes ranging from approximately 3,900 square feet to 7,000 square feet. Proposed improvements include paved roadways; concrete curbs, gutters and sidewalks constructed to County standards; landscaping; underground water, sewer, drainage, electrical, cable, and telephone systems; and a neighborhood park.

2.0 EXISTING INFRASTRUCTURE

2.1 ROADWAYS

Honoapiilani Highway is located west of the project site. It is a two lane undivided State Highway which runs in the north-south direction into Wailuku town. The speed limit ranges between 30 and 55 miles per hour (mph) in the vicinity of Waikapu. There are traffic signals at the intersection with Waiko Road to the south of the project site and with Kuikahi Drive to the north of the project site with existing left turn pockets for southbound traffic to head east towards Waiale Road.

Kuihelani Highway is located approximately 4,500 feet east of the project site. It is a two way, four-lane State arterial highway which also runs in the north-south direction. The posted speed limit on Kuihelani Highway varies between 30 and 55 mph. Traffic signals are installed at the Kuihelani Highway-Waiko Road intersection. The southern terminus of Kuihelani Highway is its intersection with Honoapiilani Highway.

Waiko Road is a two-lane collector roadway that connects Honoapiilani Highway and Kuihelani Highway. The posted speed limit on Waiko Road is 20 mph. Immediately east of Honoapiilani Highway, Waiko Road provides access to a residential community. Further east, Waiko Road provides access to industrial and livestock land uses.

Waiale Road is a two-lane collector roadway running north from Waiko Road. It turns into Lower Main Street near Kaahumanu Avenue. The section of Waiale Road from Waiko Road to Kuikahi Drive was improved with 36' of pavement as part of the Waikapu Gardens Subdivision (Subdivision File No. 3.2129). Waiale Road is proposed to be extended from the intersection with Waiko Road southward to intersect with Honoapiilani Highway in the vicinity of the Maui Tropical Plantation. There is an existing driveway along Waiale Road near the northern end of the parcel used by Valley Isle Fellowship providing access to their portion of property.

2.2 DRAINAGE

The existing ground slopes in a west to east direction from elevation 355 feet above mean sea level at mauka portion of the property (western boundary) to elevation 324 feet at the Waiale Road (eastern boundary), with an average slope of approximately 4.8%. The project site is currently vacant and was previously used for pineapple cultivation.

According to the Soil Survey Geographic Database for Island of Maui, State of Hawaii (September 2014) prepared by the United States Department of Agriculture Natural Conservation Service, the soils within the project site are classified as Puuone sand (PZUE) and Iao silty clay (IaA). Puuone sand is characterized as having rapid permeability near the surface, slow runoff, and a moderate to severe wind erosion hazard. Iao silty clay is characterized as having slow runoff and an erosion hazard of no more than slight.

According to Panel Number 150003 0393 E of the Flood Insurance Rate Map, Sept. 29, 2009, prepared by the United States Federal Emergency Management Agency, the project site is situated in Flood Zone X. Flood Zone X represents areas outside the 0.2% annual chance floodplain.

There are no drainage improvements within the project site. The onsite runoff presently sheet flows across the project site in a west to east direction towards Waiale Road. The proposed Valley Isle Fellowship project intends to construct retention basins to collect runoff from its parcel which will minimize runoff from entering the project site. Along Waiale Road there is a grassed shoulder which conveys some of the runoff to the existing drainage systems in the surrounding area. It is estimated that the present onsite runoff for a 50-year, 1-hour storm from the entire project site is 11.1 cfs and approximately 12,610 cubic feet of runoff volume.

As part of the drainage improvements for the Waikapu Gardens Subdivision (Subdivision File No. 3.2129), a retention basin was constructed on Lot 195 to the south of the subject property. The retention basin was constructed to accommodate the post development surface runoff from the contributory area of the Waikapu Gardens Subdivision Phase 1 and 2 which is approximately 301,725 cf of runoff volume from a 50-year, 1-hour design storm. The retention basin has a total storage volume of approximately 719,000 cf. The existing drainage improvements in the vicinity also include grated inlets to capture and convey runoff from the Waiale Road shoulder fronting the subdivision to the retention basin.

2.3 SEWER

There are existing 8-inch and 12-inch gravity sewer lines traversing along the mauka boundary of the project site and continues north towards Kuikahi Drive. The 8-inch sewerline begins on Waiko Road and heads in a northerly direction along the eastern side of the existing reservoir. It continues in a northerly direction until it connects to the existing sewer system on Waiale Road. Wastewater collected from the Waikapu area is transported to the Kahului Wastewater Treatment Plant in Naska. As part of the Waikapu Gardens Subdivision, two sewer pump stations were installed along Waiale Road to convey wastewater collected from the eastern portion of the subdivision to the existing gravity sewer lines previously mentioned.

2.4 WATER

Domestic water and fire flow for the Waikapu area are serviced from the 300,000 gallon Waikapu Tank and 1.5 million gallon Kehalani mid-level tank. A series of 8-inch and 12-inch waterlines traverse along West Waiko Road from the Waikapu Tank to Honoapiilani Highway. To the east of Honoapiilani Highway, the waterline is reduced to a 4-inch line which presently services the Makai Waikapu Village. The 4-inch waterline reduces to a 1-1/2 inch waterline east of the village. As part of the Waikapu Gardens Subdivision, a 12-inch waterline was installed from Waiko Road, through the center of the subdivision and reduced to 8-inch waterlines to provide distribution throughout the subdivision. A new 12" waterline was connected to the existing waterlines in the Waikapu Gardens Subdivision and installed along the southern boundary line of the property to provide water service and fire protection to the subject property for the Valley Isle Fellowship project. A fire hydrant was installed at the end of the line near the Waiale Road and Kokololio Street intersection.

The source for this water system is the Mokuhau wells located in Happy Valley.

2.5 ELECTRIC, TELEPHONE & CABLE TV

There is an existing electrical transmission system traversing along Waiale Road fronting the project site. The existing system currently provides service to the adjacent Waikapu Gardens Subdivision.

3.0 ANTICIPATED INFRASTRUCTURE IMPROVEMENTS

3.1 ROADWAYS

The subdivision roadway will access onto Waiale Road near the northerly end of the property. There will be no direct access from the individual lots onto Waiale Road or Kokololio Road. From Waiale Road, vehicles can continue north to access Kuikahi Drive and eventually exit onto Lower Main Street. Vehicles can turn south to the Waiko Road intersection and head west to access Honoapiilani Highway or east to access Kuhelani Highway. A 20' wide emergency access lane will be constructed near the southerly end of the property to provide a second access from the interior subdivision road to Waiale Road.

The interior subdivision streets are intended to be dedicated to the County. They will have 48 foot right-of-ways, concrete curbs, gutters and sidewalks, and will be improved to County standards. The cul-de-sacs will have an edge of pavement radius of 40 feet and a right-of-way radius of 50 feet. The larger traffic lanes and cul-de-sac pavement radius are to accommodate the larger fire trucks in the Central Maui district. Concrete wheel chair ramps will be constructed at appropriate locations to comply with ADA standards. Appropriate striping and signage will be installed in accordance with the Department of Public Works standards.

3.2 DRAINAGE

It is estimated that the post development runoff from the project site will be 35.6 cfs generating 35,220 cf of runoff volume, which equates to a net increase of 24.5 cfs of runoff and 22,610 cf of runoff volume. Onsite runoff from the project site will be collected by curb-inlet catch basins located at appropriate intervals along the subdivision roadways and convey the runoff to the retention basin which was constructed for the Waikapu Gardens Subdivision on Lot 195 to the south of the project site. As previously mentioned, the existing retention basin has a total capacity of approximately 719,400 cf. The Waikapu Gardens Subdivision contributes approximately 301,725 cf of runoff volume to the basin, therefore the remaining capacity will accommodate the entire post development runoff volume of the design storm from the project site.

There will be no increase in runoff sheet flowing from the project site after construction of the development. This is in accordance with Chapter 4, Rules for the Design of Storm Drainage Facilities in the County of Maui.

The design intent of the project will be to limit the need for extensive grading as much as possible. Development of the project will also include implementation of site specific best management practices (BMP's) during construction to provide erosion control and minimize impacts to downstream properties. BMP's which may be implemented would include, but is not limited to:

1. Prevention of cement products, oil, fuel, and other toxic substances from falling or leaching into the water.
2. Prompt and proper disposal of all loosened and excavated soil and debris material from drainage structure work.
3. Retention of ground cover until the last possible date.
4. Stabilization of denuded areas by sodding or planting as soon as possible.
5. Early construction of drainage features.
6. Minimize time of construction.

Incorporating BMP's such as these during construction along with post construction measures to be installed will meet the requirements of Chapter 111, Rules for the Design of Stormwater Treatment Best Management Practices.

3.3 SEWER

The proposed project will generate approximately 24,500 gallons per day of wastewater based on the 70 house lots. Wastewater from the project will be collected by an onsite gravity sewer system and conveyed to an onsite sewer pump station. The pump station will be constructed at the lowpoint of the gravity system along Waiale Road. A force main will convey wastewater from the pump station and connect at a new sewer manhole to the existing sewer system along the western boundary of the project site which continues in the northerly direction towards Lower Main Street. The existing system will continue to convey wastewater to the Kahului Wastewater Treatment Plant. The onsite sewer system improvements are intended to remain privately owned and maintained.

3.4 WATER

The domestic water demand for the project is anticipated to be approximately 42,210 gallons per day. Waterlines will be extended from the existing 12" waterline along the southern boundary of the property to provide domestic and fire protection throughout the project site and service each proposed lot. In accordance with DWS standards, the fire flow demand for a residential development is 1,000 gallons per minute for a 2-hour duration. Fire hydrants will be installed at the appropriately spaced intervals along the subdivision roadways.

3.5 ELECTRIC, TELEPHONE & CABLE TV

The proposed electrical, telephone, and cable TV distribution systems will be serviced from the existing facilities along Waiale Road. Within the subdivision, all distributions systems will be installed underground and service laterals will be provided to each lot. Street lights will be installed along the subdivision streets at intervals to be determined by the electrical engineer.

APPENDIX A
HYDROLOGIC CALCULATIONS

HYDROLOGIC CALCULATIONS

Purpose: Determine the increase in onsite surface runoff from the development of the proposed project based on a 50-year storm.

A. Determine the Runoff Coefficient (C):

EXISTING CONDITIONS:

Infiltration (Medium)	=	0.07
Relief (Rolling)	=	0.03
Vegetal Cover (High)	=	0.00
Development Type (Open)	=	0.15
	C =	0.25

DEVELOPED CONDITIONS:

Infiltration (Negligible)	=	0.20
Relief (Rolling)	=	0.03
Vegetal Cover (Good)	=	0.03
Development Type (Residential)	=	0.40
	C =	0.66

B. Determine the 50-year 1-hour rainfall:

i_{50} = 2.5 inches

Adjust for time of concentration to compute Rainfall Intensity (I):

Existing Condition:

T_c = 19 minutes

I = 4.25 inches/hour

Developed Condition:

T_c = 11 minutes

I = 5.18 inches/hour

C. Drainage Area (A) = 10.4.Acres

D. Compute the 50-year storm runoff volume (Q):

Q = CIA

Existing Conditions:

Q = (0.25)(4.25)(10.4)

= 11.1 cfs

Developed Conditions:

Q = (0.66)(5.18)(10.4)

= 35.6 cfs

The increase in runoff due to the proposed development is 35.6 – 11.1 = 24.5 cfs.

Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 — Friday, 08 / 21 / 2015

Hyd. No. 1

Pre Development

Hydrograph type	= Rational	Peak discharge	= 11.06 cfs
Storm frequency	= 50 yrs	Time to peak	= 19 min
Time interval	= 1 min	Hyd. volume	= 12,608 cuft
Drainage area	= 10.400 ac	Runoff coeff.	= 0.25
Intensity	= 4.254 in/hr	Tc by User	= 19.00 min
IDF Curve	= 2-5.IDF	Asc/Rec limb fact	= 1/1

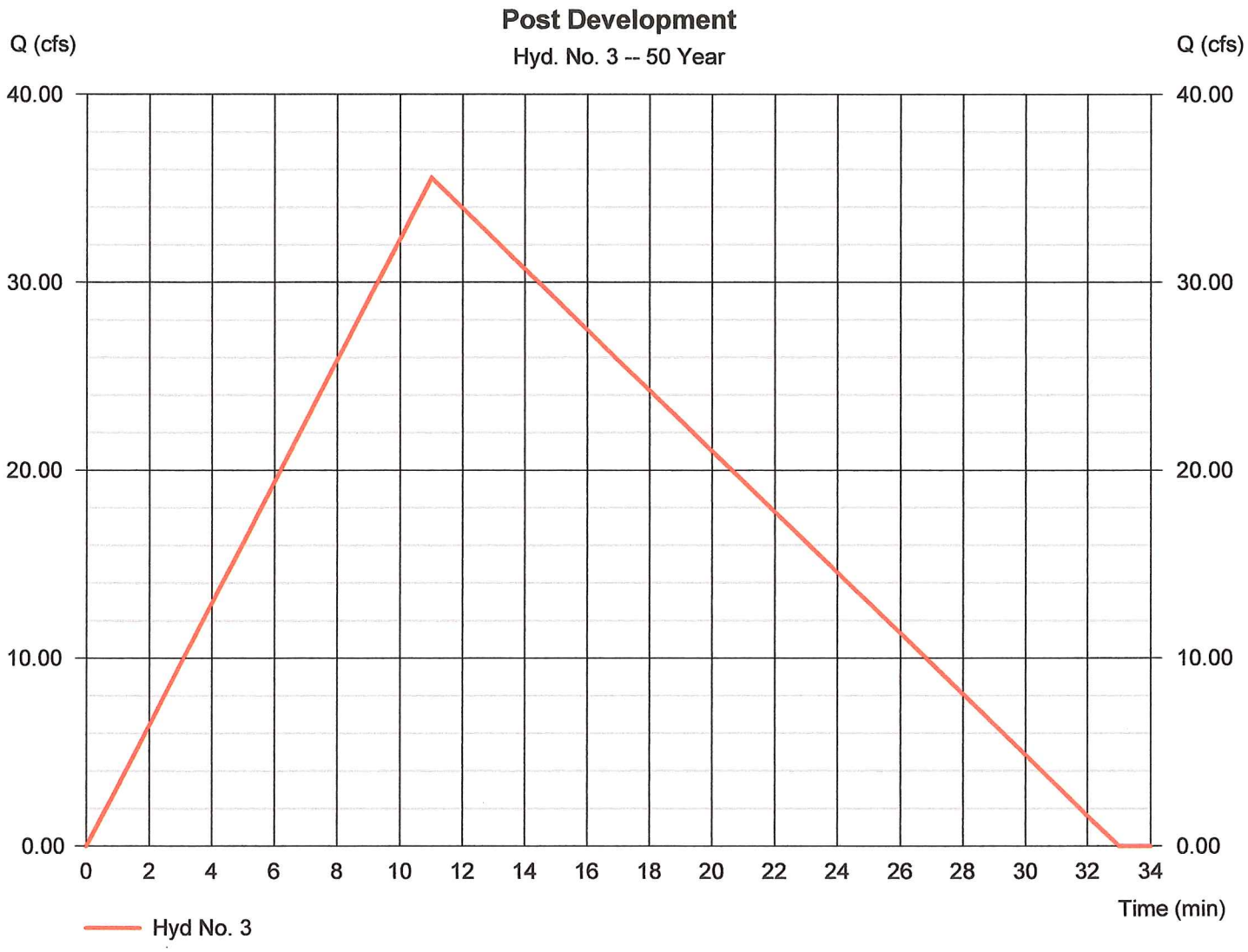
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2014 by Autodesk, Inc. v10.3 — Friday, 08 / 21 / 2015

Hyd. No. 3

Post Development

Hydrograph type	= Rational	Peak discharge	= 35.57 cfs
Storm frequency	= 50 yrs	Time to peak	= 11 min
Time interval	= 1 min	Hyd. volume	= 35,217 cuft
Drainage area	= 10.400 ac	Runoff coeff.	= 0.66
Intensity	= 5.182 in/hr	Tc by User	= 11.00 min
IDF Curve	= 2-5.IDF	Asc/Rec limb fact	= 1/2



APPENDIX B
WASTEWATER CALCULATIONS

WASTEWATER CALCULATIONS

Project Data:

Single Family Subdivision

70 units

Per the 2000 Wastewater Flow Standards:

Single-family residence = 350 gallons/day/unit

Occupancy = 4 persons unit

Wastewater Contribution:

Single-family	= 350 x 70 units	= 24,500 gpd

APPENDIX C
WATER DEMAND CALCULATIONS

WATER DEMAND CALCULATIONS

Project Data:

70 Single Family Residential Units (10.365 acres)

Per 2002 Water System Standards:

Consumption Guidelines (Average Daily Demand):

Single Family Residential = 600 gallons/unit or 3,000 gallons/acre

Parks = 1,700 gallons/acre

Average Daily Demand (ADD)

Single Family Residential = 600 x 70 units = 42,000 gallons

or

= 3,000 x 10.365 acres = 31,095 gallons

Park = 1,700 x 0.12 acres = 210 gallons

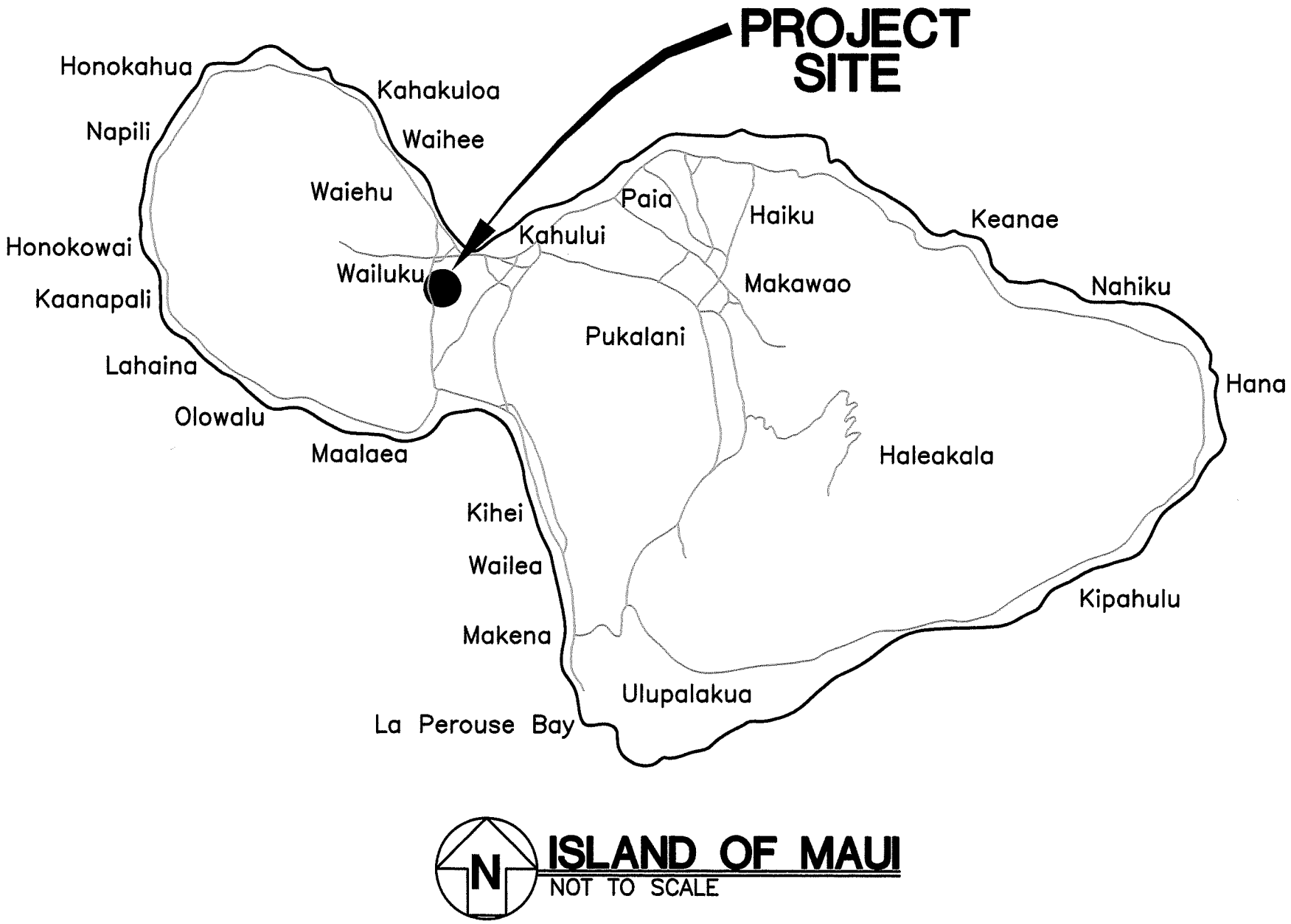
Total Average Daily Demand = 42,2100 gpd

Max. Daily Demand (1.5 x ADD) = 1.5 x 42,210 = 63,315 gpd

Max. Fire Flow = 1,000 gpm (Residential)

EXHIBITS

1	Location Map
2	Vicinity Map
3	Soil Survey Map
4	Flood Insurance Rate Map
5	Preliminary Site Plan
6	Preliminary Grading Plan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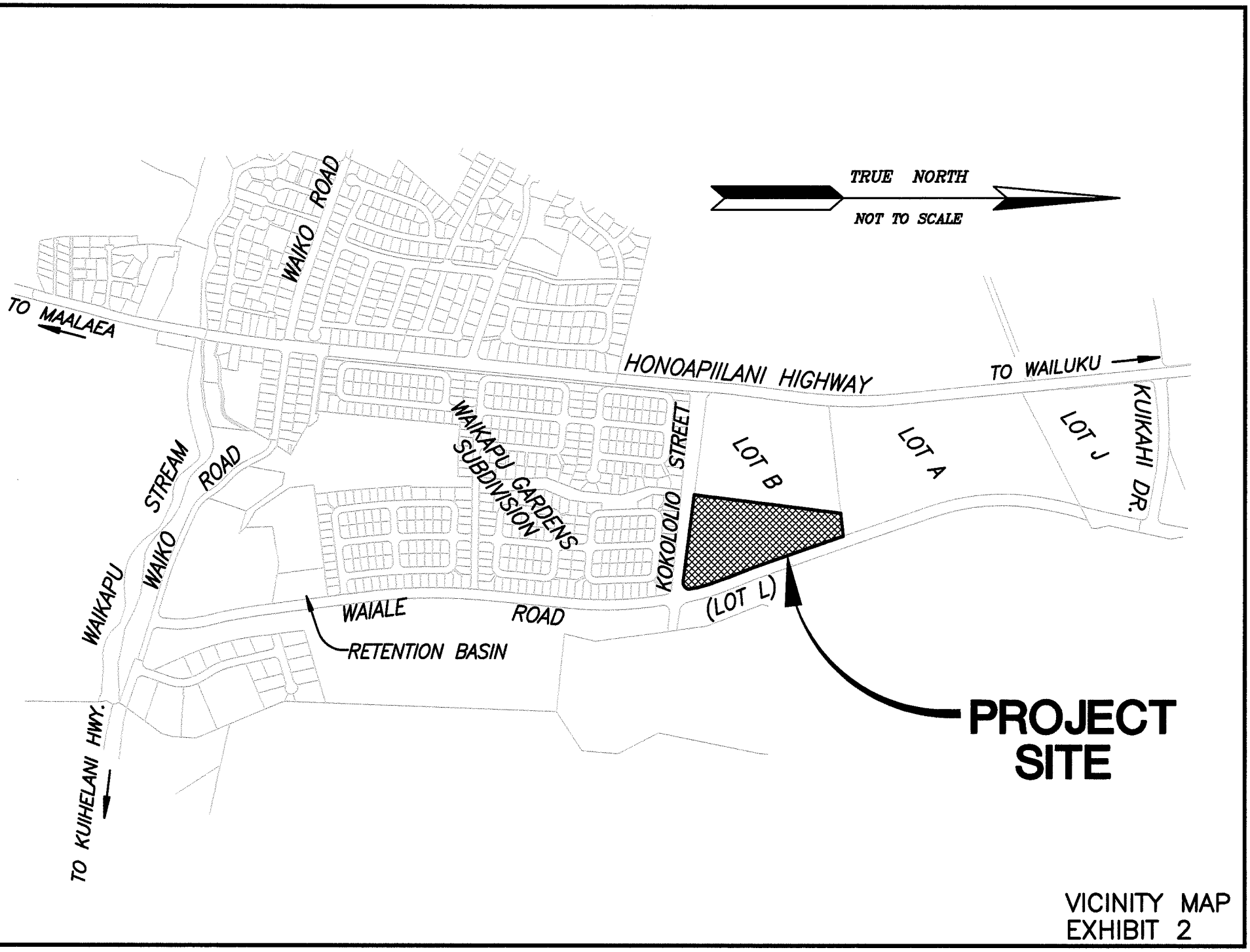
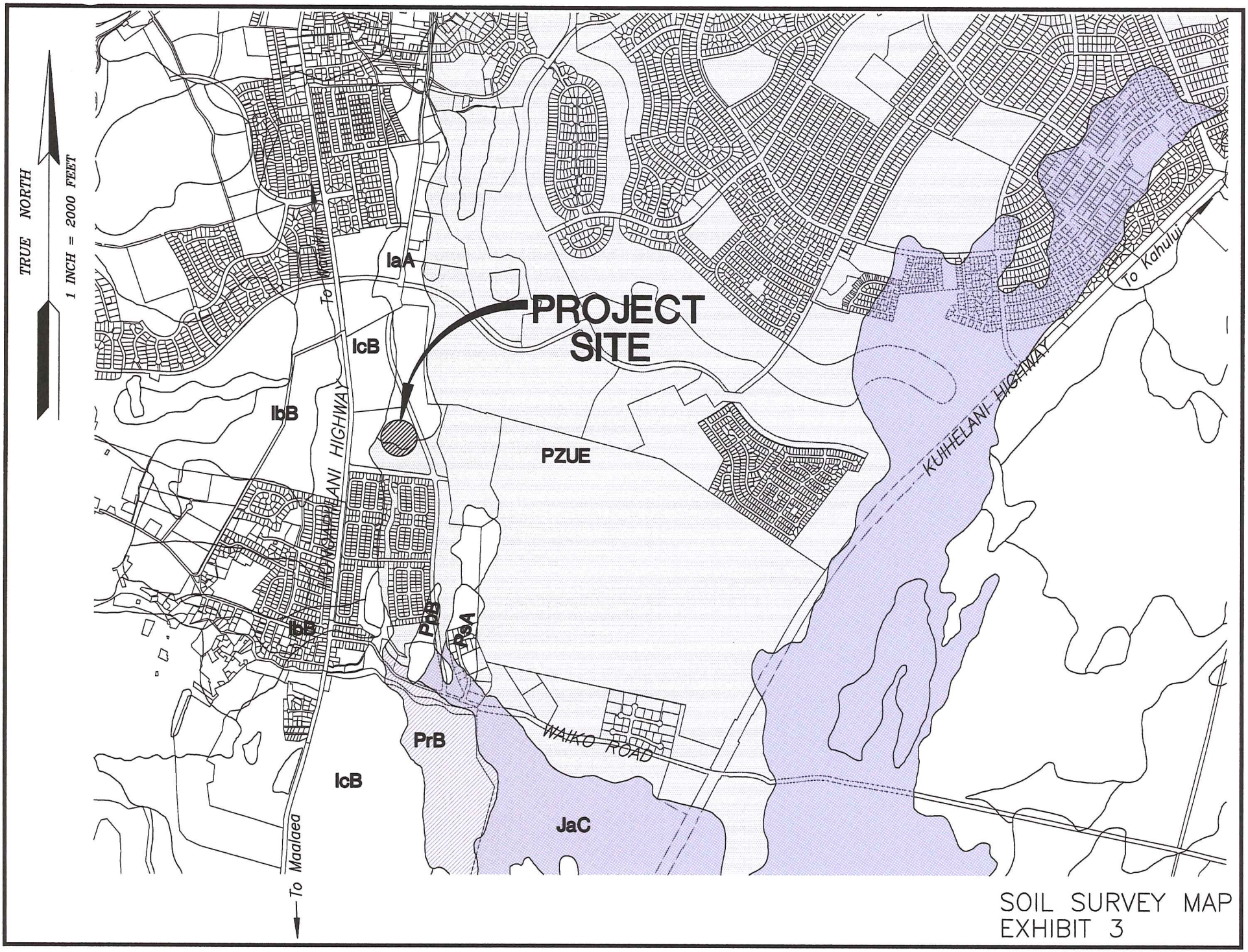
Napili
Kahakuloa
Waihee
Waiehu
Honokowai
Kaanapali
Wailuku
Kahului
Paia
Haiku
Keanae
Makawao
Nahiku
Pukalani
Lahaina
Hana
Olowalu
Maalaea
Haleakala
Kihei
Wailea
Kipahulu
Makena
Ulupalakua
La Perouse Bay
N
ISLAND OF MAUI
NOT TO SCALE

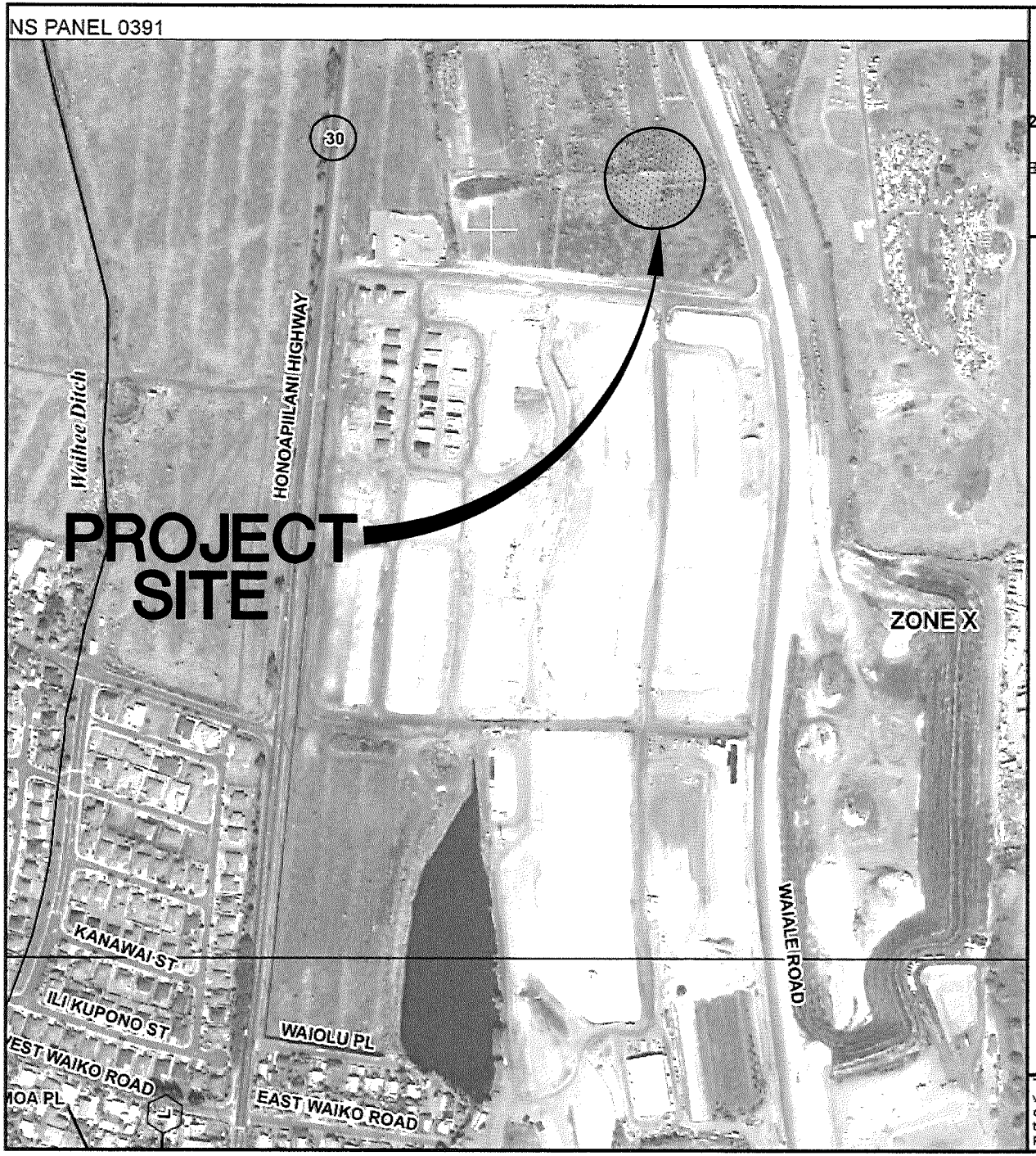
EXHIBIT 1



VICINITY MAP
EXHIBIT 2



SOIL SURVEY MAP
EXHIBIT 3



MAP SCALE 1" = 500'

250 0 500 1000 FEET

METER 0 150 300

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0393E

FIRM

FLOOD INSURANCE RATE MAP

MAUI COUNTY, HAWAII

PANEL 393 OF 825

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS

COMMUNITY	NUMBER	PANEL	SUFFIX
MAUI COUNTY	150003	0393	E

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

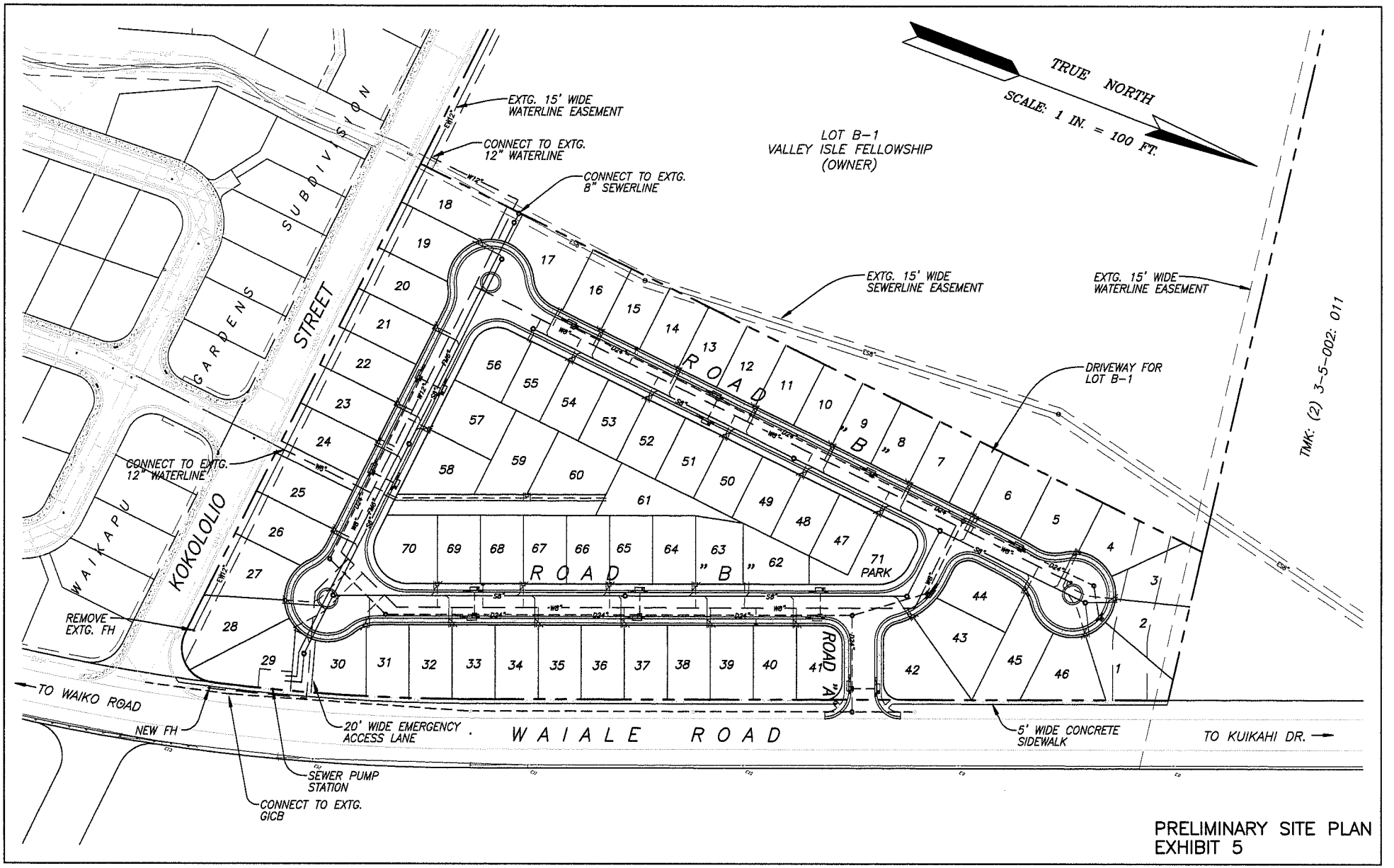
MAP NUMBER
1500030393E

MAP REVISED
SEPTEMBER 25, 2009

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

EXHIBIT 4



PRELIMINARY SITE PLAN
EXHIBIT 5

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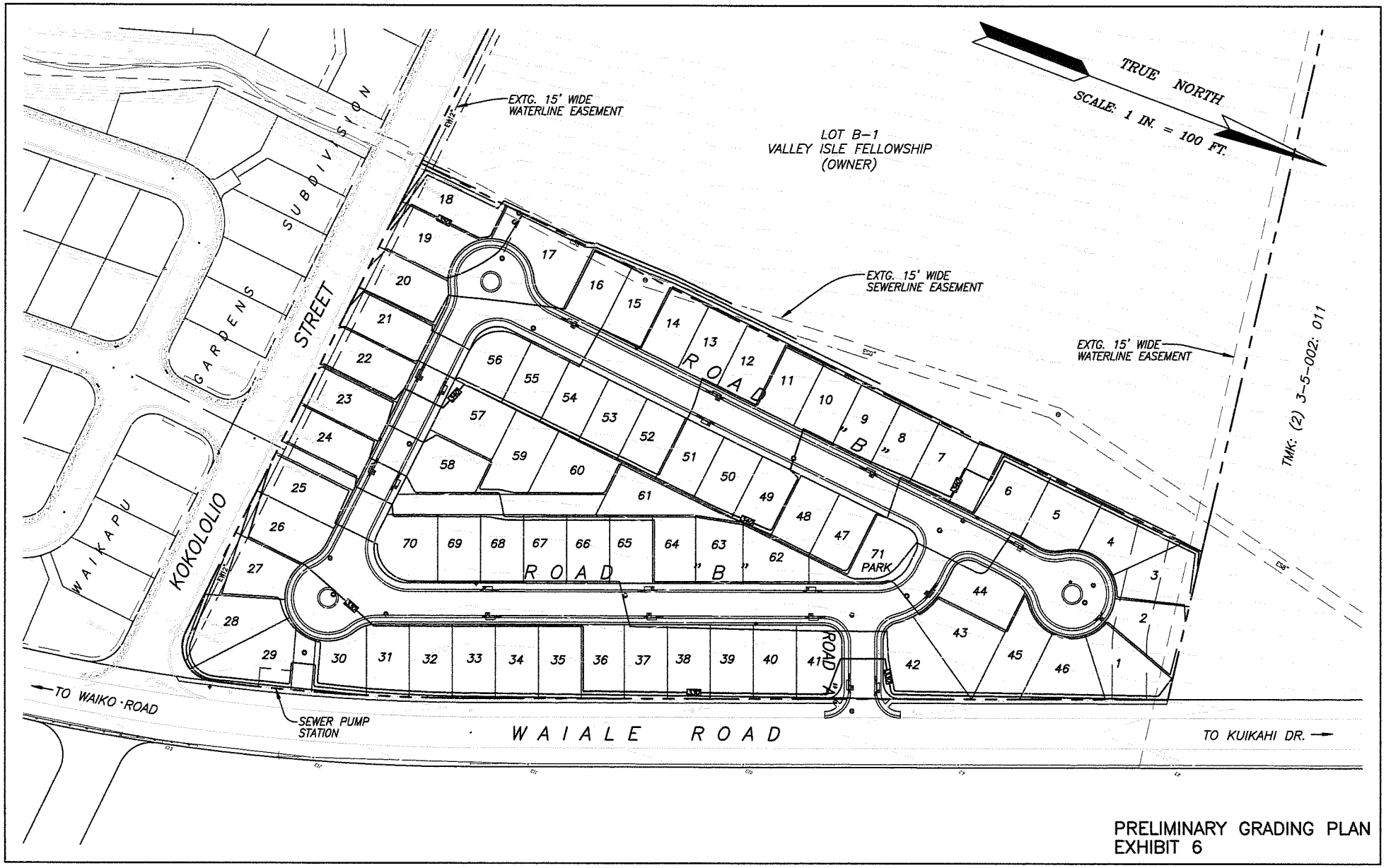

PRELIMINARY GRADING PLAN
EXHIBIT 6

C:\2015 PROJECTS\2015-50\dwg\Exhibits\SITE-00.dwg

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D. Flood Insurance Rate Maps of the County of Maui, September 2009.

E. Chapter 4, Rules for the Design of Storm Drainage Facilities in the County of Maui, prepared by the Department of Public Works and Waste Management, County of Maui, 1995.

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Appendix F

Traffic Impact Analysis Report

TRAFFIC IMPACT ANALYSIS REPORT
WAIALE AFFORDABLE HOUSING

Wailuku, Maui, Hawaii

DRAFT FINAL

Prepared for

Waiale Road 201 LLC

Prepared by

Austin, Tsutsumi & Associates, Inc.

Civil Engineers • Surveyors
Honolulu • Wailuku • Hilo, Hawaii

February 1, 2016

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AUSTIN, TSUTSUMI & ASSOCIATES, INC. CIVIL ENGINEERS • SURVEYORS
CONTINUING THE ENGINEERING PRACTICE FOUNDED BY H. A. R. AUSTIN IN 1934

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WAIALE AFFORDABLE HOUSING
TRAFFIC IMPACT ANALYSIS REPORT

Wailuku, Maui, Hawaii

1. INTRODUCTION

This report documents the findings of a traffic study conducted by Austin, Tsutsumi & Associates, Inc. (ATA) to evaluate the potential traffic impacts resulting from the proposed Waiale Affordable Housing development (hereinafter referred to as the "Project").

1.1 Location

The Project site is located in Wailuku along the west side of Waiale Road, just east of Honoapiilani Highway and north of Kokololio Street. The undeveloped Project site is more specifically identified as TMK: (2) 3-5-002:012. See Figure 1.1 for the Project location and Figure 1.2 for the Project site plan.

1.2 Project Description

The Project proposes to construct 70 single-family detached residential units and a neighborhood park on approximately 10.35 acres of land. The Project also proposes to provide one (1) new vehicular access along Waiale Road between Kokololio Street and Kuikahi Drive. The Project is anticipated to be completed by Year 2018.

REPLY TO:
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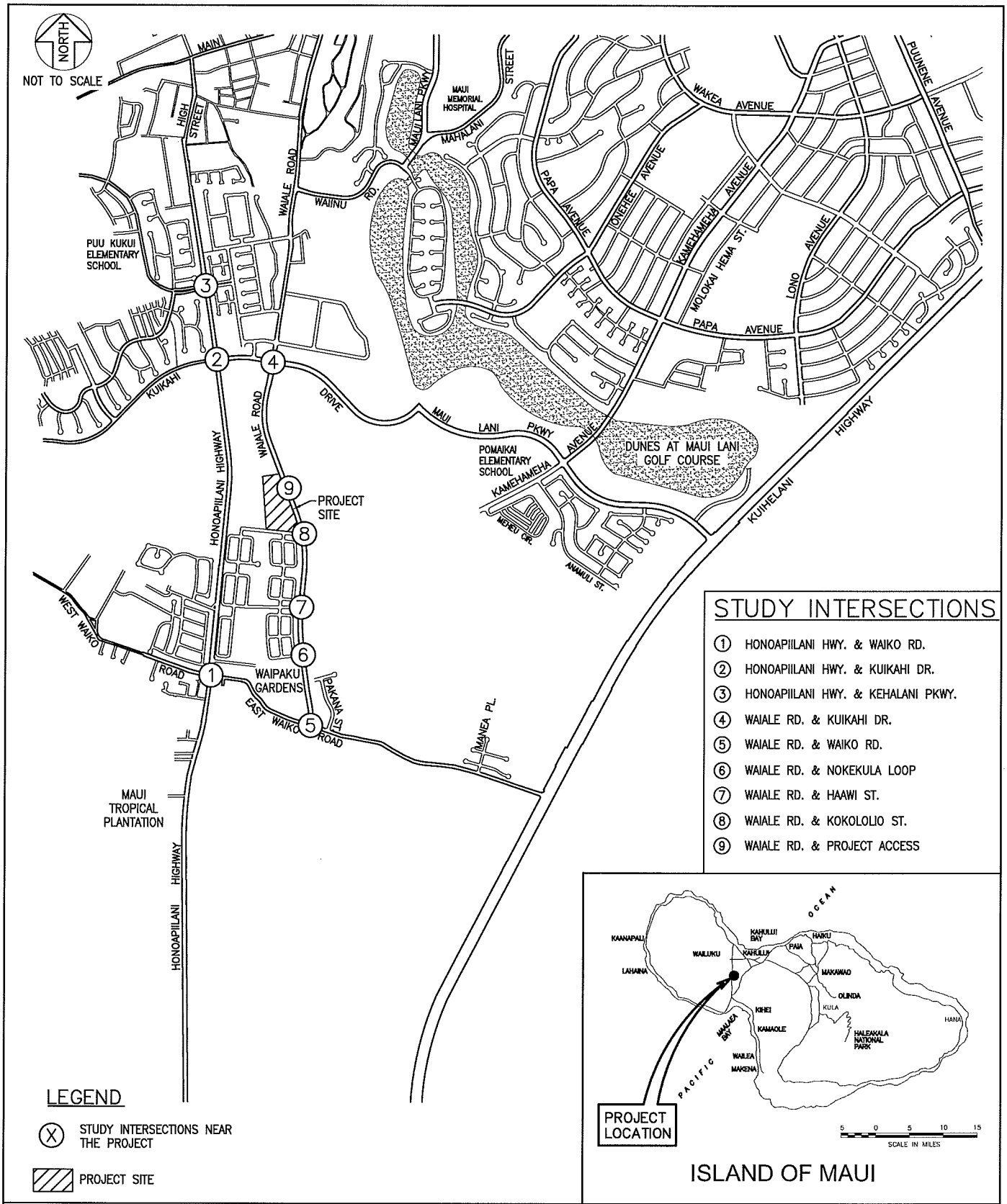
WAILUKU, MAUI, HAWAII
HILO, HAWAII



STUDY INTERSECTIONS

1. HONOAPIILANI HWY. & WAIKO RD.
2. HONOAPIILANI HWY. & KUIKAHI DR.
3. HONOAPIILANI HWY. & KEHALANI PKWY.
4. WAIALE RD. & KUIKAHI DR.
5. WAIALE RD. & WAIKO RD.
6. WAIALE RD. & NOKEKULA LOOP
7. WAIALE RD. & HAAWI ST.
8. WAIALE RD. & KOKOLOLIO ST.
9. WAIALE RD. & PROJECT ACCESS

ISLAND OF MAUI

LEGEND

(X) STUDY INTERSECTIONS NEAR THE PROJECT

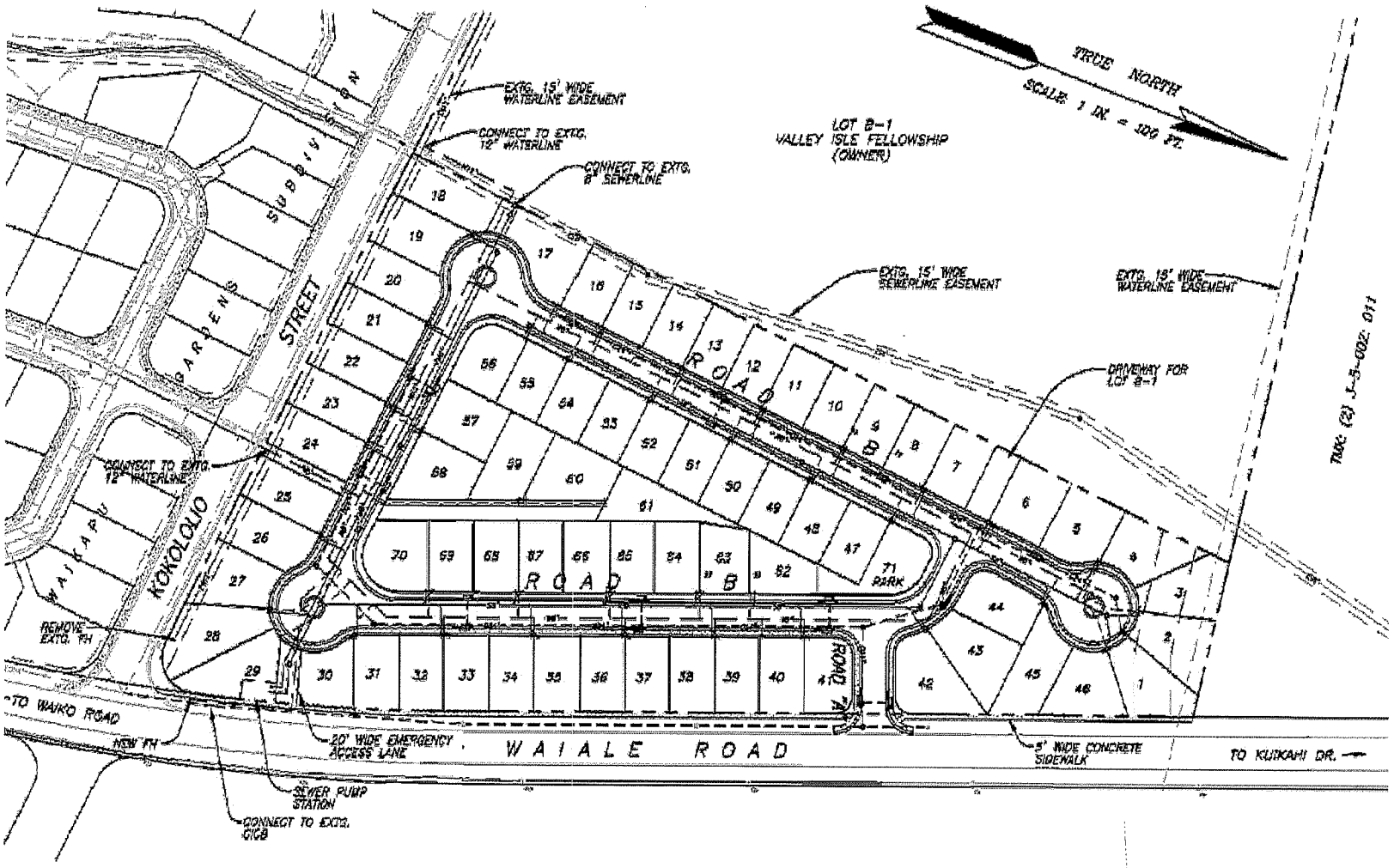
PROJECT SITE

WAIALE AFFORDABLE HOUSING TIAR

AUSTIN, TSUTSUMI & ASSOCIATES, INC.
ENGINEERS, SURVEYORS • HONOLULU, HAWAII

PROJECT LOCATION MAP

FIGURE 1.1



WAIALE AFFORDABLE HOUSING TIAR	AUSTIN, TSUTSUMI & ASSOCIATES, INC. ENGINEERS, SURVEYORS • HONOLULU, HAWAII	FIGURE 1.2
	PROJECT SITE PLAN	

2. STUDY METHODOLOGY

Level of Service (LOS) is a qualitative measure used to describe the conditions of traffic flow at intersections, with values ranging from free-flow conditions at LOS A, to congested conditions at LOS F. The Highway Capacity Manual (HCM), dated 2010, methods for calculating volume to capacity ratios, delays and corresponding Levels of Service were utilized in this study. LOS definitions for signalized and unsignalized intersections are provided in Appendix B.

2.1 Intersection Analysis

For applicable intersections as determined in Section 2.2, intersection analysis was performed using the traffic analysis software Synchro, which prepares Highway Capacity Manual (HCM) reports. The reports contain quantitative delay results, as based on intersection lane geometry, signal timing (including coordination and actuated minimums and maximums), roundabouts, and hourly traffic volume.

Based on the vehicular delay, reserve capacity and critical gaps at the intersection, a LOS is assigned (see Appendix B) as a qualitative measure of performance. These results constitute the technical analysis that will form the basis of the recommendations outlined in this report.

2.2 Study Area Intersection Analysis

Intersection analysis within the study area was performed on the following intersections due to their proximity to the Project:

- Honoapiilani Highway/Waiko Road (Signalized)
- Honoapiilani Highway/Kuikahi Drive (Signalized)
- Honoapiilani Highway/Kehalani Parkway (Signalized)
- Waiale Road/Kuikahi Drive (Signalized)
- Waiale Road/Waiko Road (Unsignalized)
- Waiale Road/Nokekula Loop (Unsignalized)
- Waiale Road/Haawi Street (Unsignalized)
- Waiale Road/Kokololio Street (Unsignalized)

3. EXISTING TRAFFIC CONDITIONS

3.1 Roadway Network

The following are brief descriptions of the existing roadways studied within the vicinity of the Project:

Honoapiilani Highway is a north-south, two-way, two-lane, undivided arterial highway with posted speed limits ranging between 30 miles per hour (mph) and 45 mph. Honoapiilani Highway begins as the continuation of South High Street near Kahookele Street and continues southward through Waikapu, Maalaea, and wraps around the "Pali" to West Maui. Right turn channelization is provided at all of its major intersections within the study area.

Kuikahi Drive is an east-west, two-way, two-lane, undivided collector roadway with posted speed limits ranging between 25 mph and 30 mph. Kuikahi Drive begins approximately 1.2 miles west of Honoapiilani Highway within the Wailuku Heights development and extends eastward past Honoapiilani Highway, terminating near The Church of Jesus Christ of Latter Day Saints, where Kuikahi Drive becomes Maui Lani Parkway.

Waiale Road is a north-south, two-way, two-lane, undivided collector roadway with a posted speed limit of 20 mph in the Project study area. To the north, Waiale Road serves as the southern connection to Lower Main Street and extends past the Maui Community Correctional Center, Kehalani Commercial Center and various residential subdivisions, eventually terminating at a T-intersection with East Waiko Road.

East Waiko Road is an east-west, two-way, two-lane, undivided collector roadway with a posted speed limit of 20 mph in the Project study area. East Waiko Road extends westward from Kuihelani Highway to Honoapiilani Highway where it continues as West Waiko Road within the Waikapu residential neighborhood.

Kehalani Parkway is an east-west, two-way, four-lane, divided collector roadway with posted speed limits ranging between 20 mph and 30 mph on either side of Honoapiilani Highway. Kehalani Parkway extends east of Honoapiilani Highway from the lower Kehalani residential subdivision at Kamole Street and continues in the mauka direction, curving north past Puu Kukui Elementary School in the upper Kehalani residential subdivisions.

Nokekula Loop is an east-west, two-way, two lane, undivided local roadway to the west of Waiale Road with a posted speed limit of 20 mph. Nokekula Loop extends from Waiale Road into the Waikapu Gardens Phase I residential neighborhood and curves to the north in a loop before terminating at Iniiniki Street.

Haawi Street is an east-west, two-way, two lane, undivided local roadway to the west of Waiale Road with a posted speed limit of 20 mph. Haawi Street extends from Waiale Road into the Waikapu Gardens Phase I residential neighborhood and continues as Haawi Loop at Kamahao Street.

Kokololio Street is an east-west, two-way, two lane, undivided local roadway to the west of Waiale Road with a posted speed limit of 20 mph. Kokololio Street extends from Waiale Road into the Waikapu Gardens Phase I residential neighborhood and terminates at its uncontrolled intersection with Kamahao Street.

3.2 Existing Traffic Volumes

The existing traffic volumes data utilized in this report were collected on Tuesday, March 31, 2015 and Thursday, October 22, 2015. Based on the traffic count data, the weekday AM peak hour of traffic was determined to occur between 7:00 AM and 8:00 AM, while the weekday PM peak hour of traffic was determined to occur between 4:15 PM and 5:15 PM. The traffic count data is provided in Appendix A for the existing intersections studied.

3.3 Existing Traffic Conditions Analysis and Observations

Honoapiilani Highway/Waiko Road is a signalized intersection with exclusive left-turn lanes on the northbound and southbound approaches, and exclusive right-turn lanes on the eastbound

and southbound approaches. All movements at this intersection currently operate at LOS C or better with no significant delays or queuing observed during the AM and PM peak hours of traffic.

Honoapiilani Highway/Kuikahi Drive is a signalized intersection with exclusive right-turn lanes on all approaches and exclusive left-turn lanes on the northbound and southbound approaches. The channelized northbound right-turn movement also includes an exclusive eastbound acceleration lane. All movements at this intersection currently operate at LOS C or better with no significant delays or queueing observed during the AM and PM peak hours of traffic.

Honoapiilani Highway/Kehalani Parkway is a signalized intersection with exclusive left-turn and right-turn lanes on all approaches. The channelized northbound and southbound right-turn movements also include exclusive eastbound and westbound receiving lanes, respectively. All movements at this intersection currently operate at LOS D or better during the AM and PM peak hours of traffic, except for the eastbound left-turn movement which operates at LOS F and overcapacity conditions during the AM peak hour. For a portion of the AM peak hour, the eastbound left-turn movement operates with queues that extend to or beyond the existing left-turn storage lane and some vehicles may require two cycle lengths to clear the intersection. Heavy traffic during a short period of time is reflective of typical school traffic conditions, as these queuing conditions were observed to last about 30 minutes during the AM peak hour, generally between 7:10-7:40 AM and likely primarily stem from traffic generated by the Puu Kukui Elementary School.

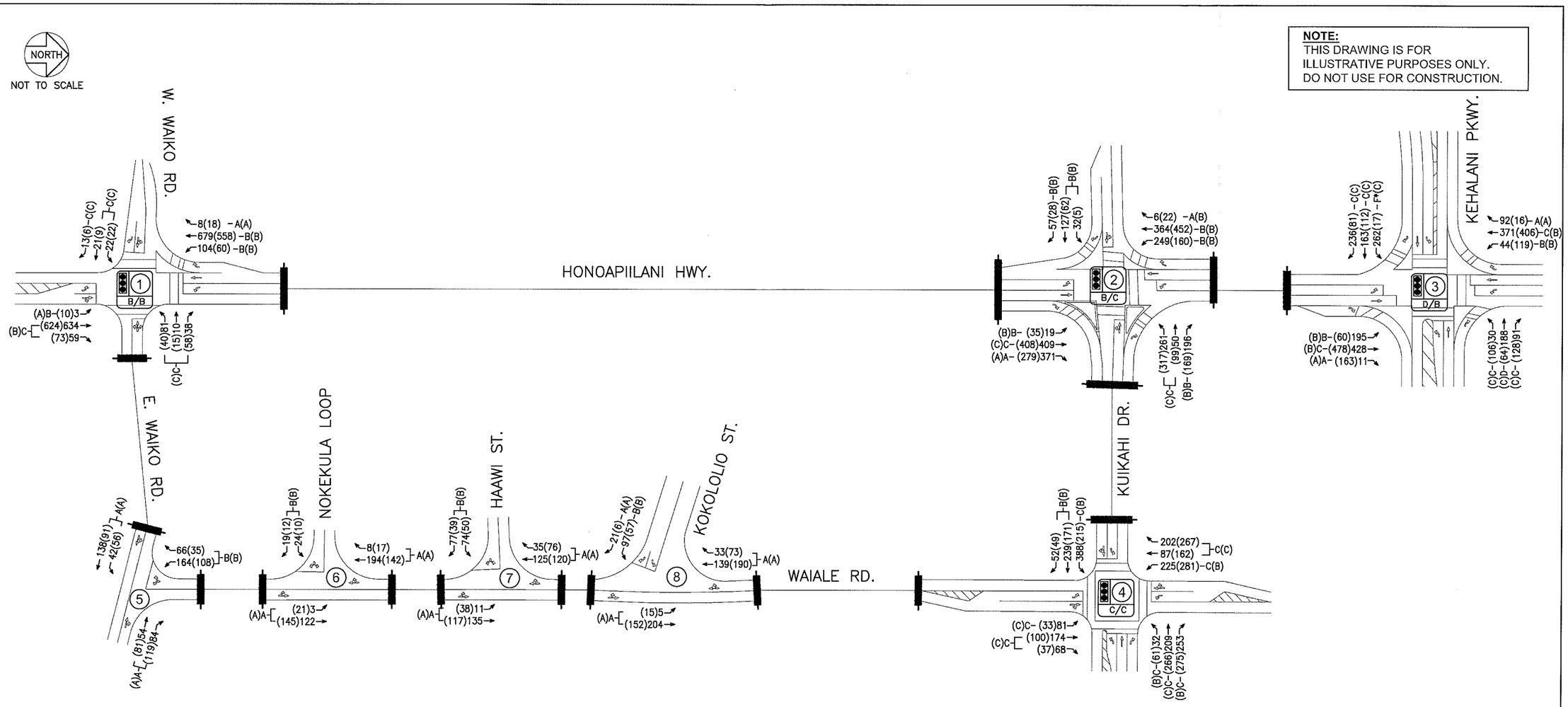
Waiale Road/Kuikahi Drive is a signalized intersection with exclusive left-turn lanes on all approaches and an exclusive right-turn lane on the westbound approach. All movements at this intersection currently operate at LOS D or better during the AM and PM peak hours of traffic. During the AM peak hour, vehicles can queue beyond the length of the eastbound left-turn storage lane. However, these queues occur at variable lengths and may depend on existing northbound queues that spill back from Waiale Road into the Waiale Road/Kuikahi intersection, occasionally limiting progression of eastbound left-turn vehicles.

Waiale Road/Waiko Road is an unsignalized T-intersection with shared lanes on all approaches and the southbound approach stop-controlled. All movements at this intersection currently operate at LOS B or better with no significant delays or queuing during the AM and PM peak hours of traffic. Due to generally low volume traffic along all approaches, queues along the stop controlled southbound approach typically consisted of no more than 3 vehicles.

Waiale Road/Nokekula Loop & Waiale Road/Haawi Street are unsignalized T-intersection with shared lanes on all approaches and the eastbound approach stop-controlled. All movements at this intersection currently operate at LOS B or better with no significant delays or queuing during the AM and PM peak hours of traffic.

Waiale Road/Kokololio Street is an unsignalized T-intersection with the eastbound approach stop-controlled and provided with separate left-turn and right-turn lanes. All movements at this intersection currently operate at LOS B or better with no significant delays or queuing during the AM and PM peak hours of traffic.

Figure 3.1 illustrates the existing lane configuration, existing traffic volumes, and LOS for each study intersection. Table 3.1 summarizes the existing LOS at the study intersections. LOS worksheets are provided in Appendix C.



DATE OF COUNTS:
MARCH 31, 2015 &
OCTOBER 22, 2015

AM PEAK HOUR:
7:00 AM – 8:00 AM

PM PEAK HOUR:
4:15 PM – 5:15 PM

LEGEND

##(##) – AM(PM) PEAK HOUR OF TRAFFIC VOLUMES

X(X) – AM(PM) LOS

(Y) X/X – SIGNALIZED INTERSECTION Y, OVERALL AM/PM LOS

(Y) – INTERSECTION Y

WAIALE AFFORDABLE HOUSING TIAR

AUSTIN, TSUTSUMI & ASSOCIATES, INC.
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EXISTING LANE CONFIGURATION, TRAFFIC VOLUMES AND LOS

FIGURE 3.1

Table 3.1: Existing Conditions LOS

Intersection	Existing Conditions					
	AM			PM		
	HCM Delay	v/c Ratio	LOS	HCM Delay	v/c Ratio	LOS
Honoapiilani Highway & Waiko Road						
EB LT/TH	28.2	0.12	C	27.0	0.09	C
EB RT	27.5	0.01	C	26.6	0.02	C
WB LT/TH/RT	30.8	0.35	C	28.7	0.33	C
NB LT	10.6	0.01	B	9.5	0.03	A
NB TH/RT	22.0	0.77	C	19.8	0.78	B
SB LT	12.2	0.29	B	11.7	0.18	B
SB TH	12.8	0.65	B	10.9	0.55	B
SB RT	6.4	0.01	A	6.8	0.02	A
Overall	18.3	--	B	16.8	--	B
Honoapiilani Highway & Kuikahi Drive						
EB LT/TH	19.1	0.29	B	16.5	0.10	B
EB RT	17.4	0.03	B	16.2	0.06	B
WB LT/TH	23.5	0.69	C	27.1	0.77	C
WB RT	17.9	0.12	B	18.1	0.34	B
NB LT	13.8	0.05	B	15.4	0.12	B
NB TH	21.2	0.67	C	22.6	0.67	C
SB LT	13.0	0.59	B	14.2	0.44	B
SB TH	13.5	0.46	B	19.0	0.63	B
SB RT	10.0	0.00	A	12.7	0.04	B
Overall	18.1	--	B	21.0	--	C
Honoapiilani Highway & Kehalani Parkway						
EB LT	79.1	**1.01**	F*	25.6	0.06	C
EB TH	25.1	0.34	C	29.5	0.61	C
EB RT	23.5	0.14	C	29.0	0.51	C
WB LT	30.6	0.11	C	23.6	0.38	C
WB TH	38.2	0.79	D	24.4	0.23	C
WB RT	32.5	0.05	C	26.3	0.54	C
NB LT	17.2	0.52	B	10.7	0.15	B
NB TH	23.0	0.63	C	17.8	0.67	B
SB LT	18.4	0.14	B	11.7	0.32	B
SB TH	26.7	0.64	C	15.3	0.55	B
Overall	35.5	--	D	19.3	--	B

* - Denotes overcapacity conditions.

Table 3.1: Existing Conditions LOS (cont.)

Intersection	Existing Conditions					
	AM			PM		
	HCM Delay	v/c Ratio	LOS	HCM Delay	v/c Ratio	LOS
Waiale Road & Kuikahi Drive						
EB LT	23.6	0.82	C	15.8	0.54	B
EB TH/RT	17.4	0.42	B	17.4	0.41	B
WB LT	25.6	0.11	C	17.6	0.15	B
WB TH	33.0	0.69	C	24.5	0.70	C
WB RT	27.5	0.13	C	19.7	0.14	B
NB LT	24.2	0.25	C	21.5	0.15	C
NB TH/RT	33.5	0.74	C	25.1	0.48	C
SB LT	24.0	0.63	C	17.5	0.58	B
SB TH/RT	25.8	0.52	C	27.0	0.82	C
Overall	25.5	--	C	21.4	--	C
Waiale Road & East Waiko Road						
EB LT	7.6	0.03	A	7.8	0.05	A
SB LT/RT	13.0	0.36	B	12.3	0.24	B
Waiale Road & Nokekula Loop						
EB LT/RT	10.4	0.06	B	10.0	0.03	B
NB LT	7.7	0.01	A	7.6	0.02	A
Waiale Road & Haawi Street						
EB LT/RT	11.0	0.22	B	11.0	0.14	B
NB LT	7.6	0.01	A	7.7	0.03	A
Waiale Road & Kokololio Street						
EB LT	12.2	0.18	B	12.2	0.11	B
EB RT	9.2	0.03	A	9.6	0.01	A
NB LT	7.6	0.01	A	7.9	0.01	A

* - Denotes overcapacity conditions.

4. BASE YEAR 2018 TRAFFIC CONDITIONS

4.1 Defacto Growth Rate

Projections for Base Year 2018 traffic were based upon existing traffic counts performed by ATA, The Maui Regional Travel Demand Model (MRTDM) growth for forecast years of 2020 and 2035, and nearby developments in the immediate vicinity of the Project. The resulting growth rates along study roadways ranged from 1.5 to 1.9 percent per year.

4.2 Traffic Forecasts for Known Developments

By year 2018, the Wailuku/Waikapu area will have experienced significant growth, both in its residential population and commercial/industrial/business land uses, primarily as a result of the following developments, which are also shown in Figure 4.1 and Table 4.1. Appendix E shows the general trip distribution/assignment percentages associated with each development either based on existing traffic patterns or their respective Project TIAR's. The Waikapu Gardens Phase II development and Central Maui Regional Sports Complex Phase I have begun construction and were included. The Waikapu Light Industrial, Waiko Baseyard Light Industrial and Valley Isle Fellowship Church have all obtained necessary land use and zoning approvals to begin construction, pending any obligations that are required to be fulfilled prior to occupancy and were also included in this TIAR. The Kehalani Village Center and Maui Lani Village Center are currently occupied and ongoing developments with associated growth assumptions described in Table 4.1 below.

Trips generated by the master planned communities for the Kehalani, Maui Lani residential developments are accounted for in the MRTDM growth. It was assumed that the Puunani Residences, Waiale Development and Waikapu Country Town (WCT) developments are unlikely to be built by Year 2018, given their current statuses in the permitting process, and were therefore not explicitly included in this TIAR.

- **Waikapu Light Industrial Project** - Proposed 8.5-acre industrial development along Waiko Road. Forecast traffic growth generated by this development was obtained from the Project's TIAR dated April 2013 and was added to the roadway network.

- **Waiko Baseyard Light Industrial Development** - Proposed industrial development along Waiko Road that will include 100,000 SF of commercial space and 19.7 acres of light industrial uses. Forecast traffic growth generated by this development was obtained from the Project's TIAR dated May 2011 and was added to the roadway network.

- **Central Maui Regional Sports Complex (CMRSC)** – Proposed regional park development, located south of the Maui Lani Parkway and Kamehameha Avenue intersection. Forecast traffic growth generated by this development was obtained from the Project's TIAR dated May 2014 and was added to the roadway network.

- **Valley Isle Fellowship Church** – Proposed church located west and adjacent to the Waiale Affordable Housing 201-H development. An existing gated access to the project is located along Waiale Road and was assumed to be the primary access to the church. The forecast AM and PM peak hour trips were generated based on ITE Trip generation for an assumed 9,000 SF church.

- **Kehalani Village Center** – Existing retail center in the Kehalani subdivision. Currently occupied by Longs Drugs, Foodland, Foodland Gas, American Savings Bank, Coffee Bean Tea & Leaf and McDonalds. Based on the remaining acreage parcels, it was assumed for this TIAR, that 40% of the Project remains to be finished. The forecast AM and PM peak hour trips were obtained from the Project's TIAR dated 2012 and was added to the roadway network.

- **Maui Lani Village Center** – Existing retail center in the Maui Lani subdivision. Currently occupied by Walgreen and a mix of various commercial, office and warehouse land uses. Based on the our latest projections, approximately 20,000 SF of commercial, 65,000 SF of office and 80,000 SF of warehouse space is anticipated to be completed by year 2018. The forecast AM and PM peak hour trips were generated based on the cumulative ITE Trip generation and added to the roadway network.

- **Waikapu Gardens Phase II** – Proposed 56-unit single-family residential subdivision, adjacent to the existing Waikapu Gardens Phase I subdivision along Waiale Road. A single access to the Waikapu Gardens Phase II is currently constructed along Waiale Road, between Nokekula Street and Waiko Road. At the time of the traffic count, a portion of the subdivision was currently constructed and occupied. However, numerous construction vehicles were observed accessing the site. Therefore, for purposes of this TIAR all existing residential and construction vehicular trips generated by the subdivision were removed from the roadway network and reapplied based on ITE Trip generation data/distribution.

4.3 Planned Roadway Projects

The Waiale Road Extension and Waiko Road Improvements are planned roadway improvements to be constructed in the future. However, since they are unlikely to be built by Year 2018 given their current status, these roadway improvements were not included in this TIAR.

Table 4.1: Total Trips Generated by Known Developments in Project Vicinity [1]

Known Development	Land Use	Units	AM Peak Hour			PM Peak Hour		
			Enter	Exit	Total	Enter	Exit	Total
Waikapu Light Industrial Project	Industrial Park	8.5 Acres	74	15	89	21	79	100
Waiko Baseyard Light Industrial Development	Light Industrial, Retail	19.7 Acres, 100,000 SF	219	86	305	220	351	571
Central Maui Regional Sports Complex	County Park, Soccer Complex	13 Acres, 12 Fields	9	6	15	144	71	215
Kehalani Village Center [2]	Commercial	72,000 SF 56 MF	55	39	94	181	194	375
Maui Lani Village Center (formerly VMX) [3]	Commercial, Office, Warehouse	165,000 SF	123	26	149	65	142	207
Valley Isle Fellowship Church	Church	9,000 SF	4	2	6	2	3	5
Waikapu Gardens Phase II	Single-Family Residential	56 Units	12	37	49	40	23	63

Note:

1. Table 4.1 shows trips generated by known developments in the vicinity of the Project. Not all traffic generated by these developments travel through the study area of this TIAR, since some traffic will be routed to various roadways and intersections that were not included in this TIAR. See Appendix E for more detailed assessment of trip distribution/assignment patterns.
2. Kehalani Village Center partially completed with Longs Drugs, Foodland, Foodland Gas and McDonalds. Trips shown, accounts for assumed 40% remaining commercial development and residential unit and is based on Kehalani Village Center TIAR dated 2012.
3. Maui Lani Village Center projections based on latest assumptions for growth. Majority of expansion (145,000 SF) attributed to lower trip generating office and warehouse land uses.

4.4 Base Year 2018 Analysis

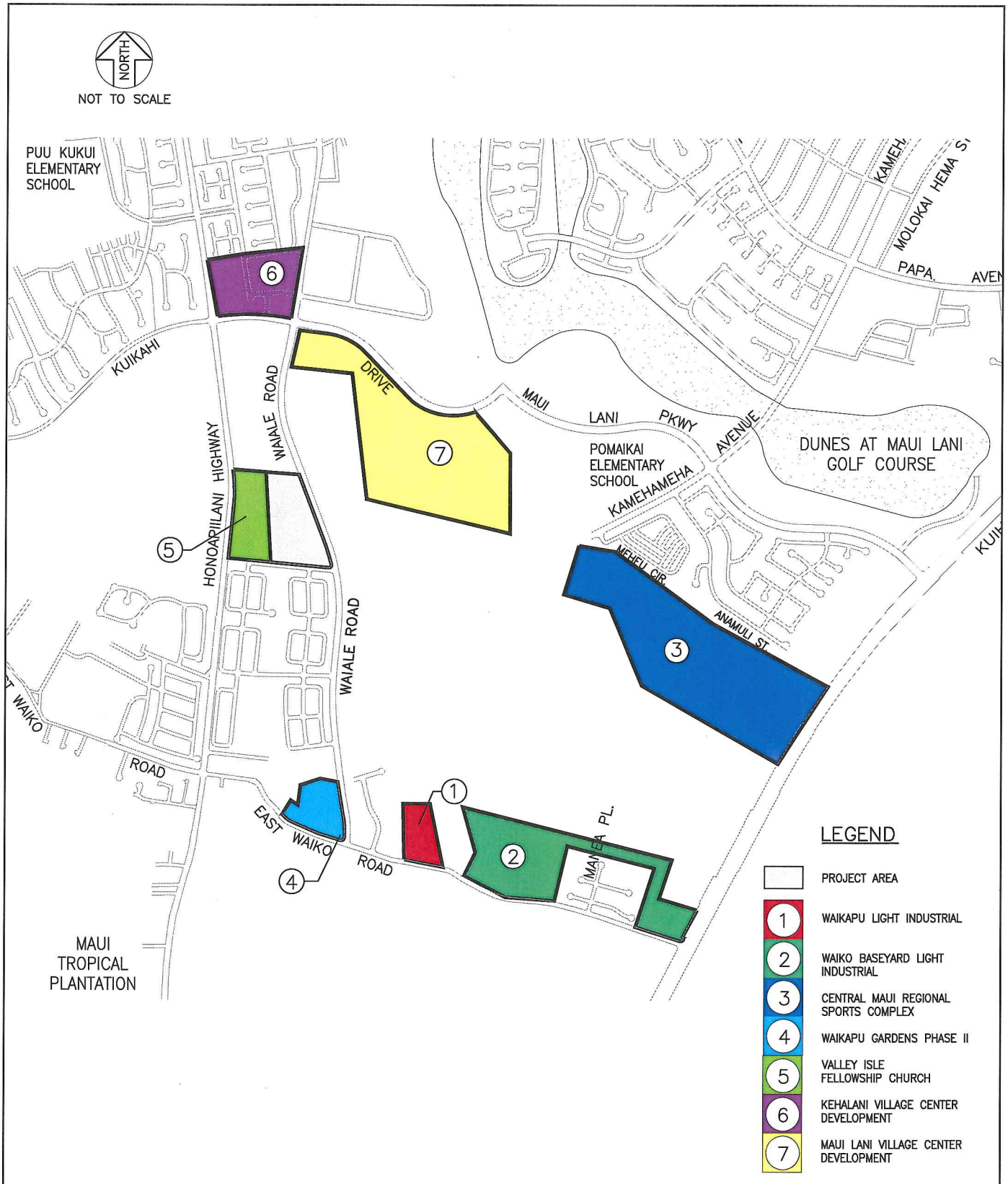
All study intersections are forecast to operate with LOS similar to existing conditions, with all movements operating at LOS D or better during AM and PM peak hour conditions, except for the eastbound left-turn movement at the Honoapiilani Highway/Kehalani Parkway intersection, which will continue to operate at over-capacity and LOS F conditions. As noted in Section 3.3, heavy traffic during a short period of time is reflective of typical school traffic conditions, as these queuing conditions were observed to last about 30 minutes during the AM peak hour, generally between 7:10-7:40 AM and likely primarily stem from traffic generated by the Puu Kukui Elementary School. However, Base Year 2018 traffic at the Honoapiilani

Highway/Kehalani Parkway intersection is only anticipated to increase by approximately 5.8 percent over existing conditions. In addition, the more critical eastbound left-turn movement is not anticipated to significantly increase, due to no major expansion expected to occur at the Puu Kukui Elementary School or upper Kehalani subdivision region by Year 2018. There are currently no identified or planned roadway improvements likely to occur at this intersection.

Since the Waikapu Gardens Phase I subdivision is fully built out, entering northbound left-turn vehicles at the three (3) accesses along Waiale Road at Kokololio Street, Haawi Street and Nokekula Loop are anticipated to remain similar to existing conditions with each northbound left-turn movement serving fewer than 40 vehicles during the AM and PM peak hours of traffic. At these three Waikapu Garden Phase I accesses, traffic signals are likely not warranted based on the 4-hour vehicular traffic signal warrant in the Manual on Uniform Traffic Control Devices (MUTCD).

The Waiko Road/Waiale Road intersection will operate adequately with all movements at LOS D or better. Similarly, a traffic signal is not warranted at the intersection. Based on AASHTO guidance, an exclusive eastbound left-turn lane may be considered. However, no roadway improvements are planned at the intersection outside of the Waiale Road Extension and Waiko Road Improvements. Therefore, for purposes of this TIAR, the existing intersection laneage was assumed to remain for Base Year and Future Year 2018 conditions.

Figure 4.2 illustrates the Base Year 2018 forecast traffic volumes and LOS for the study intersection movements. Table 4.2 summarizes the Base Year 2018 LOS at the study intersections compared to existing conditions. LOS worksheets are provided in Appendix C.



WAIALE AFFORDABLE HOUSING TIAR

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FIGURE 4.1

BACKGROUND DEVELOPMENTS IN PROJECT VICINITY

NORTH

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W. WAIKO RD.

E. WAIKO RD.

NOKEKULA LOOP

HAAWI ST.

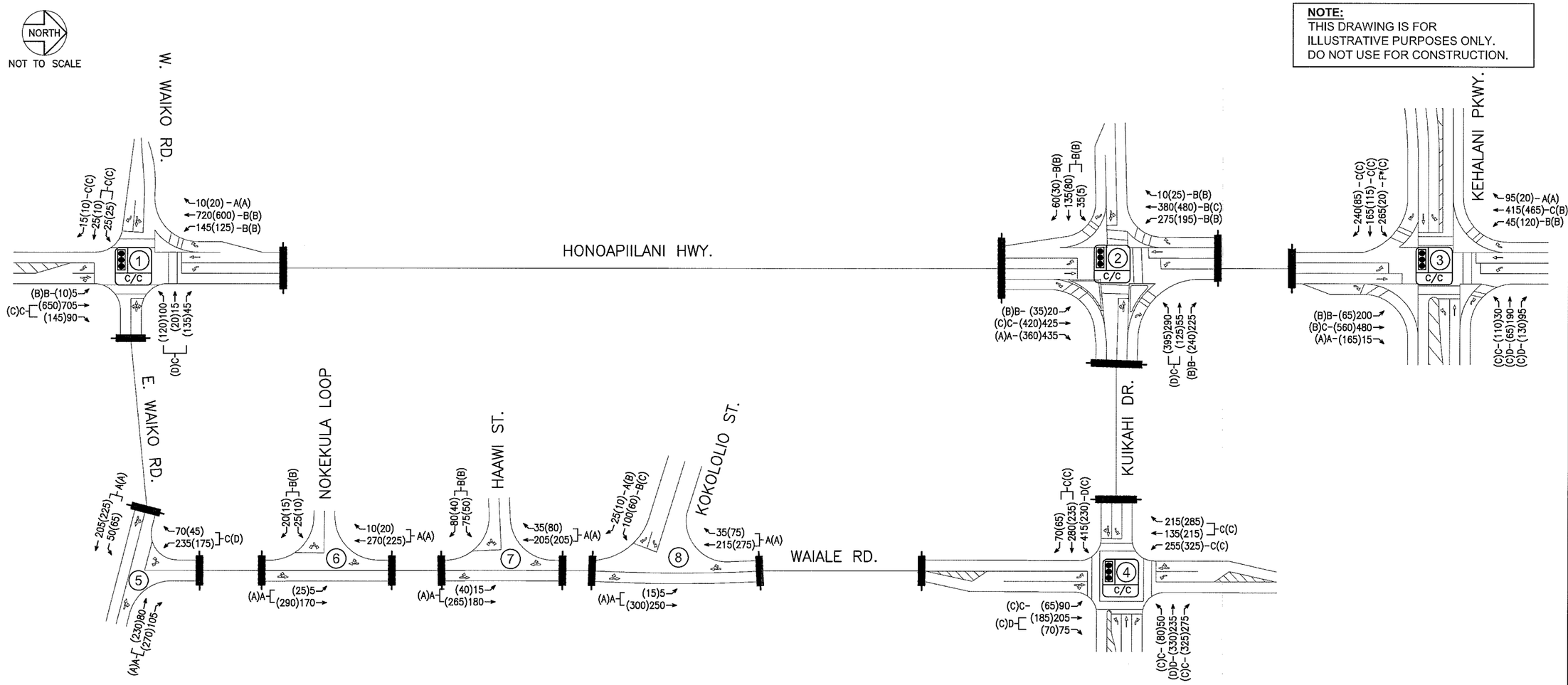
KOKOLOLIO ST.

KUIKAHI DR.

KEHALANI PKWY.

HONOAPIILANI HWY.

WAIALE RD.



LEGEND

##(##)	– AM(PM) PEAK HOUR OF TRAFFIC VOLUMES
X(X)	– AM(PM) LOS
(Y) X/X	– SIGNALIZED INTERSECTION Y, OVERALL AM/PM LOS
(Y)	– INTERSECTION Y

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BASE YEAR 2018 LANE CONFIGURATION, TRAFFIC VOLUMES AND LOS

FIGURE 4.2

Table 4.2: Existing vs Base Year 2018 Conditions LOS

Intersection	Existing Conditions						Base Year 2018					
	AM			PM			AM			PM		
	HCM Delay	v/c Ratio	LOS	HCM Delay	v/c Ratio	LOS	HCM Delay	v/c Ratio	LOS	HCM Delay	v/c Ratio	LOS
Honoapiilani Highway & Waiko Road												
EB LT/TH	28.2	0.12	C	27.0	0.09	C	28.2	0.14	C	29.1	0.12	C
EB RT	27.5	0.01	C	26.6	0.02	C	27.4	0.01	C	28.4	0.01	C
WB LT/TH/RT	30.8	0.35	C	28.7	0.33	C	31.7	0.45	C	38.2	0.73	D
NB LT	10.6	0.01	B	9.5	0.03	A	11.3	0.02	B	10.5	0.03	B
NB TH/RT	22.0	0.77	C	19.8	0.78	B	32.0	0.90	C	29.0	0.89	C
SB LT	12.2	0.29	B	11.7	0.18	B	17.6	0.51	B	18.1	0.45	B
SB TH	12.8	0.65	B	10.9	0.55	B	14.0	0.69	B	11.8	0.58	B
SB RT	6.4	0.01	A	6.8	0.02	A	6.5	0.01	A	7.0	0.01	A
Overall	18.3	--	B	16.8	--	B	23.6	--	C	23.5	--	C
Honoapiilani Highway & Kuikahi Drive												
EB LT/TH	19.1	0.29	B	16.5	0.10	B	19.7	0.29	B	16.1	0.12	B
EB RT	17.4	0.03	B	16.2	0.06	B	17.8	0.04	B	15.6	0.05	B
WB LT/TH	23.5	0.69	C	27.1	0.77	C	28.0	0.74	C	38.4	0.89	D
WB RT	17.9	0.12	B	18.1	0.34	B	18.7	0.17	B	18.4	0.42	B
NB LT	13.8	0.05	B	15.4	0.12	B	16.1	0.05	B	19.6	0.14	B
NB TH	21.2	0.67	C	22.6	0.67	C	25.8	0.73	C	32.0	0.78	C
SB LT	13.0	0.59	B	14.2	0.44	B	17.9	0.68	B	18.8	0.60	B
SB TH	13.5	0.46	B	19.0	0.63	B	15.4	0.49	B	25.2	0.71	C
SB RT	10.0	0.00	A	12.7	0.04	B	11.3	0.01	B	15.5	0.04	B
Overall	18.1	--	B	21.0	--	C	21.5	--	C	27.8	--	C
Honoapiilani Highway & Kehalani Parkway												
EB LT	79.1	1.01	F*	25.6	0.06	C	84.9	1.03	F*	27.7	0.08	C
EB TH	25.1	0.34	C	29.5	0.61	C	26.8	0.34	C	32.2	0.63	C
EB RT	23.5	0.14	C	29.0	0.51	C	25.2	0.14	C	31.7	0.54	C
WB LT	30.6	0.11	C	23.6	0.38	C	33.5	0.11	C	25.5	0.41	C
WB TH	38.2	0.79	D	24.4	0.23	C	42.1	0.82	D	26.7	0.24	C
WB RT	32.5	0.05	C	26.3	0.54	C	35.6	0.07	D	28.7	0.55	C
NB LT	17.2	0.52	B	10.7	0.15	B	18.6	0.56	B	11.0	0.17	B
NB TH	23.0	0.63	C	17.8	0.67	B	25.2	0.68	C	19.8	0.73	B
SB LT	18.4	0.14	B	11.7	0.32	B	19.5	0.16	B	12.7	0.36	B
SB TH	26.7	0.64	C	15.3	0.55	B	28.6	0.68	C	16.0	0.59	B
Overall	35.5	--	D	19.3	--	B	37.8	--	D	20.8	--	C
Waiale Road & Kuikahi Drive												
EB LT	23.6	0.82	C	15.8	0.54	B	36.2	0.89	D	23.0	0.68	C
EB TH/RT	17.4	0.42	B	17.4	0.41	B	21.7	0.49	C	24.8	0.54	C
WB LT	25.6	0.11	C	17.6	0.15	B	30.8	0.17	C	22.9	0.24	C
WB TH	33.0	0.69	C	24.5	0.70	C	40.6	0.74	D	38.8	0.82	D
WB RT	27.5	0.13	C	19.7	0.14	B	33.6	0.16	C	26.4	0.23	C
NB LT	24.2	0.25	C	21.5	0.15	C	28.5	0.34	C	23.3	0.31	C
NB TH/RT	33.5	0.74	C	25.1	0.48	C	38.8	0.75	D	27.5	0.54	C
SB LT	24.0	0.63	C	17.5	0.58	B	29.9	0.71	C	26.1	0.74	C
SB TH/RT	25.8	0.52	C	27.0	0.82	C	32.5	0.70	C	31.9	0.85	C
Overall	25.5	--	C	21.4	--	C	32.8	--	C	28.9	--	C
Waiale Road & East Waiko Road												
EB LT	7.6	0.03	A	7.8	0.05	A	7.7	0.04	A	8.8	0.07	A
SB LT/RT	13.0	0.36	B	12.3	0.24	B	19.2	0.57	C	30.9	0.65	D
Waiale Road & Nokekula Loop												
EB LT/RT	10.4	0.06	B	10.0	0.03	B	11.4	0.08	B	11.3	0.05	B
NB LT	7.7	0.01	A	7.6	0.02	A	7.9	0.00	A	7.8	0.02	A
Waiale Road & Haawi Street												
EB LT/RT	11.0	0.22	B	11.0	0.14	B	12.5	0.26	B	13.4	0.19	B
NB LT	7.6	0.01	A	7.7	0.03	A	7.8	0.01	A	8.0	0.04	A
Waiale Road & Kokololio Street												
EB LT	12.2	0.18	B	12.2	0.11	B	14.1	0.22	B	15.8	0.16	C
EB RT	9.2	0.03	A	9.6	0.01	A	9.7	0.04	A	10.2	0.02	B
NB LT	7.6	0.01	A	7.9	0.01	A	7.8	0.00	A	8.1	0.01	A

* - Denotes overcapacity conditions.

5. FUTURE YEAR 2018 TRAFFIC CONDITIONS

The Future Year 2018 scenario represents the traffic conditions within the Project study area with the full build-out of the Project.

5.1 Background

The Project currently plans to develop 70 single-family detached residential units and a neighborhood park on approximately 10.35 acres of land between Waiale Road and Honoapiilani Highway, to the north of Kokololio Street. Vehicular access to the Project will be provided by a new access intersection located along Waiale Road.

5.2 Travel Demand Estimations

5.2.1 Transportation Demand Management (TDM) Assumptions

The State of Hawaii Department of Transportation (HDOT) and Maui County provide various TDM programs that promote the use of transit, walking, biking and alternative modes of transportation, to reduce the use of single-occupant vehicles on roadways. TDM measures discussed in this section have only been identified, but conservatively assumed to yield NO vehicular reductions for Project generated traffic.

Maui County, in partnership with Roberts Hawaii currently provides bus service to the major areas in Maui. In the vicinity of the Project, the Maui Bus does not traverse Waiale Road. However, it currently provides a Lahaina-Wailuku route that stops at the Honoapiilani Highway/Wilikona Place intersection, about 450 feet south of the Honoapiilani Highway/East Waiko Road intersection. The nearest park and ride lots are currently located to the northeast of the Project, on the southwest corner of the Puunene Avenue/Kuihelani Highway/Dairy Road intersection and to the south of the Project, at the Honoapiilani Highway/North Kihei Road intersection.

HDOT currently provides the Bike Plan Hawaii Master Plan, which identifies proposed bicycle routes that could potentially be implemented in the future. In the vicinity of the study area, Honoapiilani Highway is proposed to be a "signed shared roadway", which is a roadway shared by both vehicles and bicycles, which accommodate bicycles through wider vehicular travel lanes or paved shoulders. There is currently no bike improvement identified in the HDOT Bike Plan Hawaii Master Plan along Waiale Road.

5.2.2 Trip Generation

The Institute of Transportation Engineers (ITE) publishes a book based on empirical data compiled from a body of more than 4,250 trip generation studies submitted by public agencies, developers, consulting firms, and associations. This publication, titled Trip Generation Manual, 9th Edition, provides trip rates and/or formulae based on graphs that correlate vehicular trips with independent variables. The independent variable can range from Dwelling Units (DU) for single-family attached homes to Gross Floor Area (GFA) for commercial and office development. See Tables 5.1 and 5.2 for Trip Generation formulae and projections for the Project.

Table 5.1: Project Trip Generation Rates

Land Use Type	Independent Variable	AM Peak Hour		PM Peak Hour	
		Rate	% Enter	Rate	% Enter
Single-Family Detached Housing (ITE 210)	Dwelling Units (DU)	[a]	17%	[b]	67%

Notes:
[a] T = 0.70*X+9.74 [b] Ln(T) = 0.90*Ln(X)+0.51

Table 5.2: New Project-Generated Trips

Land Use Type	Quantity	AM Peak Hour			PM Peak Hour		
		Enter	Exit	Total	Enter	Exit	Total
Single-Family Detached Housing (ITE 210)	70 DU	15	44	59	49	28	77

5.2.3 Trip Distribution

Trips generated by the Project were assigned throughout the study area generally based upon existing travel patterns experienced by the adjacent Waikapu Gardens Phase I residential subdivision. The traffic generated by the Project was added to the forecast Base Year 2018 traffic volumes within the vicinity of the Project to constitute the traffic volumes for the Future Year 2018 traffic conditions. Figure 5.1 illustrates the Project-generated trip distribution.

5.3 Future Year 2018 Analysis

Upon completion of the Project, all study intersections are forecast to operate with LOS similar to Base Year 2018 conditions, with nearly all movements continuing to operate at LOS D or better during the AM and PM peak hours of traffic. However, the eastbound left-turn movement at the Honoapiilani Highway/Kehalani Parkway intersection is forecast to continue operating at over-capacity and LOS F conditions, similar to Base Year 2018 conditions. As noted in Section 4.4, heavy traffic during a short period of time is reflective of typical school conditions, as these queuing conditions were observed to last about 30 minutes during the AM peak hour, generally between 7:10-7:40 AM and likely primarily stem from traffic generated by the Puu Kukui Elementary School. However, the Project is only anticipated to increase traffic at the Honoapiilani Highway/Kehalani Parkway intersection by approximately 0.8%. In addition, the more critical eastbound left-turn movement is not anticipated to significantly increase in volumes, due to no major expansion expected to occur at the Puu Kukui Elementary School or in the upper Kehalani subdivision region by Year 2018. There are currently no identified or planned roadway improvements likely to occur at this intersection.

Fronting the three (3) Waikapu Gardens Phase I subdivision accesses along Waiale Road at Kokololio Street, Haawi Street and Nokekula Loop, the Project is only anticipated to increase throughput traffic along Waiale Road by 19(24) vehicles during the AM(PM) peak hours of traffic, which translates to a 4% increase in throughput traffic along Waiale Road. Similar to Base Year 2018 conditions, a traffic signal is not anticipated to be warranted at any of three Waikapu Garden accesses OR the unsignalized Waiko Road/Waiale Road intersection based on the 4-hour vehicular traffic signal warrant in the Manual on Uniform Traffic Control Devices (MUTCD). Due to minimal increases at the Waiko Road/Waiale Road intersection, all movements are anticipated to operate adequately at LOS D or better.

At the Waiale Road/Project Access intersection, turning movement traffic entering/exiting the site is forecast to be generally low, with each turning movement anticipated to be below 35 vehicles during the AM and PM peak hours. Left-turn lanes are likely not warranted based on AASHTO guidance and a traffic signal is not warranted based on the 4-hour vehicular traffic signal warrant in the Manual on Uniform Traffic Control Devices (MUTCD).

Figure 5.2 illustrates the Future Year 2018 forecast traffic volumes and LOS for the study intersection movements. Table 5.3 summarizes the Future Year 2018 LOS at the study intersections compared to Base Year 2018 conditions. LOS worksheets are provided in Appendix C. The traffic signal warrant analysis for the Waiko Road/Waiale Road intersection is provided in Appendix D.

NORTH

NOT TO SCALE

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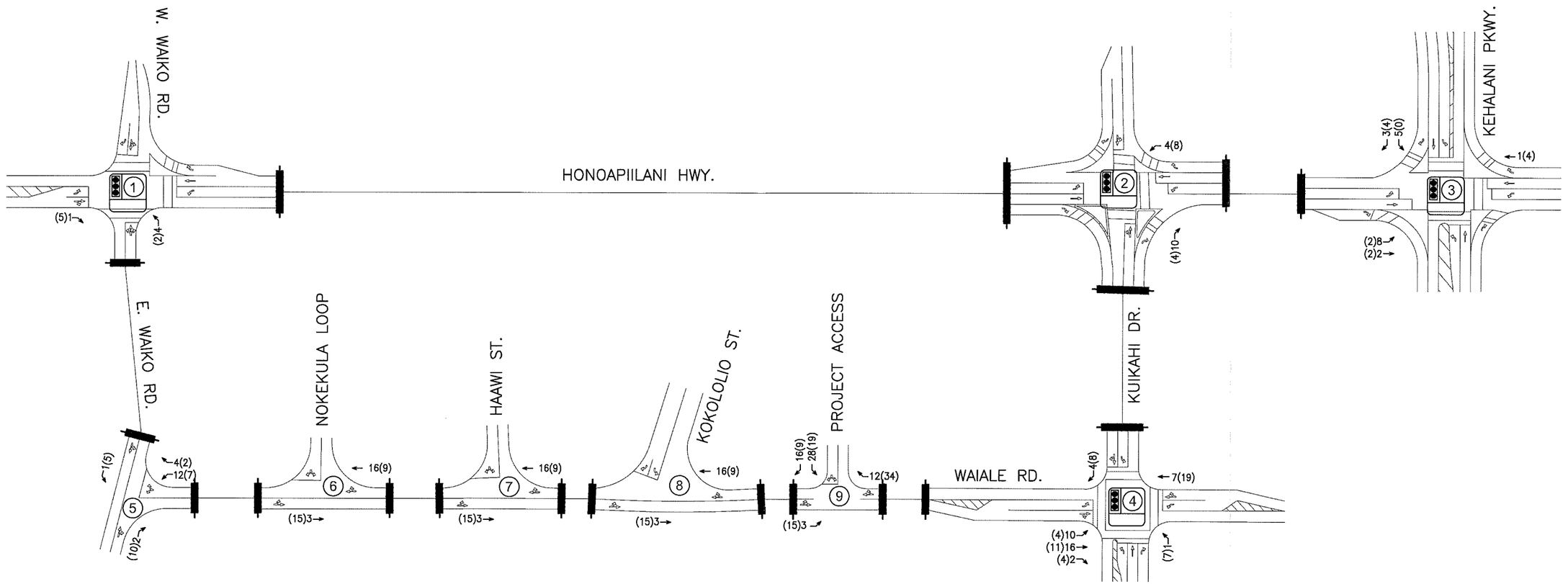

LEGEND

##(##) – AM(PM) PEAK HOUR PROJECT GENERATED VOLUMES

– SIGNALIZED INTERSECTION Y

(Y) – INTERSECTION Y

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PROJECT GENERATED TRAFFIC VOLUMES

FIGURE
5.1

NORTH

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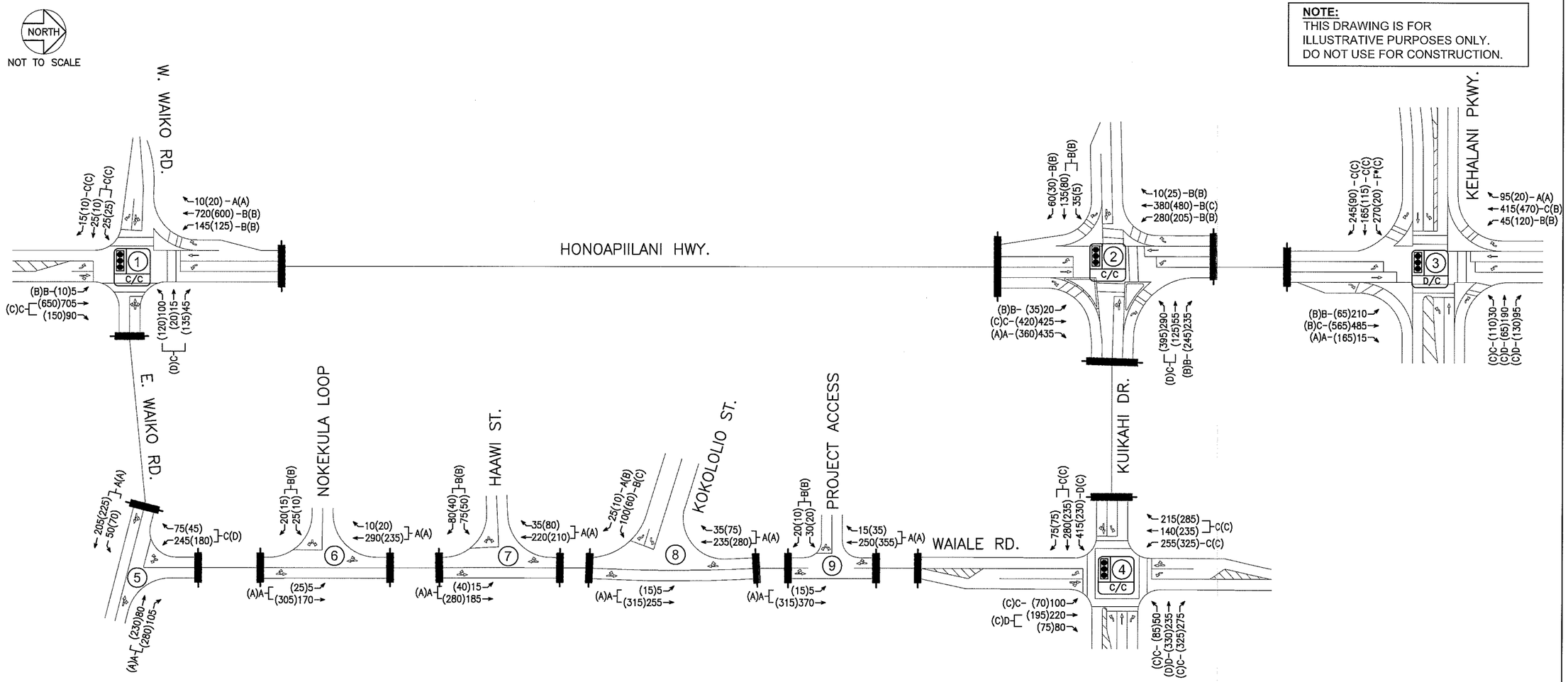

LEGEND

##(##)	– AM(PM) PEAK HOUR OF TRAFFIC VOLUMES
X(X)	– AM(PM) LOS
(Y) X/X	– SIGNALIZED INTERSECTION Y, OVERALL AM/PM LOS
(Y)	– INTERSECTION Y

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FUTURE YEAR 2018 LANE CONFIGURATION, TRAFFIC VOLUMES AND LOS

FIGURE 5.2

Table 5.3: Base Year vs Future Year 2018 LOS

Intersection	Base Year 2018						Future Year 2018					
	AM			PM			AM			PM		
	HCM Delay	v/c Ratio	LOS	HCM Delay	v/c Ratio	LOS	HCM Delay	v/c Ratio	LOS	HCM Delay	v/c Ratio	LOS
Honoapiilani Highway & Waiko Road												
EB LT/TH	28.2	0.14	C	29.1	0.12	C	28.2	0.14	C	29.2	0.12	C
EB RT	27.4	0.01	C	28.4	0.01	C	27.4	0.01	C	28.5	0.01	C
WB LT/TH/RT	31.7	0.45	C	38.2	0.73	D	31.7	0.45	C	38.3	0.73	D
NB LT	11.3	0.02	B	10.5	0.03	B	11.3	0.02	B	10.5	0.03	B
NB TH/RT	32.0	0.90	C	29.0	0.89	C	32.0	0.90	C	29.6	0.90	C
SB LT	17.6	0.51	B	18.1	0.45	B	17.6	0.51	B	18.4	0.46	B
SB TH	14.0	0.69	B	11.8	0.58	B	14.0	0.69	B	11.8	0.58	B
SB RT	6.5	0.01	A	7.0	0.01	A	6.5	0.01	A	7.0	0.01	A
Overall	23.6	--	C	23.5	--	C	23.6	--	C	23.9	--	C
Honoapiilani Highway & Kuikahi Drive												
EB LT/TH	19.7	0.29	B	16.1	0.12	B	19.7	0.29	B	16.2	0.12	B
EB RT	17.8	0.04	B	15.6	0.05	B	17.9	0.04	B	15.7	0.05	B
WB LT/TH	28.0	0.74	C	38.4	0.89	D	28.1	0.74	C	38.8	0.89	D
WB RT	18.7	0.17	B	18.4	0.42	B	18.6	0.19	B	18.6	0.43	B
NB LT	16.1	0.05	B	19.6	0.14	B	16.2	0.05	B	19.8	0.14	B
NB TH	25.8	0.73	C	32.0	0.78	C	26.0	0.73	C	32.6	0.79	C
SB LT	17.9	0.68	B	18.8	0.60	B	18.3	0.69	B	19.5	0.63	B
SB TH	15.4	0.49	B	25.2	0.71	C	15.4	0.49	B	25.1	0.71	C
SB RT	11.3	0.01	B	15.5	0.04	B	11.4	0.01	B	15.4	0.04	B
Overall	21.5	--	C	27.8	--	C	21.6	--	C	28.1	--	C
Honoapiilani Highway & Kehalani Parkway												
EB LT	84.9	1.03	F*	27.7	0.08	C	93.2	1.06	F*	27.9	0.08	C
EB TH	26.8	0.34	C	32.2	0.63	C	27.1	0.34	C	32.4	0.63	C
EB RT	25.2	0.14	C	31.7	0.54	C	25.6	0.15	C	32.2	0.58	C
WB LT	33.5	0.11	C	25.5	0.41	C	33.8	0.11	C	25.6	0.41	C
WB TH	42.1	0.82	D	26.7	0.24	C	42.5	0.82	D	26.8	0.24	C
WB RT	35.6	0.07	D	28.7	0.55	C	35.9	0.07	D	28.8	0.55	C
NB LT	18.6	0.56	B	11.0	0.17	B	18.8	0.58	B	11.0	0.17	B
NB TH	25.2	0.68	C	19.8	0.73	B	25.2	0.68	C	19.9	0.74	B
SB LT	19.5	0.16	B	12.7	0.36	B	19.6	0.16	B	12.8	0.37	B
SB TH	28.6	0.68	C	16.0	0.59	B	28.9	0.68	C	16.1	0.60	B
Overall	37.8	--	D	20.8	--	C	39.5	--	D	20.9	--	C
Waiale Road & Kuikahi Drive												
EB LT	36.2	0.89	D	23.0	0.68	C	38.5	0.90	D	24.0	0.70	C
EB TH/RT	21.7	0.49	C	24.8	0.54	C	22.6	0.50	C	26.4	0.57	C
WB LT	30.8	0.17	C	22.9	0.24	C	31.7	0.17	C	23.8	0.26	C
WB TH	40.6	0.74	D	38.8	0.82	D	42.1	0.75	D	41.0	0.83	D
WB RT	33.6	0.16	C	26.4	0.23	C	34.6	0.17	C	27.4	0.23	C
NB LT	28.5	0.34	C	23.3	0.31	C	28.5	0.37	C	23.5	0.33	C
NB TH/RT	38.8	0.75	D	27.5	0.54	C	39.6	0.77	D	27.5	0.55	C
SB LT	29.9	0.71	C	26.1	0.74	C	31.2	0.73	C	26.9	0.75	C
SB TH/RT	32.5	0.70	C	31.9	0.85	C	33.2	0.71	C	34.0	0.86	C
Overall	32.8	--	C	28.9	--	C	34.1	--	C	30.2	--	C
Waiale Road & East Waiko Road												
EB LT	7.7	0.04	A	8.8	0.07	A	7.7	0.04	A	8.8	0.08	A
SB LT/RT	19.2	0.57	C	30.9	0.65	D	20.1	0.60	C	33.8	0.68	D
Waiale Road & Nokekula Loop												
EB LT/RT	11.4	0.08	B	11.3	0.05	B	11.7	0.08	B	11.5	0.05	B
NB LT	7.9	0.00	A	7.8	0.02	A	7.9	0.00	A	7.9	0.02	A
Waiale Road & Haawi Street												
EB LT/RT	12.5	0.26	B	13.4	0.19	B	12.7	0.27	B	13.6	0.19	B
NB LT	7.8	0.01	A	8.0	0.04	A	7.8	0.01	A	8.0	0.04	A
Waiale Road & Kokololio Street												
EB LT	14.1	0.22	B	15.8	0.16	C	14.5	0.22	B	16.1	0.17	C
EB RT	9.7	0.04	A	10.2	0.02	B	9.9	0.04	A	10.2	0.02	B
NB LT	7.8	0.00	A	8.1	0.01	A	7.8	0.00	A	8.1	0.01	A
Waiale Road & Project Driveway												
EB LT/RT	N/A	N/A	N/A	N/A	N/A	N/A	13.1	0.11	B	14.3	0.08	B
NB LT	N/A	N/A	N/A	N/A	N/A	N/A	7.8	0.00	A	8.2	0.01	A

* - Denotes overcapacity conditions.

6. CONCLUSIONS

The Project proposes to construct 70 single-family detached residential units and a neighborhood park on approximately 10.35 acres of land on a vacant lot along the west side of Waiale Road and north of Kokololio Street. The Project also proposes to provide one (1) new access intersection on Waiale Road between Kokololio Street and Kuikahi Drive with completion by Year 2018.

6.1 Existing Conditions

All movements at each study intersection currently operate at LOS D or better during the AM and PM peak hours of traffic, except for the eastbound left-turn movement at the Honoapiilani Highway/Kehalani Parkway intersection that operates at LOS F and overcapacity conditions during the AM peak hour. The eastbound left-turn movement operates with queues that extend at or beyond the existing left-turn storage lane and a portion of vehicles require two cycle lengths to clear the intersection. Heavy traffic during a short period of time is reflective of typical school traffic conditions, as these queuing conditions were observed to last about 30 minutes during the AM peak hour, generally between 7:10-7:40 AM and likely primarily stem from traffic generated by the Puu Kukui Elementary School.

6.2 Base Year 2018 without the Project

Traffic growth in the study area was estimated for Year 2018 by using the existing count data collected by ATA and the MRTDM, which resulted in an anticipated growth rate of approximately 1.5 to 1.9 percent per year. Nearby future developments that are assumed to be completed by Year 2018 include the Waikapu Light Industrial Project, Waiko Baseyard Light Industrial Development, Kehalani Village Center, Maui Lani Village Center, Central Maui Regional Sports Complex, Waikapu Gardens Phase II Subdivision, and Valley Isle Fellowship Church. Other major developments such as the Puunani Residences, Waikapu Country Town (WCT) and Waiale developments are unlikely to be built by Year 2018, and were therefore not explicitly included in this TIAR.

All study intersections are forecast to operate with LOS similar to existing conditions, with all movements operating at LOS D or better during the AM and PM peak hours of traffic, except for the eastbound left-turn movement at the Honoapiilani Highway/Kehalani Parkway intersection, which will continue to operate at over-capacity and LOS F conditions. Base Year 2018 traffic at the Honoapiilani Highway/Kehalani Parkway intersection is only anticipated to increase by approximately 5.8 percent. In addition, the more critical eastbound left-turn movement is not anticipated to significantly increase, due to no major expansion expected to occur at the Puu Kukui Elementary School or upper Kehalani subdivision region by Year 2018. There are currently no identified or planned roadway improvements likely to occur at this intersection.

Since the Waikapu Gardens Phase I subdivision is fully built out, entering northbound left-turn vehicles at the three (3) accesses along Waiale Road at Kokololio Street, Haawi Street and Nokekula Loop, will likely remain similar to existing conditions with the each of the northbound left-turn movements operating under 40 vehicles during the AM and PM peak hours. At these three Waikapu Garden Phase I accesses, traffic signals are likely not warranted based on the 4-hour vehicular traffic signal warrant in the Manual on Uniform Traffic Control Devices (MUTCD).

The Waiko Road/Waiale Road intersection is forecast to operate adequately with all movements at LOS D or better. Similarly, a traffic signal is not warranted at the intersection. Based on AASHTO guidance, an exclusive eastbound left-turn lane may be considered. However, no roadway improvements are planned at the intersection outside of the Waiale Road Extension and Waiko Road Improvements. Therefore, for purposes of this TIAR, the existing intersection laneage was assumed to remain for Base Year and Future Year 2018 conditions.

6.3 Future Year 2018 with the Project

The Project currently plans to develop 70 single-family detached residential units and a neighborhood park on approximately 10.35 acres of land between Waiale Road and Honoapiilani Highway, to the north of Kokololio Street. Vehicular access to the Project will be provided by a new access intersection located along Waiale Road. The Project is anticipated to generate approximately 59 AM peak hour trips and 77 PM peak hour trips. Due to minimal impacts generated by the Project, all study intersections are forecast to operate similar to Base Year 2018 conditions with only slight increases in movement delays at each study intersection. No roadway improvements are required as a result of the Project.

7. REFERENCES

1. AECOM, Kehalani Village Center TIAR, 2012.
2. Austin, Tsutsumi & Associates, Waikapu Light Industrial Project TIAR, 2013.
3. Austin, Tsutsumi & Associates, Central Maui Regional Sports Complex TIAR, 2014.
4. Federal Highway Administration, Manual on Uniform Traffic Control Devices, 2009.
5. Institute of Transportation Engineers, Trip Generation, 9th Edition, 2012.
6. Phillip Rowell & Associates, Waikapu Gardens Phase II Affordable Housing Project TIAR, 2012.
7. Phillip Rowell & Associates, Waiko Road Light Industrial Park TIAR, 2011.
8. Transportation Research Board, Highway Capacity Manual, 2010.

APPENDICES

APPENDIX A

TRAFFIC COUNT DATA

Austin Tsutsumi & Associates

501 Sumner Street Suite 521
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File Name : AM_Honoapiilani Hwy - Waiko Rd
Site Code : 00000000
Start Date : 10/22/2015
Page No : 1

Groups Printed- Class 1

	Waiko Rd Eastbound					Waiko Rd Westbound					Honoapiilani Hwy Northbound					Honoapiilani Hwy Southbound					
Start Time	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Int. Total
06:30 AM	4	2	3	0	9	14	0	4	0	18	0	86	6	0	92	17	142	1	0	160	279
06:45 AM	9	2	4	0	15	15	4	3	0	22	0	120	15	0	135	13	164	0	0	177	349
Total	13	4	7	0	24	29	4	7	0	40	0	206	21	0	227	30	306	1	0	337	628
07:00 AM	8	6	7	0	21	23	6	6	0	35	1	131	12	0	144	18	174	1	0	193	393
07:15 AM	5	11	3	0	19	16	0	12	0	28	0	186	15	0	201	29	161	1	0	191	439
07:30 AM	6	1	0	0	7	23	2	9	0	34	1	171	22	0	194	33	174	0	0	207	442
07:45 AM	3	3	3	0	9	19	2	11	0	32	1	146	10	0	157	24	170	6	0	200	398
Total	22	21	13	0	56	81	10	38	0	129	3	634	59	0	696	104	679	8	0	791	1672
08:00 AM	3	2	2	0	7	7	5	6	2	20	4	106	11	0	121	11	148	3	2	164	312
08:15 AM	0	4	4	0	8	14	2	7	0	23	1	104	11	0	116	7	125	3	0	135	282
Grand Total	38	31	26	0	95	131	21	58	2	212	8	1050	102	0	1160	152	1258	15	2	1427	2894
Apprch %	40	32.6	27.4	0		61.8	9.9	27.4	0.9		0.7	90.5	8.8	0		10.7	88.2	1.1	0.1		
Total %	1.3	1.1	0.9	0	3.3	4.5	0.7	2	0.1	7.3	0.3	36.3	3.5	0	40.1	5.3	43.5	0.5	0.1	49.3	

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Site Code : 00000000
Start Date : 10/22/2015
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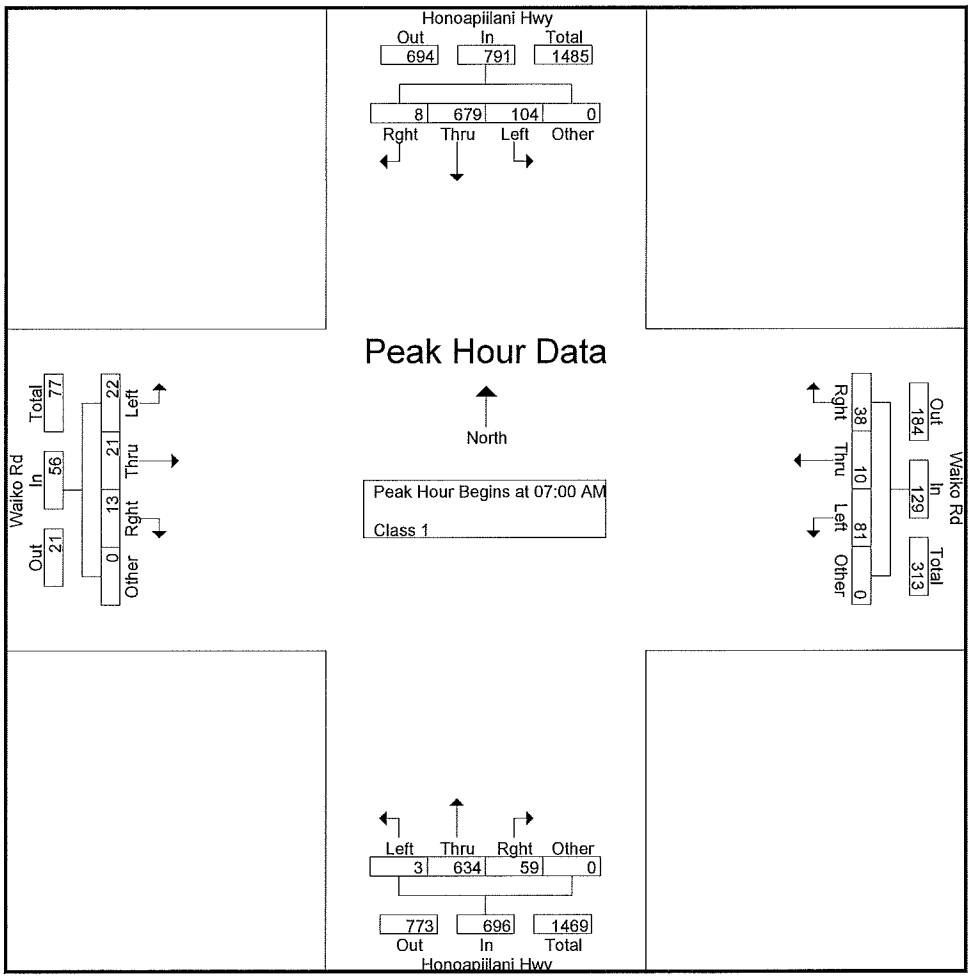
	Waiko Rd Eastbound					Waiko Rd Westbound					Honoapiilani Hwy Northbound					Honoapiilani Hwy Southbound					
Start Time	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Int. Total
Peak Hour Analysis From 06:30 AM to 08:15 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	**8**	6	**7**	0	**21**	**23**	**6**	6	0	**35**	**1**	131	12	0	144	18	**174**	1	0	193	393
07:15 AM	5	**11**	3	0	19	16	0	**12**	0	28	0	**186**	15	0	**201**	29	161	1	0	191	439
07:30 AM	6	1	0	0	7	23	2	9	0	34	1	171	**22**	0	194	**33**	174	0	0	**207**	**442**
07:45 AM	3	3	3	0	9	19	2	11	0	32	1	146	10	0	157	24	170	**6**	0	200	398
Total Volume	22	21	13	0	56	81	10	38	0	129	3	634	59	0	696	104	679	8	0	791	1672
% App. Total	39.3	37.5	23.2	0		62.8	7.8	29.5	0		0.4	91.1	8.5	0		13.1	85.8	1	0		
PHF	.688	.477	.464	.000	.667	.880	.417	.792	.000	.921	.750	.852	.670	.000	.866	.788	.976	.333	.000	.955	.946



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Page No : 1

Groups Printed- Class 1

	Waiko Rd Eastbound					Waiko Rd Westbound					Honoapiilani Hwy Northbound					Honoapiilani Hwy Southbound					
Start Time	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Int. Total
03:15 PM	2	0	0	1	3	6	3	7	0	16	1	133	8	0	142	5	157	3	0	165	326
03:30 PM	6	1	1	0	8	17	2	17	0	36	3	153	14	0	170	5	123	2	1	131	345
03:45 PM	4	3	3	0	10	8	5	9	1	23	4	161	19	0	184	8	136	8	0	152	369
Total	12	4	4	1	21	31	10	33	1	75	8	447	41	0	496	18	416	13	1	448	1040
04:00 PM	1	1	2	0	4	22	5	9	0	36	0	157	13	0	170	10	147	4	0	161	371
04:15 PM	1	2	4	0	7	11	5	15	0	31	2	179	15	0	196	16	134	5	0	155	389
04:30 PM	8	1	1	0	10	9	4	20	0	33	2	163	19	0	184	17	148	5	0	170	397
04:45 PM	8	1	1	0	10	12	5	6	0	23	3	139	21	0	163	15	143	6	0	164	360
Total	18	5	8	0	31	54	19	50	0	123	7	638	68	0	713	58	572	20	0	650	1517
05:00 PM	5	5	0	0	10	8	1	17	1	27	3	143	18	0	164	12	133	2	0	147	348
05:15 PM	2	1	2	0	5	17	2	7	0	26	1	161	18	0	180	9	135	8	0	152	363
05:30 PM	2	0	0	0	2	6	3	7	0	16	1	133	8	0	142	5	157	3	0	165	325
Grand Total	39	15	14	1	69	116	35	114	2	267	20	1522	153	0	1695	102	1413	46	1	1562	3593
Apprch %	56.5	21.7	20.3	1.4		43.4	13.1	42.7	0.7		1.2	89.8	9	0		6.5	90.5	2.9	0.1		
Total %	1.1	0.4	0.4	0	1.9	3.2	1	3.2	0.1	7.4	0.6	42.4	4.3	0	47.2	2.8	39.3	1.3	0	43.5	

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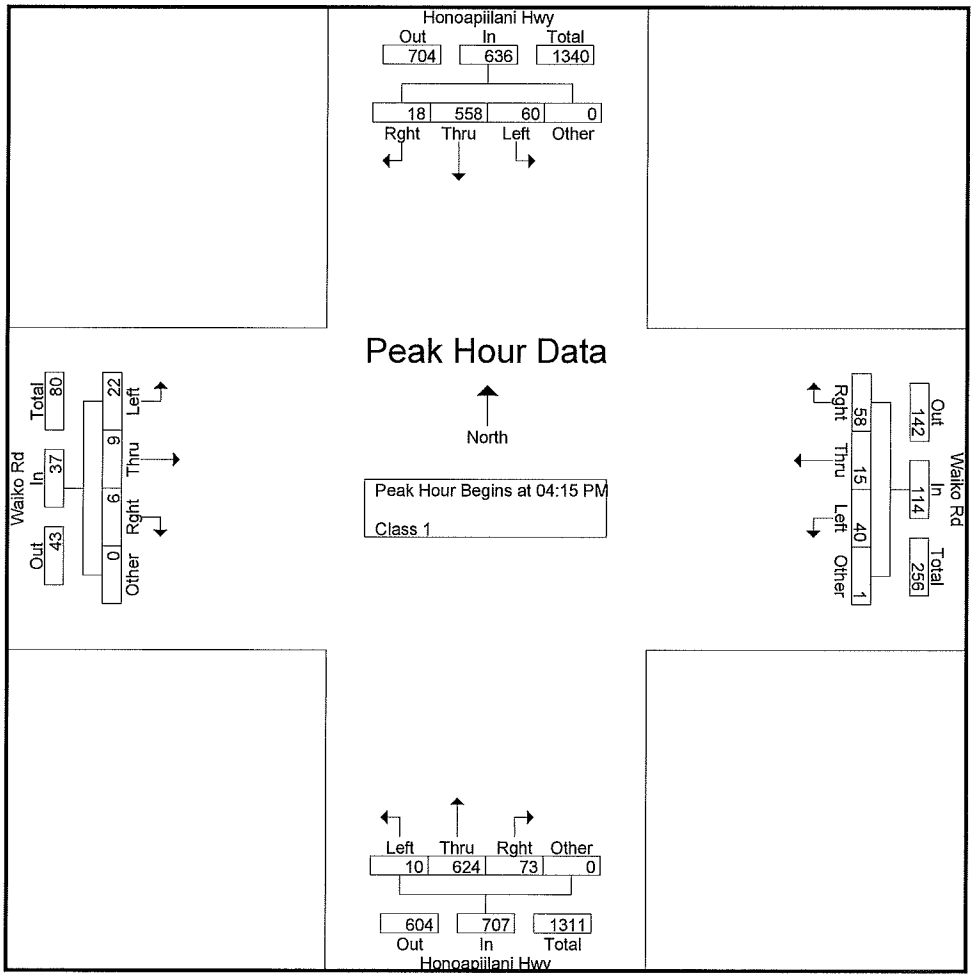
Site Code : 00000000
Start Date : 10/22/2015
Page No : 2

	Waiko Rd Eastbound					Waiko Rd Westbound					Honoapiilani Hwy Northbound					Honoapiilani Hwy Southbound					
Start Time	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Int. Total
Peak Hour Analysis From 04:15 PM to 05:00 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:15 PM																					
04:15 PM	1	2	4	0	7	11	5	15	0	31	2	179	15	0	196	16	134	5	0	155	389
04:30 PM	8	1	1	0	10	9	4	20	0	33	2	163	19	0	184	17	148	5	0	170	397
04:45 PM	8	1	1	0	10	12	5	6	0	23	3	139	21	0	163	15	143	6	0	164	360
05:00 PM	5	5	0	0	10	8	1	17	1	27	3	143	18	0	164	12	133	2	0	147	348
Total Volume	22	9	6	0	37	40	15	58	1	114	10	624	73	0	707	60	558	18	0	636	1494
% App. Total	59.5	24.3	16.2	0		35.1	13.2	50.9	0.9		1.4	88.3	10.3	0		9.4	87.7	2.8	0		
PHF	.688	.450	.375	.000	.925	.833	.750	.725	.250	.864	.833	.872	.869	.000	.902	.882	.943	.750	.000	.935	.941



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Site Code : 00000000
Start Date : 3/31/2015
Page No : 1

Groups Printed- Class 1

	HONOAPIILANI HWY From North					KUIKAHI DR From East					HONOAPIILANI HWY From South					KUIKAHI DR From West					
Start Time	Rght	Thru	Left	Other	App. Total	Rght	Thru	Left	Other	App. Total	Rght	Thru	Left	Other	App. Total	Rght	Thru	Left	Other	App. Total	Int. Total
06:30 AM	2	81	28	0	111	11	6	34	0	51	47	24	0	0	71	7	19	1	0	27	260
06:45 AM	2	99	43	1	145	29	14	50	0	93	67	64	2	0	133	10	32	8	0	50	421
Total	4	180	71	1	256	40	20	84	0	144	114	88	2	0	204	17	51	9	0	77	681
07:00 AM	0	81	46	0	127	56	14	65	0	135	68	74	4	0	146	17	38	4	2	61	469
07:15 AM	1	98	63	0	162	48	6	55	0	109	118	128	6	0	252	9	31	8	0	48	571
07:30 AM	3	80	68	0	151	58	12	67	1	138	89	109	6	0	204	20	28	15	0	63	556
07:45 AM	2	105	72	0	179	34	18	74	0	126	96	98	3	0	197	11	30	5	0	46	548
Total	6	364	249	0	619	196	50	261	1	508	371	409	19	0	799	57	127	32	2	218	2144
08:00 AM	2	91	42	0	135	26	11	66	0	103	60	87	8	0	155	5	19	4	0	28	421
08:15 AM	4	71	24	0	99	27	16	72	0	115	68	83	3	0	154	6	34	7	0	47	415
Grand Total	16	706	386	1	1109	289	97	483	1	870	613	667	32	0	1312	85	231	52	2	370	3661
Apprch %	1.4	63.7	34.8	0.1		33.2	11.1	55.5	0.1		46.7	50.8	2.4	0		23	62.4	14.1	0.5		
Total %	0.4	19.3	10.5	0	30.3	7.9	2.6	13.2	0	23.8	16.7	18.2	0.9	0	35.8	2.3	6.3	1.4	0.1	10.1	

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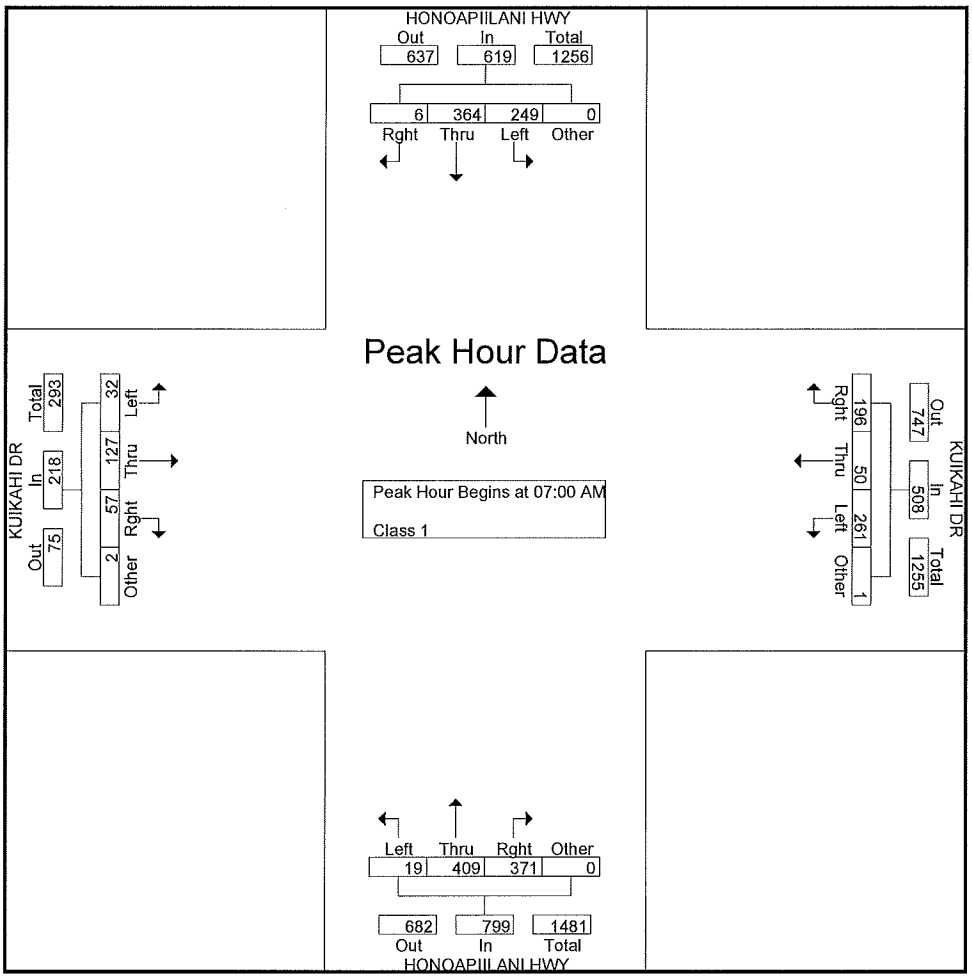
File Name : AM_Honoapiilani Hwy - Kuikahi Dr
Site Code : 00000000
Start Date : 3/31/2015

	HONOAPIILANI HWY From North					KUIKAHI DR From East					HONOAPIILANI HWY From South					KUIKAHI DR From West					
Start Time	Rght	Thru	Left	Other	App. Total	Rght	Thru	Left	Other	App. Total	Rght	Thru	Left	Other	App. Total	Rght	Thru	Left	Other	App. Total	Int. Total
Peak Hour Analysis From 06:30 AM to 08:15 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	0	81	46	0	127	56	14	65	0	135	68	74	4	0	146	17	**38**	4	**2**	61	469
07:15 AM	1	98	63	0	162	48	6	55	0	109	**118**	**128**	**6**	0	**252**	9	31	8	0	48	**571**
07:30 AM	**3**	80	68	0	151	**58**	12	67	**1**	**138**	89	109	6	0	204	**20**	28	**15**	0	**63**	556
07:45 AM	2	**105**	**72**	0	**179**	34	**18**	**74**	0	126	96	98	3	0	197	11	30	5	0	46	548
Total Volume	6	364	249	0	619	196	50	261	1	508	371	409	19	0	799	57	127	32	2	218	2144
% App. Total	1	58.8	40.2	0		38.6	9.8	51.4	0.2		46.4	51.2	2.4	0		26.1	58.3	14.7	0.9		
PHF	.500	.867	.865	.000	.865	.845	.694	.882	.250	.920	.786	.799	.792	.000	.793	.713	.836	.533	.250	.865	.939



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Site Code : 00000000
Start Date : 3/31/2015
Page No : 1

Groups Printed- Class 1

	KUIKAHI DR Eastbound					KUIKAHI DR Westbound					HONOAPIILANI HWY Northbound					HONOAPIILANI HWY Southbound					
Start Time	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Int. Total
03:30 PM	3	28	4	0	35	78	25	43	1	147	3	96	71	0	170	37	99	2	0	138	490
03:45 PM	4	19	2	0	25	84	28	63	2	177	12	106	97	1	216	44	88	3	0	135	553
Total	7	47	6	0	60	162	53	106	3	324	15	202	168	1	386	81	187	5	0	273	1043
04:00 PM	3	15	6	0	24	72	38	55	1	166	14	94	92	2	202	42	95	8	0	145	537
04:15 PM	0	16	4	1	21	76	23	43	3	145	5	117	80	0	202	49	118	3	0	170	538
04:30 PM	1	13	4	0	18	88	34	44	0	166	9	101	70	1	181	43	118	6	0	167	532
04:45 PM	2	9	9	0	20	81	26	42	1	150	5	119	77	0	201	46	119	6	0	171	542
Total	6	53	23	1	83	317	121	184	5	627	33	431	319	3	786	180	450	23	0	653	2149
05:00 PM	2	26	6	0	34	86	23	49	3	161	16	91	73	0	180	27	97	8	0	132	507
05:15 PM	6	18	4	0	28	77	23	47	0	147	15	72	43	0	130	41	87	6	0	134	439
Grand Total	21	144	39	1	205	642	220	386	11	1259	79	796	603	4	1482	329	821	42	0	1192	4138
Apprch %	10.2	70.2	19	0.5		51	17.5	30.7	0.9		5.3	53.7	40.7	0.3		27.6	68.9	3.5	0		
Total %	0.5	3.5	0.9	0	5	15.5	5.3	9.3	0.3	30.4	1.9	19.2	14.6	0.1	35.8	8	19.8	1	0	28.8	

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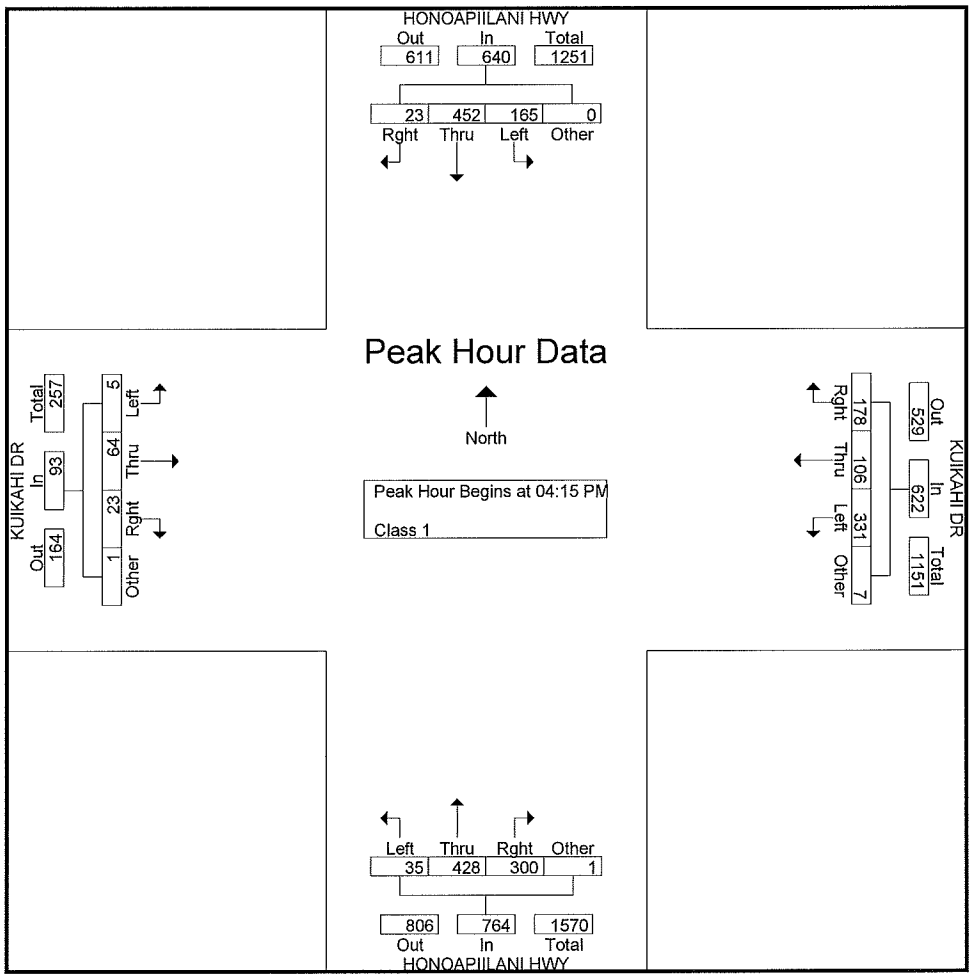
File Name : PM_Honoapiilani Hwy - Kuikahi Dr
Site Code : 00000000
Start Date : 3/31/2015
Page No : 2

	KUIKAHI DR Eastbound					KUIKAHI DR Westbound					HONOAPIILANI HWY Northbound					HONOAPIILANI HWY Southbound					
Start Time	Left	Thru	Right	Other	App. Total	Left	Thru	Right	Other	App. Total	Left	Thru	Right	Other	App. Total	Left	Thru	Right	Other	App. Total	Int. Total
Peak Hour Analysis From 04:15 PM to 05:00 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:15 PM																					
04:15 PM	0	16	4	1	21	76	23	43	3	145	5	117	80	0	202	49	118	3	0	170	538
04:30 PM	1	13	4	0	18	88	34	44	0	166	9	101	70	1	181	43	118	6	0	167	532
04:45 PM	2	9	9	0	20	81	26	42	1	150	5	119	77	0	201	46	119	6	0	171	542
05:00 PM	2	26	6	0	34	86	23	49	3	161	16	91	73	0	180	27	97	8	0	132	507
Total Volume	5	64	23	1	93	331	106	178	7	622	35	428	300	1	764	165	452	23	0	640	2119
% App. Total	5.4	68.8	24.7	1.1		53.2	17	28.6	1.1		4.6	56	39.3	0.1		25.8	70.6	3.6	0		
PHF	.625	.615	.639	.250	.684	.940	.779	.908	.583	.937	.547	.899	.938	.250	.946	.842	.950	.719	.000	.936	.977



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File Name : AM_Honoapiilani Hwy - Kehalani Pkwy
Site Code : 00000000
Start Date : 10/22/2015
Page No : 1

Groups Printed- Unshifted

	KEHALANI PKWY Eastbound				KEHALANI PKWY Westbound				HONOAPIILANI HWY Northbound				HONOAPIILANI HWY Southbound				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
06:30 AM	33	21	48	0	3	9	46	0	8	50	2	0	9	82	8	0	319
06:45 AM	36	12	43	0	7	18	10	0	19	78	2	0	12	101	17	0	355
Total	69	33	91	0	10	27	56	0	27	128	4	0	21	183	25	0	674
07:00 AM	67	17	61	0	11	48	16	0	42	92	3	0	9	91	24	0	481
07:15 AM	78	35	58	0	3	53	28	0	60	119	3	0	5	98	27	0	567
07:30 AM	70	68	60	0	9	65	27	0	68	105	3	0	17	83	22	0	597
07:45 AM	47	43	57	0	7	22	20	0	25	112	2	0	13	99	19	0	466
Total	262	163	236	0	30	188	91	0	195	428	11	0	44	371	92	0	2111
08:00 AM	22	15	32	0	5	9	14	0	9	88	2	0	13	79	15	0	303
08:15 AM	21	14	25	0	3	14	12	0	10	86	1	0	8	72	11	0	277
Grand Total	374	225	384	0	48	238	173	0	241	730	18	0	86	705	143	0	3365
Apprch %	38	22.9	39.1	0	10.5	51.9	37.7	0	24.4	73.8	1.8	0	9.2	75.5	15.3	0	
Total %	11.1	6.7	11.4	0	1.4	7.1	5.1	0	7.2	21.7	0.5	0	2.6	21	4.2	0	

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Site Code : 00000000
Start Date : 10/22/2015
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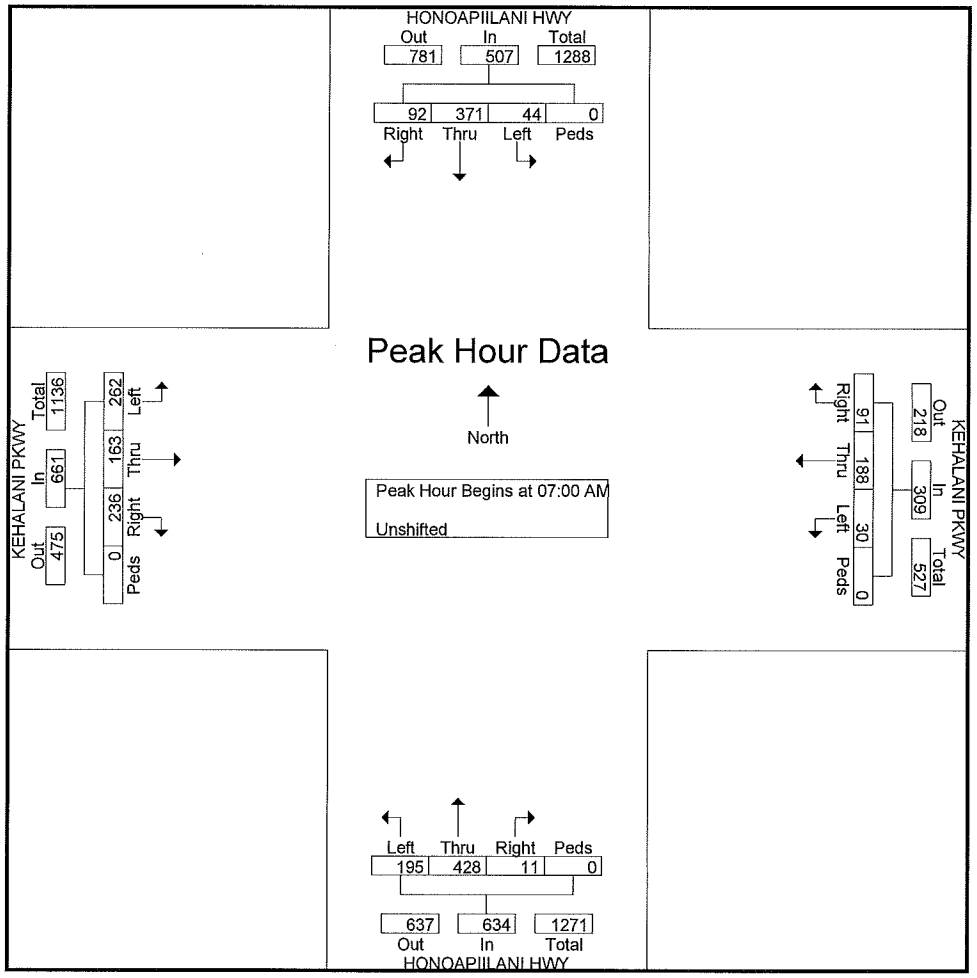
	KEHALANI PKWY Eastbound					KEHALANI PKWY Westbound					HONOAPIILANI HWY Northbound					HONOAPIILANI HWY Southbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 06:30 AM to 08:15 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	67	17	61	0	145	11	48	16	0	75	42	92	3	0	137	9	91	24	0	124	481
07:15 AM	78	35	58	0	171	3	53	28	0	84	60	119	3	0	182	5	98	27	0	130	567
07:30 AM	70	68	60	0	198	9	65	27	0	101	68	105	3	0	176	17	83	22	0	122	597
07:45 AM	47	43	57	0	147	7	22	20	0	49	25	112	2	0	139	13	99	19	0	131	466
Total Volume	262	163	236	0	661	30	188	91	0	309	195	428	11	0	634	44	371	92	0	507	2111
% App. Total	39.6	24.7	35.7	0		9.7	60.8	29.4	0		30.8	67.5	1.7	0		8.7	73.2	18.1	0		
PHF	.840	.599	.967	.000	.835	.682	.723	.813	.000	.765	.717	.899	.917	.000	.871	.647	.937	.852	.000	.968	.884



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File Name : PM_Honoapiilani Hwy - Kehalani Prkwy
Site Code : 00000000
Start Date : 10/22/2015
Page No : 1

Groups Printed- Class 1

	Kehalani Prkwy Eastbound					Kehalani Prkwy Westbound					Honoapiilani Hwy Northbound					Honoapiilani Hwy Southbound					
Start Time	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Int. Total
03:30 PM	2	15	10	1	28	38	15	28	0	81	16	108	32	1	157	29	104	2	0	135	401
03:45 PM	2	24	26	0	52	33	14	22	0	69	4	105	27	1	137	28	125	5	0	158	416
Total	4	39	36	1	80	71	29	50	0	150	20	213	59	2	294	57	229	7	0	293	817
04:00 PM	3	13	18	0	34	28	13	24	0	65	21	115	33	1	170	27	105	7	0	139	408
04:15 PM	5	18	23	1	47	31	22	33	0	86	17	123	40	1	181	24	99	4	0	127	441
04:30 PM	4	41	29	0	74	16	19	33	1	69	11	117	42	0	170	41	111	4	0	156	469
04:45 PM	5	31	14	0	50	26	11	31	0	68	14	136	45	0	195	31	117	3	0	151	464
Total	17	103	84	1	205	101	65	121	1	288	63	491	160	2	716	123	432	18	0	573	1782
05:00 PM	3	22	15	0	40	33	12	31	0	76	18	102	36	4	160	23	79	5	0	107	383
05:15 PM	2	22	21	0	45	21	16	22	0	59	15	95	31	0	141	24	87	5	0	116	361
Grand Total	26	186	156	2	370	226	122	224	1	573	116	901	286	8	1311	227	827	35	0	1089	3343
Apprch %	7	50.3	42.2	0.5		39.4	21.3	39.1	0.2		8.8	68.7	21.8	0.6		20.8	75.9	3.2	0		
Total %	0.8	5.6	4.7	0.1	11.1	6.8	3.6	6.7	0	17.1	3.5	27	8.6	0.2	39.2	6.8	24.7	1	0	32.6	

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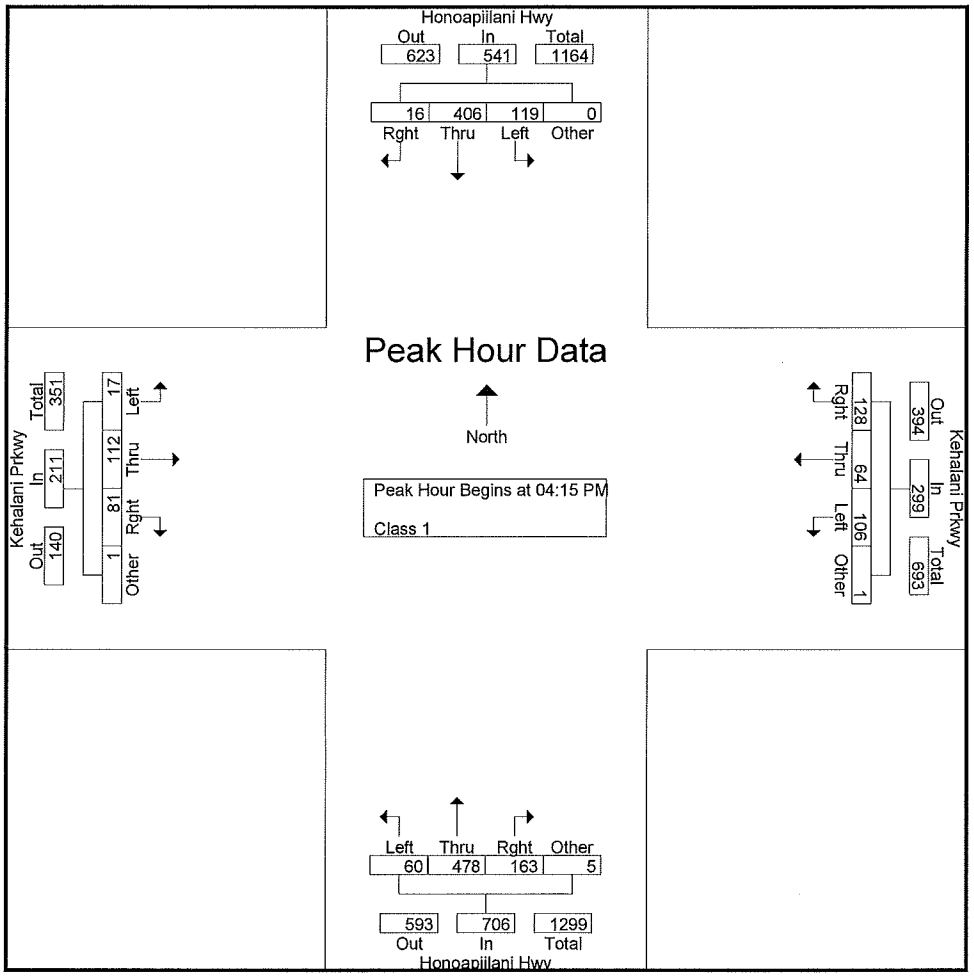
File Name : PM_Honoapiilani Hwy - Kehalani Prkwy
Site Code : 00000000
Start Date : 10/22/2015
Page No : 2

	Kehalani Prkwy Eastbound					Kehalani Prkwy Westbound					Honoapiilani Hwy Northbound					Honoapiilani Hwy Southbound					
Start Time	Left	Thru	Right	Other	App. Total	Left	Thru	Right	Other	App. Total	Left	Thru	Right	Other	App. Total	Left	Thru	Right	Other	App. Total	Int. Total
Peak Hour Analysis From 04:15 PM to 05:00 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:15 PM																					
04:15 PM	5	18	23	1	47	31	22	33	0	86	17	123	40	1	181	24	99	4	0	127	441
04:30 PM	4	41	29	0	74	16	19	33	1	69	11	117	42	0	170	41	111	4	0	156	469
04:45 PM	5	31	14	0	50	26	11	31	0	68	14	136	45	0	195	31	117	3	0	151	464
05:00 PM	3	22	15	0	40	33	12	31	0	76	18	102	36	4	160	23	79	5	0	107	383
Total Volume	17	112	81	1	211	106	64	128	1	299	60	478	163	5	706	119	406	16	0	541	1757
% App. Total	8.1	53.1	38.4	0.5		35.5	21.4	42.8	0.3		8.5	67.7	23.1	0.7		22	75	3	0		
PHF	.850	.683	.698	.250	.713	.803	.727	.970	.250	.869	.833	.879	.906	.313	.905	.726	.868	.800	.000	.867	.937



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File Name : AM_Waiale Rd - Kuikahi Dr-Maui Lani Pkwy RECOUNT
Site Code : 00000000
Start Date : 3/31/2015
Page No : 1

Groups Printed- Unshifted

	KUIKAHI DRIVE Eastbound				MAUI LANI PARKWAY Westbound				WAIALE ROAD Northbound				WAIALE ROAD Southbound				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
07:00 AM	70	54	11	2	6	46	54	0	22	51	33	0	49	23	54	0	475
07:15 AM	133	55	9	0	8	39	60	0	22	44	22	0	54	21	52	0	519
07:30 AM	89	55	20	0	8	54	61	0	32	52	5	0	61	15	52	0	504
07:45 AM	96	75	12	0	10	70	78	0	5	27	8	0	61	28	44	0	514
Total	388	239	52	2	32	209	253	0	81	174	68	0	225	87	202	0	2012
Grand Total	388	239	52	2	32	209	253	0	81	174	68	0	225	87	202	0	2012
Apprch %	57	35.1	7.6	0.3	6.5	42.3	51.2	0	25.1	53.9	21.1	0	43.8	16.9	39.3	0	
Total %	19.3	11.9	2.6	0.1	1.6	10.4	12.6	0	4	8.6	3.4	0	11.2	4.3	10	0	

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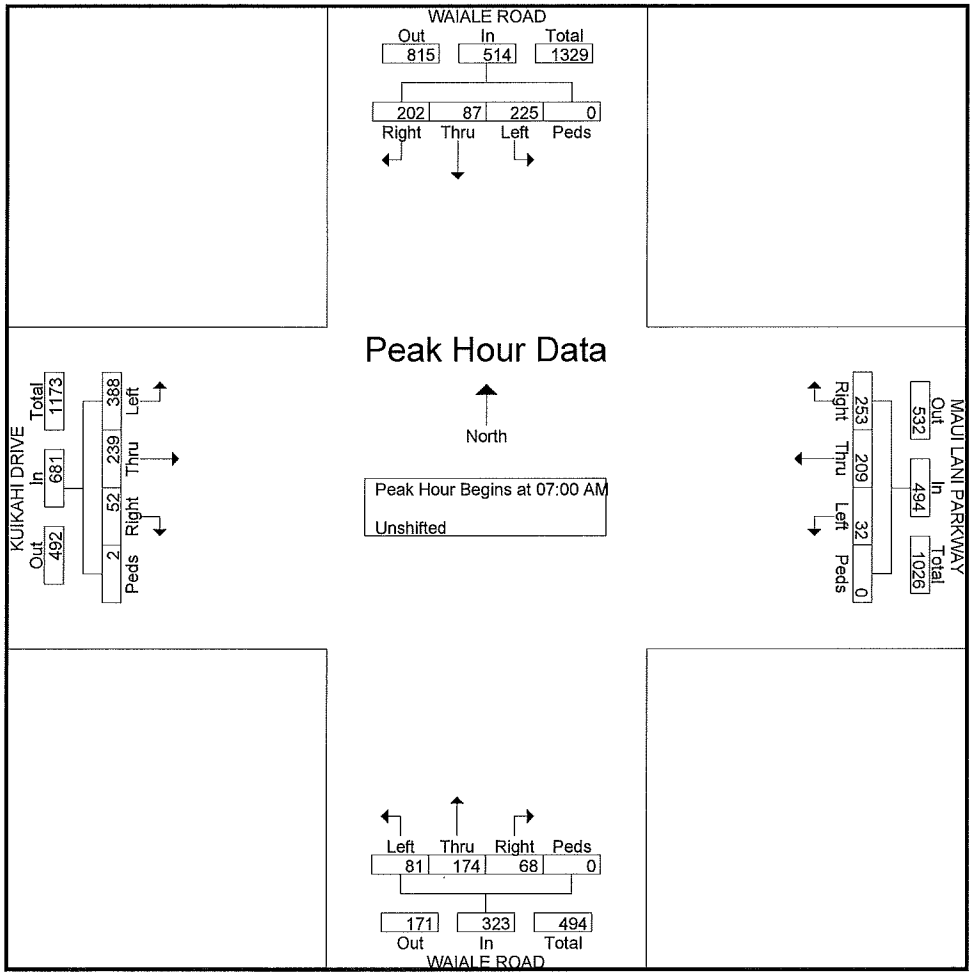
Site Code : 00000000
Start Date : 3/31/2015
Page No : 2

	KUIKAHI DRIVE Eastbound					MAUI LANI PARKWAY Westbound					WAIALE ROAD Northbound					WAIALE ROAD Southbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	70	54	11	**2**									**33**	0	**106**	49	23	**54**			
07:15 AM	**133**	**55**	**9**	**0**	**197**	8	39	60	0	107	22	44	22	0	88	54	21	52	0	127	**519**
07:30 AM	89	55	**20**								**32**	**52**				**61**					
07:45 AM	**96**	**75**	12	0	183	**10**	**70**	**78**	**0**	**158**	5	27	68	0	323	61	**28**	44	0	**133**	514
Total Volume	388	239	52	2	681	32	209	253	0	494	81	174	68	0	323	225	87	202	0	514	2012
% App. Total	57	35.1	7.6	0.3		6.5	42.3	51.2	0		25.1	53.9	21.1	0		43.8	16.9	39.3	0		
PHF	.729	.797	.650	.250	.864	.800	.746	.811	.000	.782	.633	.837	.515	.000	.762	.922	.777	.935	.000	.966	.969



Your Company Name Here

This is your address
Your City, State, Zip Code
Your Tagline Here

File Name : PM_Waiale Rd - Kuikahi Dr-Maui Lani Pkwy
Site Code : 00000000
Start Date : 3/31/2015

Groups Printed- Unshifted

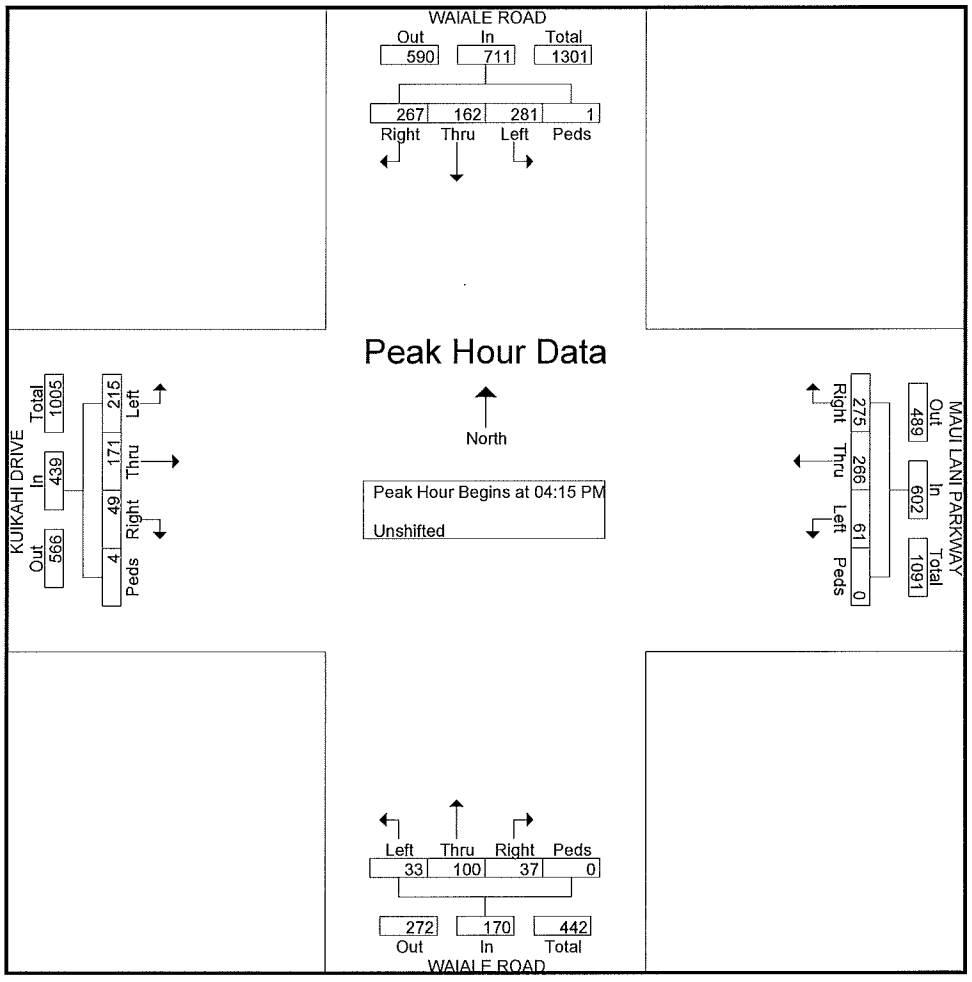
	WAIALE ROAD				MAUI LANI PARKWAY				WAIALE ROAD				KUIKAHI DRIVE				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
03:30 PM	55	33	53	0	11	79	76	0	12	44	10	0	56	52	17	0	498
03:45 PM	63	24	49	0	13	90	68	2	14	43	8	0	75	49	11	0	509
Total	118	57	102	0	24	169	144	2	26	87	18	0	131	101	28	0	1007
04:00 PM	65	35	45	0	8	83	70	0	13	33	9	0	67	47	9	0	484
04:15 PM	63	39	68	0	17	67	80	0	14	26	7	0	49	49	13	3	495
04:30 PM	81	44	72	1	18	76	55	0	4	21	16	0	51	46	16	0	501
04:45 PM	61	31	61	0	12	61	72	0	11	27	6	0	55	38	9	0	444
Total	270	149	246	1	55	287	277	0	42	107	38	0	222	180	47	3	1924
05:00 PM	76	48	66	0	14	62	68	0	4	26	8	0	60	38	11	1	482
05:15 PM	61	47	48	3	7	71	57	8	6	22	11	0	45	43	9	0	438
Grand Total	525	301	462	4	100	589	546	10	78	242	75	0	458	362	95	4	3851
Apprch %	40.6	23.3	35.8	0.3	8	47.3	43.9	0.8	19.7	61.3	19	0	49.8	39.4	10.3	0.4	
Total %	13.6	7.8	12	0.1	2.6	15.3	14.2	0.3	2	6.3	1.9	0	11.9	9.4	2.5	0.1	

Your Company Name Here

This is your address
Your City, State, Zip Code
Your Tagline Here

File Name : PM_Waiale Rd - Kuikahi Dr-Maui Lani Pkwy
Site Code : 00000000
Start Date : 3/31/2015
Page No : 2

	WAIALE ROAD					MAUI LANI PARKWAY					WAIALE ROAD					KUIKAHI DRIVE					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:15 PM to 05:15 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:15 PM																					
04:15 PM	63	39	68	0	170	17	67	**80**	0	**164**	**14**	26	7	0	**47**	49	**49**	13	**3**	**114**	495
04:30 PM	**81**	44	**72**	**1**	**198**	**18**	**76**	55	0	149	4	21	**16**	0	41	51	46	**16**	0	113	**501**
04:45 PM	61	31	61	0	153	12	61	72	0	145	11	**27**	6	0	44	55	38	9	0	102	444
05:00 PM	76	**48**	66	0	190	14	62	68	0	144	4	26	8	0	38	**60**	38	11	1	110	482
Total Volume	281	162	267	1	711	61	266	275	0	602	33	100	37	0	170	215	171	49	4	439	1922
% App. Total	39.5	22.8	37.6	0.1		10.1	44.2	45.7	0		19.4	58.8	21.8	0		49	39	11.2	0.9		
PHF	.867	.844	.927	.250	.898	.847	.875	.859	.000	.918	.589	.926	.578	.000	.904	.896	.872	.766	.333	.963	.959



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File Name : AM_Waiale Rd - Waiko Rd
Site Code : 00000000
Start Date : 10/22/2015
Page No : 1

Groups Printed- Unshifted

	WAIKO RD Eastbound				WAIKO RD Westbound				WAIALE RD Northbound				WAIALE RD Southbound				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
06:30 AM	7	18	0	0	0	8	10	0	0	0	0	0	30	0	13	0	86
06:45 AM	10	21	0	0	0	8	13	0	0	0	0	0	54	0	12	0	118
Total	17	39	0	0	0	16	23	0	0	0	0	0	84	0	25	0	204
07:00 AM	6	31	0	0	0	15	24	0	0	0	0	0	45	0	16	0	137
07:15 AM	16	36	0	0	0	9	21	0	0	0	0	0	44	0	13	0	139
07:30 AM	17	41	0	0	0	18	23	0	0	0	0	0	33	0	22	0	154
07:45 AM	3	30	0	0	0	12	16	0	0	0	0	0	42	0	15	0	118
Total	42	138	0	0	0	54	84	0	0	0	0	0	164	0	66	0	548
08:00 AM	9	16	0	0	0	16	18	0	0	0	0	0	21	0	4	0	84
08:15 AM	9	13	0	0	0	15	24	0	0	0	0	0	19	0	11	0	91
Grand Total	77	206	0	0	0	101	149	0	0	0	0	0	288	0	106	0	927
Apprch %	27.2	72.8	0	0	0	40.4	59.6	0	0	0	0	0	73.1	0	26.9	0	
Total %	8.3	22.2	0	0	0	10.9	16.1	0	0	0	0	0	31.1	0	11.4	0	

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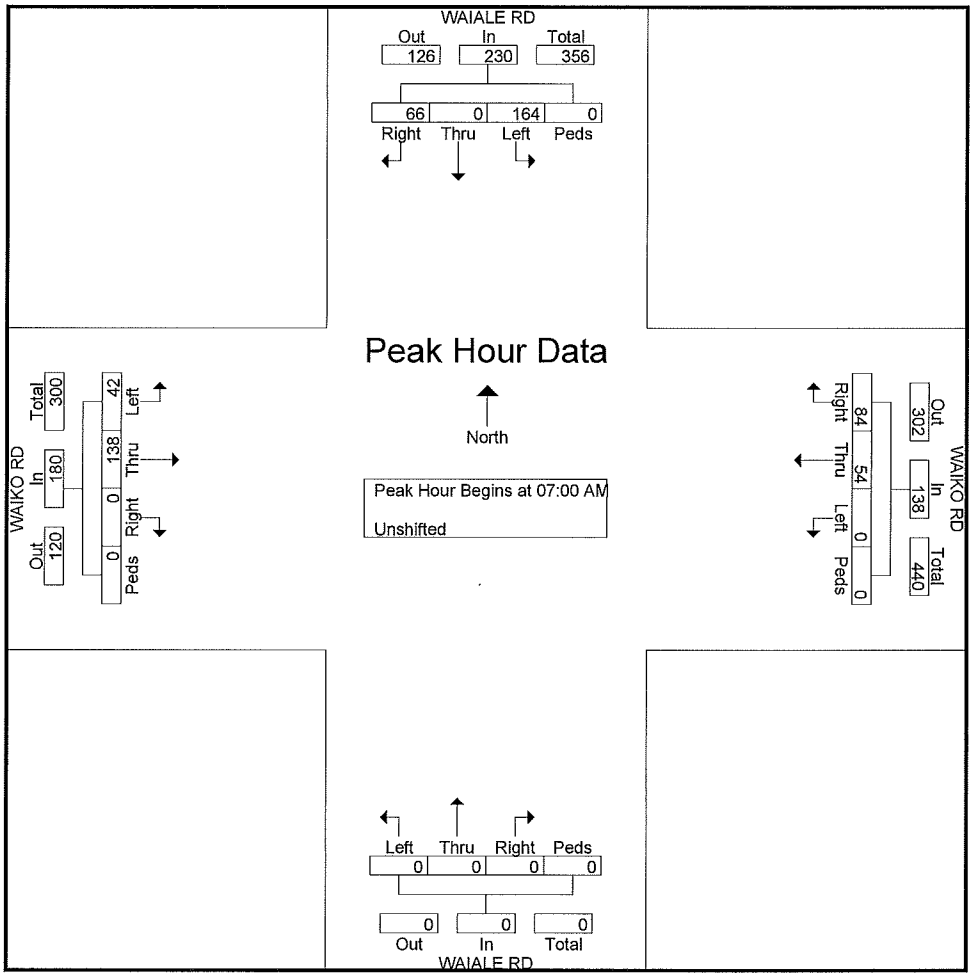
	WAIKO RD Eastbound					WAIKO RD Westbound					WAIALE RD Northbound					WAIALE RD Southbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	6	31	0	0	37	0	15	24	0	39	0	0	0	0	0	45	0	16	0	61	137
07:15 AM	16	36	0	0	52	0	9	21	0	30	0	0	0	0	0	44	0	13	0	57	139
07:30 AM	17	41	0	0	58	0	18	23	0	41	0	0	0	0	0	33	0	22	0	55	154
07:45 AM	3	30	0	0	33	0	12	16	0	28	0	0	0	0	0	42	0	15	0	57	118
Total Volume	42	138	0	0	180	0	54	84	0	138	0	0	0	0	0	164	0	66	0	230	548
% App. Total	23.3	76.7	0	0		0	39.1	60.9	0		0	0	0	0		71.3	0	28.7	0		
PHF	.618	.841	.000	.000	.776	.000	.750	.875	.000	.841	.000	.000	.000	.000	.000	.911	.000	.750	.000	.943	.890



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Start Date : 10/22/2015
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Groups Printed- Unshifted

	WAIKO RD Eastbound				WAIKO RD Westbound				WAIALE RD Northbound				WAIALE RD Southbound				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
03:30 PM	8	13	0	0	0	27	22	0	0	0	0	0	19	0	8	0	97
03:45 PM	10	21	0	0	0	17	36	0	0	0	0	0	17	0	7	0	108
Total	18	34	0	0	0	44	58	0	0	0	0	0	36	0	15	0	205
04:00 PM	11	12	0	0	0	20	26	0	0	0	0	0	13	0	19	0	101
04:15 PM	11	20	0	0	0	23	29	0	0	0	0	0	22	0	11	0	116
04:30 PM	15	28	0	0	0	24	31	0	0	0	0	0	28	0	8	0	134
04:45 PM	19	19	0	0	0	13	32	0	0	0	0	0	33	0	12	0	128
Total	56	79	0	0	0	80	118	0	0	0	0	0	96	0	50	0	479
05:00 PM	11	24	0	0	0	21	27	0	0	0	0	0	25	0	4	0	112
05:15 PM	13	12	0	0	0	12	26	0	0	0	0	0	23	0	12	0	98
Grand Total	98	149	0	0	0	157	229	0	0	0	0	0	180	0	81	0	894
Apprch %	39.7	60.3	0	0	0	40.7	59.3	0	0	0	0	0	69	0	31	0	
Total %	11	16.7	0	0	0	17.6	25.6	0	0	0	0	0	20.1	0	9.1	0	

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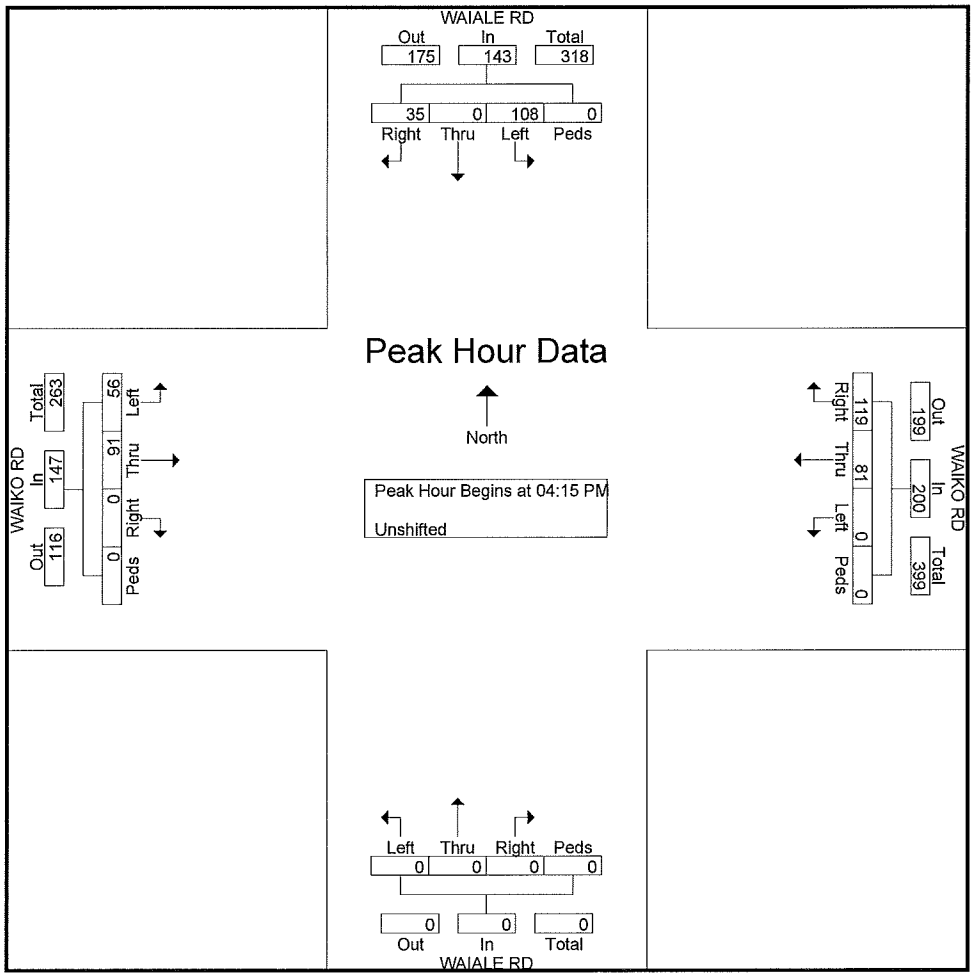
File Name : PM_Waiale Rd - Waiko Rd
Site Code : 00000000
Start Date : 10/22/2015
Page No : 2

	WAIKO RD Eastbound					WAIKO RD Westbound					WAIALE RD Northbound					WAIALE RD Southbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 03:30 PM to 05:15 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:15 PM																					
04:15 PM	11	20	0	0	31	0	23	29	0	52	0	0	0	0	0	22	0	11	0	33	116
04:30 PM	15	28	0	0	43	0	24	31	0	55	0	0	0	0	0	28	0	8	0	36	134
04:45 PM	19	19	0	0	38	0	13	32	0	45	0	0	0	0	0	33	0	12	0	45	128
05:00 PM	11	24	0	0	35	0	21	27	0	48	0	0	0	0	0	25	0	4	0	29	112
Total Volume	56	91	0	0	147	0	81	119	0	200	0	0	0	0	0	108	0	35	0	143	490
% App. Total	38.1	61.9	0	0		0	40.5	59.5	0		0	0	0	0		75.5	0	24.5	0		
PHF	.737	.813	.000	.000	.855	.000	.844	.930	.000	.909	.000	.000	.000	.000	.000	.818	.000	.729	.000	.794	.914



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File Name : AM_Waiale Rd - Nokekula Lp
Site Code : 00000000
Start Date : 10/22/2015
Page No : 1

Groups Printed- Unshifted

	NOKEKULA LP Eastbound				NOKEKULA LP Westbound				WAIALE RD Northbound				WAIALE RD Southbound				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
06:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:45 AM	2	0	8	0	0	0	0	0	1	10	0	0	0	58	1	0	80
Total	2	0	8	0	0	0	0	0	1	10	0	0	0	58	1	0	80
07:00 AM	11	0	8	0	0	0	0	0	1	29	0	0	0	46	1	0	96
07:15 AM	6	0	2	0	0	0	0	0	1	25	0	0	0	48	0	0	82
07:30 AM	5	0	2	0	0	0	0	0	0	47	0	0	0	52	2	0	108
07:45 AM	2	0	7	0	0	0	0	0	1	21	0	0	0	48	5	0	84
Total	24	0	19	0	0	0	0	0	3	122	0	0	0	194	8	0	370
08:00 AM	3	0	1	0	0	0	0	0	1	19	0	0	0	25	3	0	52
08:15 AM	2	0	3	0	0	0	0	0	2	32	0	0	0	20	3	0	62
Grand Total	31	0	31	0	0	0	0	0	7	183	0	0	0	297	15	0	564
Apprch %	50	0	50	0	0	0	0	0	3.7	96.3	0	0	0	95.2	4.8	0	
Total %	5.5	0	5.5	0	0	0	0	0	1.2	32.4	0	0	0	52.7	2.7	0	

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File Name : AM_Waiale Rd - Nokekula Lp
Site Code : 00000000
Start Date : 10/22/2015
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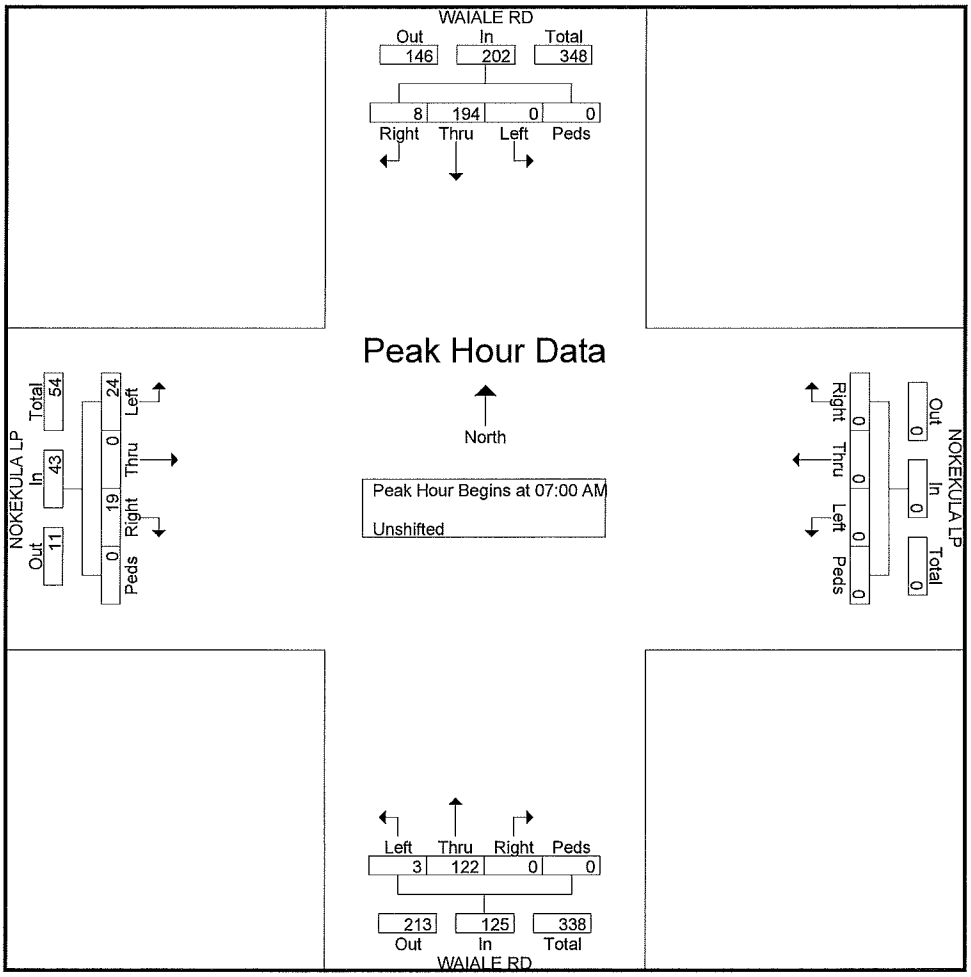
	NOKEKULA LP Eastbound					NOKEKULA LP Westbound					WAIALE RD Northbound					WAIALE RD Southbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 06:30 AM to 08:15 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	11	0	8	0	19	0	0	0	0	0	1	29	0	0	30	0	46	1	0	47	96
07:15 AM	6	0	2	0	8	0	0	0	0	0	1	25	0	0	26	0	48	0	0	48	82
07:30 AM	5	0	2	0	7	0	0	0	0	0	0	47	0	0	47	0	52	2	0	54	108
07:45 AM	2	0	7	0	9	0	0	0	0	0	1	21	0	0	22	0	48	5	0	53	84
Total Volume	24	0	19	0	43	0	0	0	0	0	3	122	0	0	125	0	194	8	0	202	370
% App. Total	55.8	0	44.2	0		0	0	0	0		2.4	97.6	0	0		0	96	4	0		
PHF	.545	.000	.594	.000	.566	.000	.000	.000	.000	.000	.750	.649	.000	.000	.665	.000	.933	.400	.000	.935	.856



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File Name : PM_Waiale Rd - Nokekula Lp
Site Code : 00000000
Start Date : 10/22/2015
Page No : 1

Groups Printed- Unshifted

	NOKEKULA LP Eastbound				NOKEKULA LP Westbound				WAIALE RD Northbound				WAIALE RD Southbound				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
03:30 PM	3	0	0	0	0	0	0	0	2	27	0	0	0	23	1	0	56
03:45 PM	0	0	1	0	0	0	0	0	4	49	0	0	0	27	2	0	83
Total	3	0	1	0	0	0	0	0	6	76	0	0	0	50	3	0	139
04:00 PM	0	0	4	0	0	0	0	0	2	34	0	0	0	29	5	0	74
04:15 PM	2	0	0	0	0	0	0	0	8	26	0	0	0	30	4	0	70
04:30 PM	2	0	4	0	0	0	0	0	7	34	0	0	0	37	4	0	88
04:45 PM	2	0	3	0	0	0	0	0	3	47	0	0	0	42	4	0	101
Total	6	0	11	0	0	0	0	0	20	141	0	0	0	138	17	0	333
05:00 PM	4	0	5	0	0	0	0	0	3	38	0	0	0	33	5	0	88
05:15 PM	3	0	2	0	0	0	0	0	2	38	0	0	0	34	2	0	81
Grand Total	16	0	19	0	0	0	0	0	31	293	0	0	0	255	27	0	641
Apprch %	45.7	0	54.3	0	0	0	0	0	9.6	90.4	0	0	0	90.4	9.6	0	
Total %	2.5	0	3	0	0	0	0	0	4.8	45.7	0	0	0	39.8	4.2	0	

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File Name : PM_Waiale Rd - Nokekula Lp
Site Code : 00000000
Start Date : 10/22/2015
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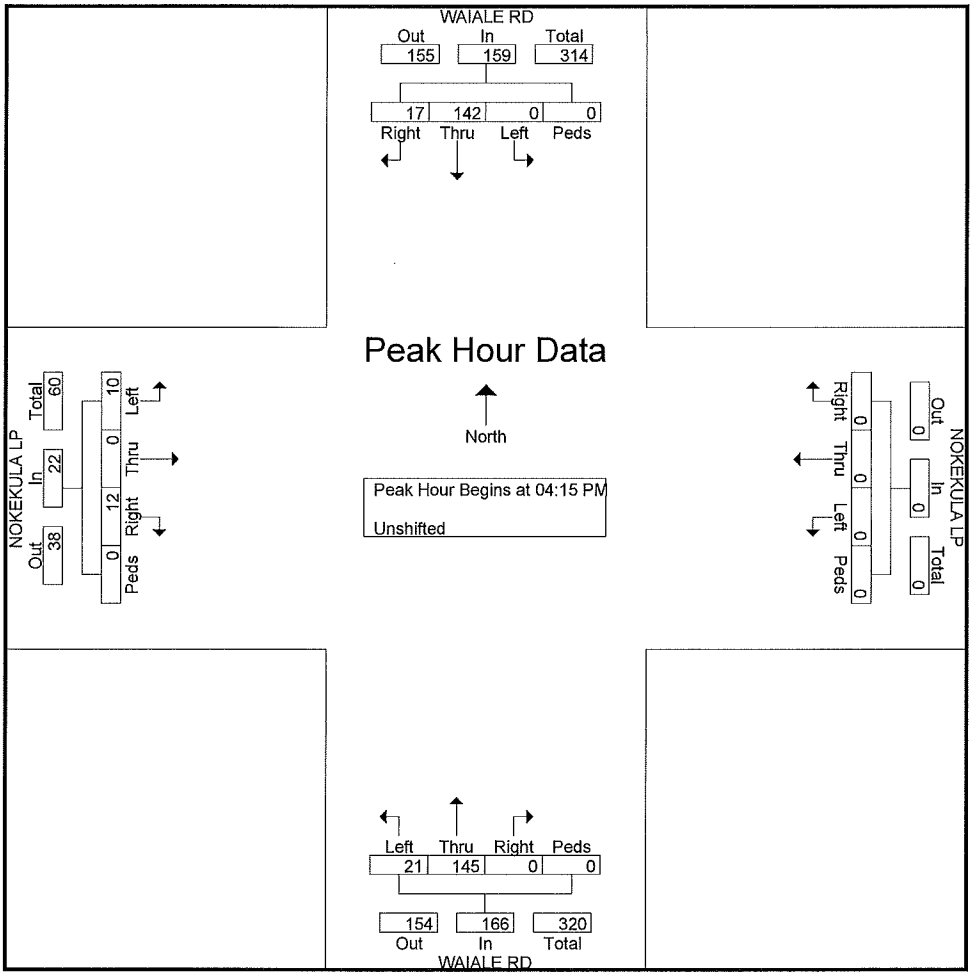
	NOKEKULA LP Eastbound					NOKEKULA LP Westbound					WAIALE RD Northbound					WAIALE RD Southbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:15 PM to 05:00 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:15 PM																					
04:15 PM	2	0	0	0	2	0	0	0	0	0	8	26	0	0	34	0	30	4	0	34	70
04:30 PM	2	0	4	0	6	0	0	0	0	0	7	34	0	0	41	0	37	4	0	41	88
04:45 PM	2	0	3	0	5	0	0	0	0	0	3	47	0	0	50	0	42	4	0	46	101
05:00 PM	4	0	5	0	9	0	0	0	0	0	3	38	0	0	41	0	33	5	0	38	88
Total Volume	10	0	12	0	22	0	0	0	0	0	21	145	0	0	166	0	142	17	0	159	347
% App. Total	45.5	0	54.5	0		0	0	0	0		12.7	87.3	0	0		0	89.3	10.7	0		
PHF	.625	.000	.600	.000	.611	.000	.000	.000	.000	.000	.656	.771	.000	.000	.830	.000	.845	.850	.000	.864	.859



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File Name : AM_Waiale Rd - Haawi St
Site Code : 00000000
Start Date : 10/22/2015
Page No : 1

Groups Printed- Unshifted

	HAAWI ST Eastbound				HAAWI ST Westbound				WAIALE RD Northbound				WAIALE RD Southbound				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
06:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:45 AM	21	0	19	0	0	0	0	0	3	9	0	0	0	40	3	0	95
Total	21	0	19	0	0	0	0	0	3	9	0	0	0	40	3	0	95
07:00 AM	22	0	21	0	0	0	0	0	2	38	0	0	0	26	6	0	115
07:15 AM	30	0	20	0	0	0	0	0	2	29	0	0	0	28	10	0	119
07:30 AM	15	0	21	0	0	0	0	0	4	48	0	0	0	33	8	0	129
07:45 AM	7	0	15	0	0	0	0	0	3	20	0	0	0	38	11	0	94
Total	74	0	77	0	0	0	0	0	11	135	0	0	0	125	35	0	457
08:00 AM	5	0	3	0	0	0	0	0	1	21	0	0	0	25	11	0	66
08:15 AM	8	0	9	0	0	0	0	0	7	27	0	0	0	14	6	0	71
Grand Total	108	0	108	0	0	0	0	0	22	192	0	0	0	204	55	0	689
Apprch %	50	0	50	0	0	0	0	0	10.3	89.7	0	0	0	78.8	21.2	0	
Total %	15.7	0	15.7	0	0	0	0	0	3.2	27.9	0	0	0	29.6	8	0	

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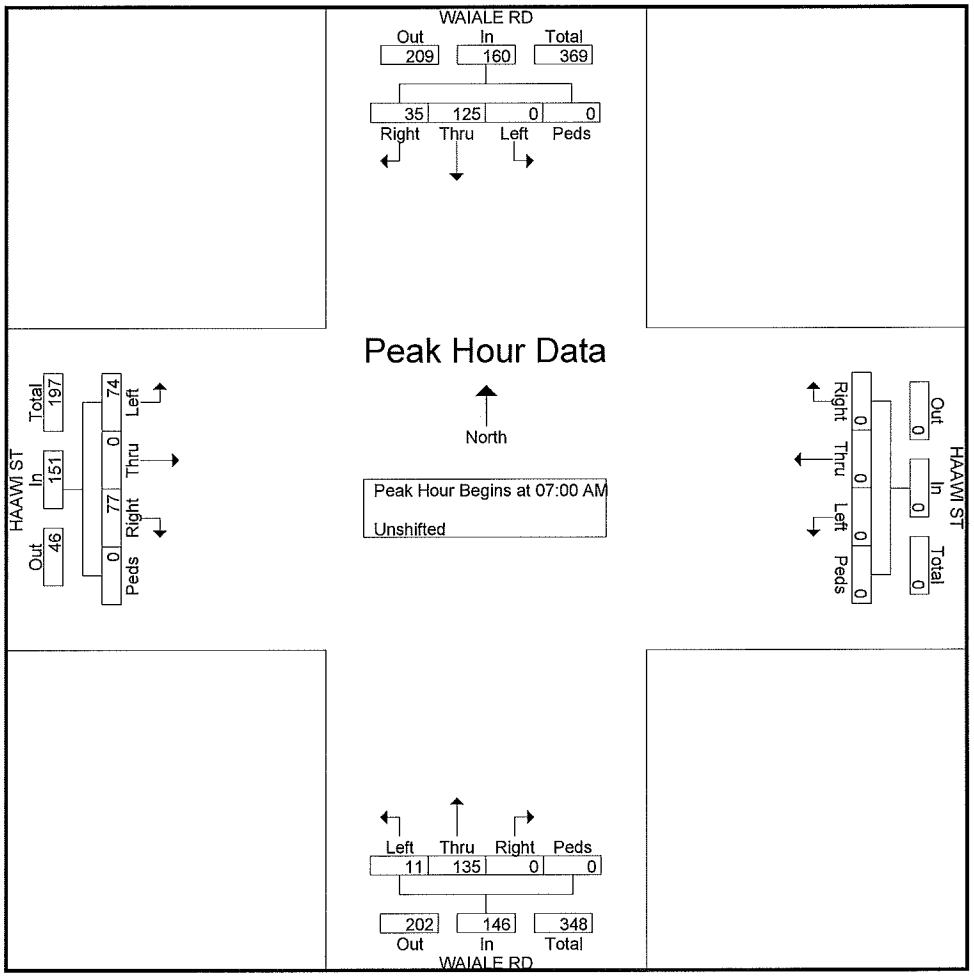
File Name : AM_Waiale Rd - Haawi St
Site Code : 00000000
Start Date : 10/22/2015
Page No : 2

	HAAWI ST Eastbound					HAAWI ST Westbound					WAIALE RD Northbound					WAIALE RD Southbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	22	0	21	0	43	0	0	0	0	0	2	38	0	0	40	0	26	6	0	32	115
07:15 AM	30	0	20	0	50	0	0	0	0	0	2	29	0	0	31	0	28	10	0	38	119
07:30 AM	15	0	21	0	36	0	0	0	0	0	4	48	0	0	52	0	33	8	0	41	129
07:45 AM	7	0	15	0	22	0	0	0	0	0	3	20	0	0	23	0	38	11	0	49	94
Total Volume	74	0	77	0	151	0	0	0	0	0	11	135	0	0	146	0	125	35	0	160	457
% App. Total	49	0	51	0		0	0	0	0		7.5	92.5	0	0		0	78.1	21.9	0		
PHF	.617	.000	.917	.000	.755	.000	.000	.000	.000	.000	.688	.703	.000	.000	.702	.000	.822	.795	.000	.816	.886



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File Name : PM_Waiale Rd - Haawi St
Site Code : 00000000
Start Date : 10/22/2015
Page No : 1

Groups Printed- Unshifted

	HAAWI ST Eastbound				HAAWI ST Westbound				WAIALE RD Northbound				WAIALE RD Southbound				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
03:30 PM	12	0	10	0	0	0	0	0	7	23	0	0	0	14	16	0	82
03:45 PM	10	0	3	0	0	0	0	0	9	40	0	0	0	26	10	0	98
Total	22	0	13	0	0	0	0	0	16	63	0	0	0	40	26	0	180
04:00 PM	14	0	3	0	0	0	0	0	15	19	0	0	0	31	13	0	95
04:15 PM	12	0	5	0	0	0	0	0	1	27	0	0	0	29	16	0	90
04:30 PM	14	0	12	0	0	0	0	0	16	20	0	0	0	29	18	0	109
04:45 PM	14	0	15	0	0	0	0	0	11	38	0	0	0	31	20	0	129
Total	54	0	35	0	0	0	0	0	43	104	0	0	0	120	67	0	423
05:00 PM	10	0	7	0	0	0	0	0	10	32	0	0	0	31	22	0	112
05:15 PM	7	0	4	0	0	0	0	0	17	24	0	0	0	32	15	0	99
Grand Total	93	0	59	0	0	0	0	0	86	223	0	0	0	223	130	0	814
Apprch %	61.2	0	38.8	0	0	0	0	0	27.8	72.2	0	0	0	63.2	36.8	0	
Total %	11.4	0	7.2	0	0	0	0	0	10.6	27.4	0	0	0	27.4	16	0	

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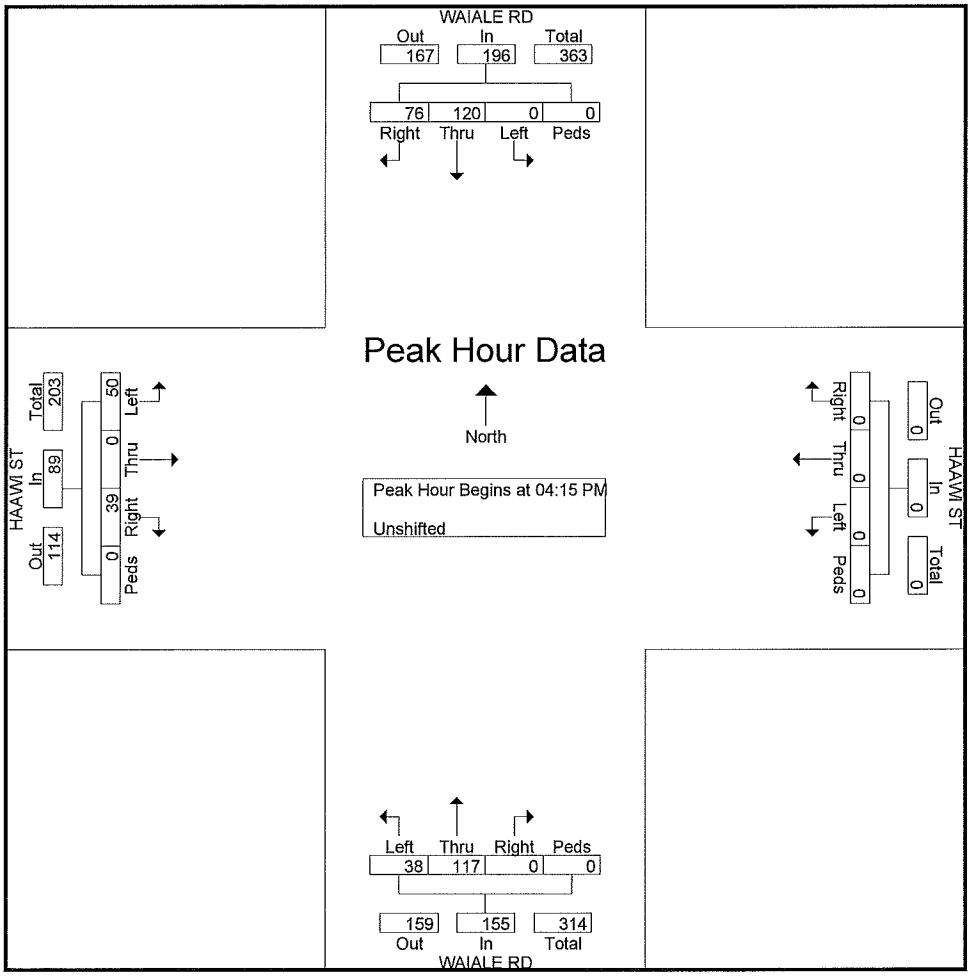
File Name : PM_Waiale Rd - Haawi St
Site Code : 00000000
Start Date : 10/22/2015
Page No : 2

	HAAWI ST Eastbound					HAAWI ST Westbound					WAIALE RD Northbound					WAIALE RD Southbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:15 PM to 05:00 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:15 PM																					
04:15 PM	12	0	5	0	17	0	0	0	0	0	1	27	0	0	28	0	29	16	0	45	90
04:30 PM	14	0	12	0	26	0	0	0	0	0	16	20	0	0	36	0	29	18	0	47	109
04:45 PM	14	0	15	0	29	0	0	0	0	0	11	38	0	0	49	0	31	20	0	51	129
05:00 PM	10	0	7	0	17	0	0	0	0	0	10	32	0	0	42	0	31	22	0	53	112
Total Volume	50	0	39	0	89	0	0	0	0	0	38	117	0	0	155	0	120	76	0	196	440
% App. Total	56.2	0	43.8	0		0	0	0	0		24.5	75.5	0	0		0	61.2	38.8	0		
PHF	.893	.000	.650	.000	.767	.000	.000	.000	.000	.000	.594	.770	.000	.000	.791	.000	.968	.864	.000	.925	.853



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File Name : AM_Waiale Rd - Kokololio St
Site Code : 00000000
Start Date : 10/22/2015
Page No : 1

Groups Printed- Unshifted

	KOKOLOLIO ST Eastbound				KOKOLOLIO ST Westbound				WAIALE RD Northbound				WAIALE RD Southbound				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
06:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:45 AM	23	0	6	0	0	0	0	0	1	29	0	0	0	37	4	0	100
Total	23	0	6	0	0	0	0	0	1	29	0	0	0	37	4	0	100
07:00 AM	20	0	6	0	0	0	0	0	1	59	0	0	0	26	6	0	118
07:15 AM	36	0	7	0	0	0	0	0	1	58	0	0	0	31	9	0	142
07:30 AM	29	0	5	0	0	0	0	0	2	61	0	0	0	36	6	0	139
07:45 AM	12	0	3	0	0	0	0	0	1	26	0	0	0	46	12	0	100
Total	97	0	21	0	0	0	0	0	5	204	0	0	0	139	33	0	499
08:00 AM	10	0	1	0	0	0	0	0	0	26	0	0	0	35	8	0	80
08:15 AM	9	0	1	0	0	0	0	0	2	33	0	0	0	19	7	0	71
Grand Total	139	0	29	0	0	0	0	0	8	292	0	0	0	230	52	0	750
Apprch %	82.7	0	17.3	0	0	0	0	0	2.7	97.3	0	0	0	81.6	18.4	0	
Total %	18.5	0	3.9	0	0	0	0	0	1.1	38.9	0	0	0	30.7	6.9	0	

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File Name : AM_Waiale Rd - Kokololio St
Site Code : 00000000
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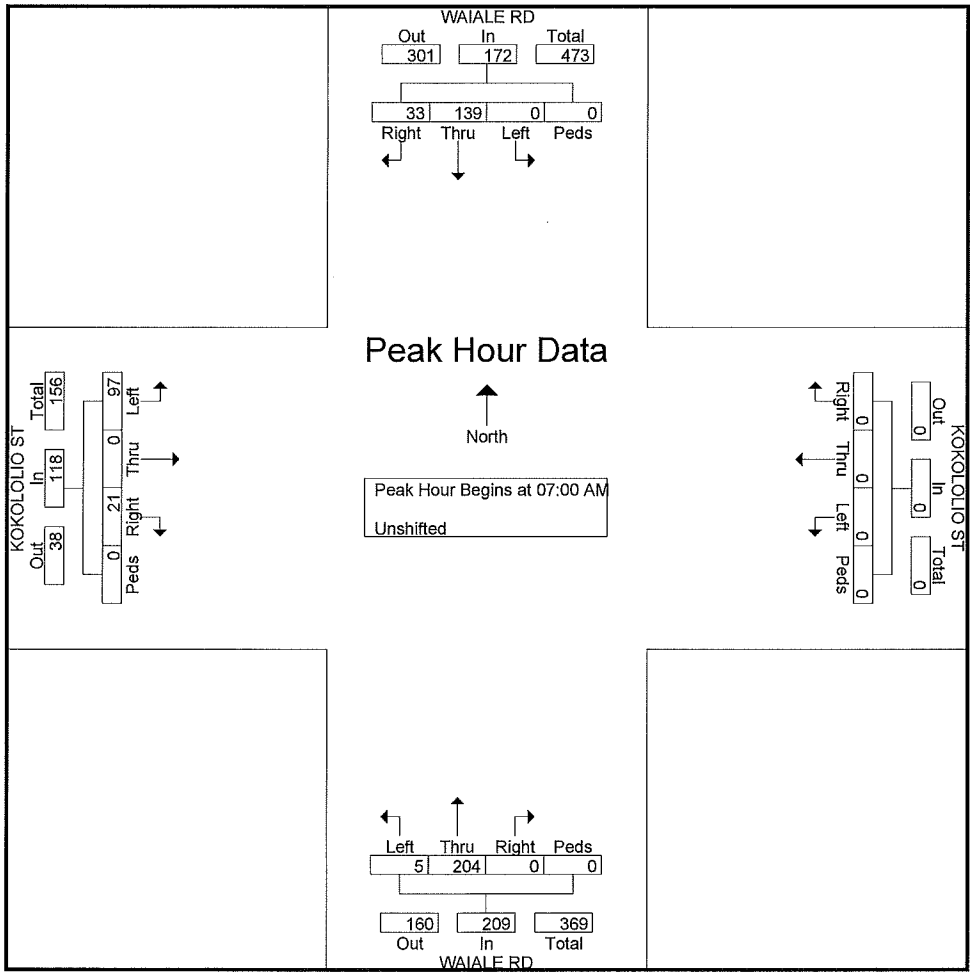
	KOKOLOLIO ST Eastbound					KOKOLOLIO ST Westbound					WAIALE RD Northbound					WAIALE RD Southbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	20	0	6	0	26	0	0	0	0	0	1	59	0	0	60	0	26	6	0	32	118
07:15 AM	36	0	7	0	43	0	0	0	0	0	1	58	0	0	59	0	31	9	0	40	142
07:30 AM	29	0	5	0	34	0	0	0	0	0	2	61	0	0	63	0	36	6	0	42	139
07:45 AM	12	0	3	0	15	0	0	0	0	0	1	26	0	0	27	0	46	12	0	58	100
Total Volume	97	0	21	0	118	0	0	0	0	0	5	204	0	0	209	0	139	33	0	172	499
% App. Total	82.2	0	17.8	0		0	0	0	0		2.4	97.6	0	0		0	80.8	19.2	0		
PHF	.674	.000	.750	.000	.686	.000	.000	.000	.000	.000	.625	.836	.000	.000	.829	.000	.755	.688	.000	.741	.879



Austin Tsutsumi & Associates

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File Name : PM_Waiale Rd - Kokololio St
Site Code : 00000000
Start Date : 10/22/2015
Page No : 1

Groups Printed- Unshifted

	KOKOLOLIO ST Eastbound				KOKOLOLIO ST Westbound				WAIALE RD Northbound				WAIALE RD Southbound				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
03:30 PM	7	0	1	0	0	0	0	0	4	31	0	0	0	29	15	0	87
03:45 PM	17	0	4	0	0	0	0	0	4	46	0	0	0	32	15	0	118
Total	24	0	5	0	0	0	0	0	8	77	0	0	0	61	30	0	205
04:00 PM	17	0	6	0	0	0	0	0	4	29	0	0	0	38	13	0	107
04:15 PM	13	0	1	0	0	0	0	0	3	36	0	0	0	44	13	0	110
04:30 PM	17	0	2	0	0	0	0	0	3	31	0	0	0	45	22	0	120
04:45 PM	14	0	2	0	0	0	0	0	5	47	0	0	0	49	21	0	138
Total	61	0	11	0	0	0	0	0	15	143	0	0	0	176	69	0	475
05:00 PM	13	0	1	0	0	0	0	0	4	38	0	0	0	52	17	0	125
05:15 PM	12	0	6	0	0	0	0	0	9	22	0	0	0	41	16	0	106
Grand Total	110	0	23	0	0	0	0	0	36	280	0	0	0	330	132	0	911
Apprch %	82.7	0	17.3	0	0	0	0	0	11.4	88.6	0	0	0	71.4	28.6	0	
Total %	12.1	0	2.5	0	0	0	0	0	4	30.7	0	0	0	36.2	14.5	0	

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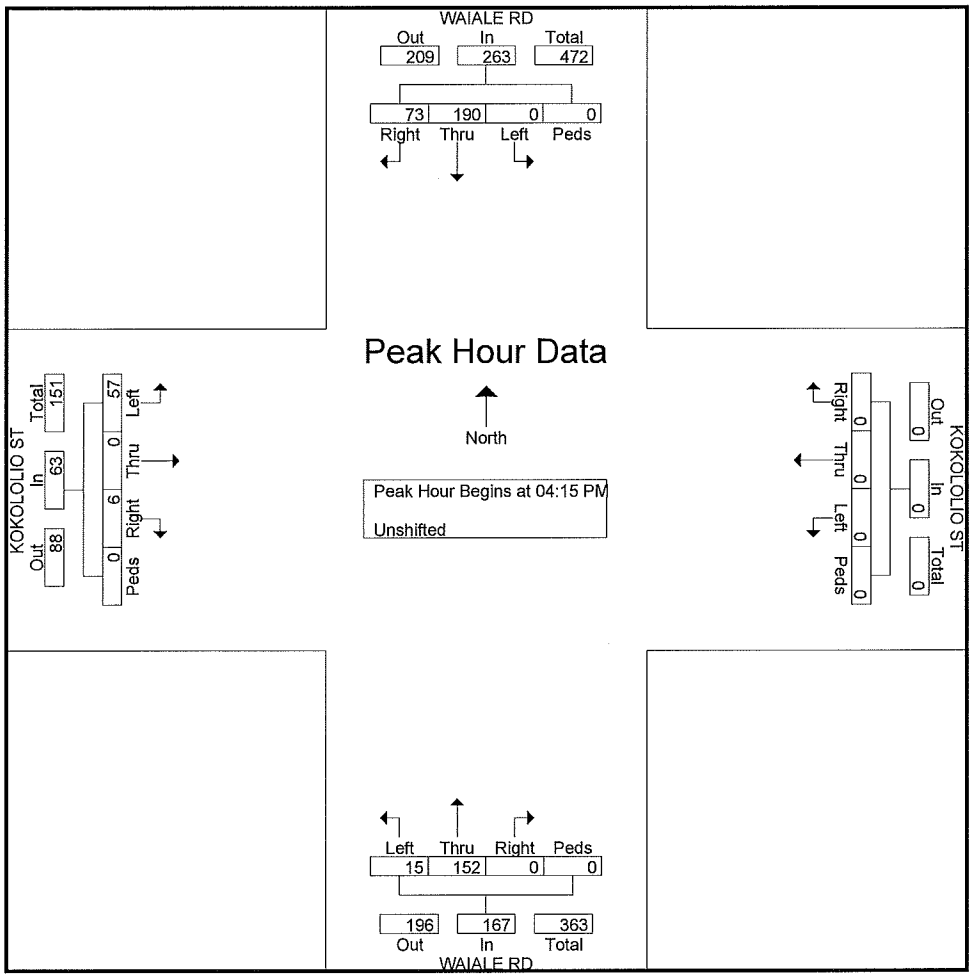
Start Date : 10/22/2015
Page No : 2

	KOKOLOLIO ST Eastbound					KOKOLOLIO ST Westbound					WAIALE RD Northbound					WAIALE RD Southbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 03:30 PM to 05:15 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:15 PM																					
04:15 PM	13	0	1	0	14	0	0	0	0	0	3	36	0	0	39	0	44	13	0	57	110
04:30 PM	17	0	2	0	19	0	0	0	0	0	3	31	0	0	34	0	45	22	0	67	120
04:45 PM	14	0	2	0	16	0	0	0	0	0	5	47	0	0	52	0	49	21	0	70	138
05:00 PM	13	0	1	0	14	0	0	0	0	0	4	38	0	0	42	0	52	17	0	69	125
Total Volume	57	0	6	0	63	0	0	0	0	0	15	152	0	0	167	0	190	73	0	263	493
% App. Total	90.5	0	9.5	0		0	0	0	0		9	91	0	0		0	72.2	27.8	0		
PHF	.838	.000	.750	.000	.829	.000	.000	.000	.000	.000	.750	.809	.000	.000	.803	.000	.913	.830	.000	.939	.893



APPENDIX B

LEVEL OF SERVICE CRITERIA

APPENDIX B – LEVEL OF SERVICE (LOS) CRITERIA

VEHICULAR LEVEL OF SERVICE FOR SIGNALIZED INTERSECTIONS (HCM 2010)

Level of service for vehicles at signalized intersections is directly related to delay values and is assigned on that basis. Level of Service is a measure of the acceptability of delay values to motorists at a given intersection. The criteria are given in the table below.

Level-of Service Criteria for Signalized Intersections

Level of Service	Control Delay per Vehicle (sec./veh.)
A	< 10.0
B	>10.0 and ≤ 20.0
C	>20.0 and ≤ 35.0
D	>35.0 and ≤ 55.0
E	>55.0 and ≤ 80.0
F	> 80.0

Delay is a complex measure, and is dependent on a number of variables, including the quality of progression, the cycle length, the green ratio, and the v/c ratio for the lane group or approach in question.

VEHICULAR LEVEL OF SERVICE CRITERIA FOR UNSIGNALIZED INTERSECTIONS (HCM 2010)

The level of service criteria for vehicles at unsignalized intersections is defined as the average control delay, in seconds per vehicle.

LOS delay threshold values are lower for two-way stop-controlled (TWSC) and all-way stop-controlled (AWSC) intersections than those of signalized intersections. This is because more vehicles pass through signalized intersections, and therefore, drivers expect and tolerate greater delays. While the criteria for level of service for TWSC and AWSC intersections are the same, procedures to calculate the average total delay may differ.

Level of Service Criteria for Two-Way Stop-Controlled Intersections

Level of Service	Average Control Delay (sec/veh)
A	≤ 10
B	>10 and ≤15
C	>15 and ≤25
D	>25 and ≤35
E	>35 and ≤50
F	> 50

APPENDIX C

LEVEL OF SERVICE CALCULATIONS

APPENDIX C

LEVEL OF SERVICE CALCULATIONS

- Existing AM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	22	21	13	81	10	38	3	634	59	104	679	8
Future Volume (veh/h)	22	21	13	81	10	38	3	634	59	104	679	8
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1900	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	24	23	2	88	11	20	3	689	61	113	738	5
Adj No. of Lanes	0	1	1	0	1	0	1	1	0	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	208	180	311	261	36	45	347	891	79	383	1142	971
Arrive On Green	0.20	0.20	0.20	0.20	0.20	0.20	0.00	0.53	0.53	0.09	0.61	0.61
Sat Flow, veh/h	736	919	1583	956	183	230	1774	1687	149	1774	1863	1583
Grp Volume(v), veh/h	47	0	2	119	0	0	3	0	750	113	738	5
Grp Sat Flow(s),veh/h/ln	1655	0	1583	1369	0	0	1774	0	1836	1774	1863	1583
Q Serve(g_s), s	0.0	0.0	0.1	5.3	0.0	0.0	0.1	0.0	27.7	2.1	21.6	0.1
Cycle Q Clear(g_c), s	1.8	0.0	0.1	7.1	0.0	0.0	0.1	0.0	27.7	2.1	21.6	0.1
Prop In Lane	0.51		1.00	0.74		0.17	1.00		0.08	1.00		1.00
Lane Grp Cap(c), veh/h	389	0	311	342	0	0	347	0	970	383	1142	971
V/C Ratio(X)	0.12	0.00	0.01	0.35	0.00	0.00	0.01	0.00	0.77	0.29	0.65	0.01
Avail Cap(c_a), veh/h	524	0	447	467	0	0	676	0	970	562	1142	971
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	0.81	0.81	0.81
Uniform Delay (d), s/veh	28.2	0.0	27.5	30.6	0.0	0.0	10.6	0.0	16.0	12.1	10.5	6.4
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.2	0.0	0.0	0.0	0.0	6.0	0.1	2.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.0	0.0	2.5	0.0	0.0	0.0	0.0	15.6	1.1	11.6	0.0
LnGrp Delay(d),s/veh	28.2	0.0	27.5	30.8	0.0	0.0	10.6	0.0	22.0	12.2	12.8	6.4
LnGrp LOS	C		C	C			B		C	B	B	A
Approach Vol, veh/h		49			119			753			856	
Approach Delay, s/veh		28.2			30.8			22.0			12.7	
Approach LOS		C			C			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	11.4	50.9		22.7	4.2	58.1		22.7
Change Period (Y+Rc), s	4.0	6.0		6.0	4.0	6.0		6.0
Max Green Setting (Gmax), s	16.0	29.0		24.0	16.0	29.0		24.0
Max Q Clear Time (g_c+I1), s	4.1	29.7		3.8	2.1	23.6		9.1
Green Ext Time (p_c), s	0.1	0.0		0.6	0.0	4.9		0.5

Intersection Summary	
HCM 2010 Ctrl Delay	18.3
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	32	127	57	261	50	196	19	409	371	249	364	6
Future Volume (veh/h)	32	127	57	261	50	196	19	409	371	249	364	6
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	35	138	16	284	54	55	21	445	0	271	396	3
Adj No. of Lanes	0	1	1	0	1	1	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	131	458	461	427	63	461	441	663	563	462	859	730
Arrive On Green	0.29	0.29	0.29	0.29	0.29	0.29	0.01	0.36	0.00	0.12	0.46	0.46
Sat Flow, veh/h	232	1575	1583	1136	216	1583	1774	1863	1583	1774	1863	1583
Grp Volume(v), veh/h	173	0	16	338	0	55	21	445	0	271	396	3
Grp Sat Flow(s),veh/h/ln	1807	0	1583	1352	0	1583	1774	1863	1583	1774	1863	1583
Q Serve(g_s), s	0.0	0.0	0.5	11.1	0.0	1.7	0.5	13.9	0.0	6.1	10.0	0.1
Cycle Q Clear(g_c), s	5.0	0.0	0.5	16.1	0.0	1.7	0.5	13.9	0.0	6.1	10.0	0.1
Prop In Lane	0.20		1.00	0.84		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	589	0	461	490	0	461	441	663	563	462	859	730
V/C Ratio(X)	0.29	0.00	0.03	0.69	0.00	0.12	0.05	0.67	0.00	0.59	0.46	0.00
Avail Cap(c_a), veh/h	818	0	670	664	0	670	701	924	786	534	924	786
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	19.0	0.0	17.4	22.7	0.0	17.8	13.8	18.7	0.0	12.5	12.6	10.0
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.8	0.0	0.0	0.0	2.5	0.0	0.5	0.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	0.0	0.2	6.1	0.0	0.8	0.2	7.5	0.0	3.0	5.3	0.0
LnGrp Delay(d),s/veh	19.1	0.0	17.4	23.5	0.0	17.9	13.8	21.2	0.0	13.0	13.5	10.0
LnGrp LOS	B		B	C		B	B	C		B	B	A
Approach Vol, veh/h		189			393			466			670	
Approach Delay, s/veh		18.9			22.7			20.9			13.3	
Approach LOS		B			C			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	12.2	30.4		25.9	5.0	37.6		25.9
Change Period (Y+Rc), s	4.0	6.0		6.0	4.0	6.0		6.0
Max Green Setting (Gmax), s	11.0	34.0		29.0	11.0	34.0		29.0
Max Q Clear Time (g_c+I1), s	8.1	15.9		7.0	2.5	12.0		18.1
Green Ext Time (p_c), s	0.1	8.5		2.4	0.0	9.5		1.9

Intersection Summary	
HCM 2010 Ctrl Delay	18.1
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	262	163	236	30	188	91	195	428	11	44	371	92
Future Volume (veh/h)	262	163	236	30	188	91	195	428	11	44	371	92
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1545	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	374	177	60	33	204	11	212	465	0	48	403	0
Adj No. of Lanes	1	1	1	1	1	1	1	1	1	1	1	1
Peak Hour Factor	0.70	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	10	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	369	522	443	306	260	221	408	739	628	333	629	535
Arrive On Green	0.17	0.28	0.28	0.03	0.14	0.14	0.10	0.40	0.00	0.04	0.34	0.00
Sat Flow, veh/h	1472	1863	1583	1774	1863	1583	1774	1863	1583	1774	1863	1583
Grp Volume(v), veh/h	374	177	60	33	204	11	212	465	0	48	403	0
Grp Sat Flow(s),veh/h/ln	1472	1863	1583	1774	1863	1583	1774	1863	1583	1774	1863	1583
Q Serve(g_s), s	15.0	6.6	2.5	1.4	9.2	0.5	6.4	17.5	0.0	1.5	15.9	0.0
Cycle Q Clear(g_c), s	15.0	6.6	2.5	1.4	9.2	0.5	6.4	17.5	0.0	1.5	15.9	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	369	522	443	306	260	221	408	739	628	333	629	535
V/C Ratio(X)	1.01	0.34	0.14	0.11	0.79	0.05	0.52	0.63	0.00	0.14	0.64	0.00
Avail Cap(c_a), veh/h	369	522	443	556	513	436	641	1047	890	671	1047	890
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	28.6	25.0	23.5	30.5	36.2	32.5	16.8	21.1	0.0	18.3	24.4	0.0
Incr Delay (d2), s/veh	50.5	0.1	0.1	0.1	2.0	0.0	0.4	1.9	0.0	0.1	2.3	0.0
Initial Q Delay(d3),s/veh	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.0	3.4	1.1	0.7	4.9	0.2	3.1	9.3	0.0	0.7	8.6	0.0
LnGrp Delay(d),s/veh	79.1	25.1	23.5	30.6	38.2	32.5	17.2	23.0	0.0	18.4	26.7	0.0
LnGrp LOS	F	C	C	C	D	C	B	C		B	C	
Approach Vol, veh/h		611			248			677			451	
Approach Delay, s/veh		58.0			37.0			21.2			25.8	
Approach LOS		E			D			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.4	40.6	7.8	30.4	13.6	35.4	20.0	18.2
Change Period (Y+Rc), s	5.0	6.0	5.0	6.0	5.0	6.0	5.0	6.0
Max Green Setting (Gmax), s	20.0	49.0	15.0	24.0	20.0	49.0	15.0	24.0
Max Q Clear Time (g_c+I1), s	3.5	19.5	3.4	8.6	8.4	17.9	17.0	11.2
Green Ext Time (p_c), s	0.0	11.2	0.0	1.5	0.2	11.5	0.0	0.9

Intersection Summary	
HCM 2010 Ctrl Delay	35.5
HCM 2010 LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	388	239	52	32	209	253	81	174	68	225	87	202
Future Volume (veh/h)	388	239	52	32	209	253	81	174	68	225	87	202
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1814	1863	1900	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	485	260	49	35	227	37	88	189	59	245	95	135
Adj No. of Lanes	1	1	0	1	1	1	1	1	0	1	1	0
Peak Hour Factor	0.80	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	594	612	115	328	329	280	357	255	79	386	182	259
Arrive On Green	0.25	0.40	0.40	0.03	0.18	0.18	0.06	0.19	0.19	0.13	0.26	0.26
Sat Flow, veh/h	1727	1525	287	1774	1863	1583	1774	1362	425	1774	697	991
Grp Volume(v), veh/h	485	0	309	35	227	37	88	0	248	245	0	230
Grp Sat Flow(s),veh/h/ln	1727	0	1812	1774	1863	1583	1774	0	1788	1774	0	1688
Q Serve(g_s), s	16.8	0.0	9.7	1.3	9.0	1.6	3.1	0.0	10.3	8.3	0.0	9.2
Cycle Q Clear(g_c), s	16.8	0.0	9.7	1.3	9.0	1.6	3.1	0.0	10.3	8.3	0.0	9.2
Prop In Lane	1.00		0.16	1.00		1.00	1.00		0.24	1.00		0.59
Lane Grp Cap(c), veh/h	594	0	727	328	329	280	357	0	334	386	0	441
V/C Ratio(X)	0.82	0.00	0.42	0.11	0.69	0.13	0.25	0.00	0.74	0.63	0.00	0.52
Avail Cap(c_a), veh/h	729	0	897	528	568	483	505	0	545	402	0	514
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	17.6	0.0	17.0	25.5	30.4	27.3	23.8	0.0	30.2	21.0	0.0	24.9
Incr Delay (d2), s/veh	6.0	0.0	0.4	0.1	2.6	0.2	0.4	0.0	3.3	3.1	0.0	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.8	0.0	4.9	0.6	4.8	0.7	1.6	0.0	5.4	4.3	0.0	4.4
LnGrp Delay(d),s/veh	23.6	0.0	17.4	25.6	33.0	27.5	24.2	0.0	33.5	24.0	0.0	25.8
LnGrp LOS	C		B	C	C	C	C		C	C		C
Approach Vol, veh/h		794			299			336			475	
Approach Delay, s/veh		21.2			31.4			31.1			24.9	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.3	20.7	6.1	37.6	8.4	26.6	23.8	19.9
Change Period (Y+Rc), s	4.0	6.0	4.0	6.0	4.0	6.0	4.0	6.0
Max Green Setting (Gmax), s	11.0	24.0	11.0	39.0	11.0	24.0	26.0	24.0
Max Q Clear Time (g_c+I1), s	10.3	12.3	3.3	11.7	5.1	11.2	18.8	11.0
Green Ext Time (p_c), s	0.1	2.4	0.0	3.8	0.1	2.5	1.0	2.9

Intersection Summary	
HCM 2010 Ctrl Delay	25.5
HCM 2010 LOS	C

Intersection	
Int Delay, s/veh	6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Traffic Vol, veh/h	42	138	54	84	164	66
Future Vol, veh/h	42	138	54	84	164	66
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	46	150	59	91	178	72

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	150	0	-	0	345	104
Stage 1	-	-	-	-	104	-
Stage 2	-	-	-	-	241	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1431	-	-	-	652	951
Stage 1	-	-	-	-	920	-
Stage 2	-	-	-	-	799	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1431	-	-	-	629	951
Mov Cap-2 Maneuver	-	-	-	-	629	-
Stage 1	-	-	-	-	920	-
Stage 2	-	-	-	-	771	-

Approach	EB	WB	SB
HCM Control Delay, s	1.8	0	13
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1431	-	-	-	697
HCM Lane V/C Ratio	0.032	-	-	-	0.359
HCM Control Delay (s)	7.6	0	-	-	13
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	1.6

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	24	19	3	122	194	8
Future Vol, veh/h	24	19	3	122	194	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	26	21	3	133	211	9

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	354	215	220	0	-	0
Stage 1	215	-	-	-	-	-
Stage 2	139	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	644	825	1349	-	-	-
Stage 1	821	-	-	-	-	-
Stage 2	888	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	643	825	1349	-	-	-
Mov Cap-2 Maneuver	643	-	-	-	-	-
Stage 1	821	-	-	-	-	-
Stage 2	886	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.4	0.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1349	-	712	-	-
HCM Lane V/C Ratio	0.002	-	0.066	-	-
HCM Control Delay (s)	7.7	0	10.4	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

Intersection	
Int Delay, s/veh	3.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	74	77	11	135	125	35
Future Vol, veh/h	74	77	11	135	125	35
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	80	84	12	147	136	38

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	326	155	174	0	-	0
Stage 1	155	-	-	-	-	-
Stage 2	171	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	668	891	1403	-	-	-
Stage 1	873	-	-	-	-	-
Stage 2	859	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	662	891	1403	-	-	-
Mov Cap-2 Maneuver	662	-	-	-	-	-
Stage 1	873	-	-	-	-	-
Stage 2	851	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11	0.6	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1403	-	762	-	-
HCM Lane V/C Ratio	0.009	-	0.215	-	-
HCM Control Delay (s)	7.6	0	11	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.8	-	-

Intersection	
Int Delay, s/veh	2.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	97	21	5	204	139	33
Future Vol, veh/h	97	21	5	204	139	33
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	50	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	105	23	5	222	151	36

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	402	169	187	0	-	0
Stage 1	169	-	-	-	-	-
Stage 2	233	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	604	875	1387	-	-	-
Stage 1	861	-	-	-	-	-
Stage 2	806	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	602	875	1387	-	-	-
Mov Cap-2 Maneuver	602	-	-	-	-	-
Stage 1	861	-	-	-	-	-
Stage 2	803	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.7	0.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1387	-	602	875	-	-
HCM Lane V/C Ratio	0.004	-	0.175	0.026	-	-
HCM Control Delay (s)	7.6	0	12.2	9.2	-	-
HCM Lane LOS	A	A	B	A	-	-
HCM 95th %tile Q(veh)	0	-	0.6	0.1	-	-

APPENDIX C

LEVEL OF SERVICE CALCULATIONS

- Existing PM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	22	9	6	40	15	58	10	624	73	60	558	18
Future Volume (veh/h)	22	9	6	40	15	58	10	624	73	60	558	18
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1900	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	24	10	7	43	16	63	11	678	79	65	607	20
Adj No. of Lanes	0	1	1	0	1	0	1	1	0	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	276	103	318	144	67	163	428	870	101	361	1114	947
Arrive On Green	0.20	0.20	0.20	0.20	0.20	0.20	0.01	0.53	0.53	0.07	0.60	0.60
Sat Flow, veh/h	1006	513	1583	425	336	813	1774	1638	191	1774	1863	1583
Grp Volume(v), veh/h	34	0	7	122	0	0	11	0	757	65	607	20
Grp Sat Flow(s),veh/h/ln	1518	0	1583	1575	0	0	1774	0	1829	1774	1863	1583
Q Serve(g_s), s	0.0	0.0	0.3	1.7	0.0	0.0	0.2	0.0	27.4	1.2	16.1	0.4
Cycle Q Clear(g_c), s	1.3	0.0	0.3	5.3	0.0	0.0	0.2	0.0	27.4	1.2	16.1	0.4
Prop In Lane	0.71		1.00	0.35		0.52	1.00		0.10	1.00		1.00
Lane Grp Cap(c), veh/h	379	0	318	375	0	0	428	0	971	361	1114	947
V/C Ratio(X)	0.09	0.00	0.02	0.33	0.00	0.00	0.03	0.00	0.78	0.18	0.55	0.02
Avail Cap(c_a), veh/h	508	0	459	512	0	0	757	0	1083	571	1114	947
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.9	0.0	26.5	28.5	0.0	0.0	9.5	0.0	15.5	11.6	9.9	6.8
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	4.2	0.1	1.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	0.1	2.4	0.0	0.0	0.1	0.0	14.8	0.6	8.4	0.2
LnGrp Delay(d),s/veh	27.0	0.0	26.6	28.7	0.0	0.0	9.5	0.0	19.8	11.7	10.9	6.8
LnGrp LOS	C		C	C			A		B	B	B	A
Approach Vol, veh/h		41			122			768			692	
Approach Delay, s/veh		26.9			28.7			19.6			10.9	
Approach LOS		C			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	10.2	49.9		22.6	4.7	55.5		22.6
Change Period (Y+Rc), s	4.0	6.0		6.0	4.0	6.0		6.0
Max Green Setting (Gmax), s	16.0	49.0		24.0	16.0	49.0		24.0
Max Q Clear Time (g_c+I1), s	3.2	29.4		3.3	2.2	18.1		7.3
Green Ext Time (p_c), s	0.0	14.5		0.6	0.0	21.1		0.5

Intersection Summary	
HCM 2010 Ctrl Delay	16.8
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	62	28	317	99	169	35	408	279	160	452	22
Future Volume (veh/h)	5	62	28	317	99	169	35	408	279	160	452	22
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	5	67	30	345	108	184	38	443	0	174	491	24
Adj No. of Lanes	0	1	1	0	1	1	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	68	618	543	466	119	543	326	662	563	393	778	661
Arrive On Green	0.34	0.34	0.34	0.34	0.34	0.34	0.02	0.36	0.00	0.08	0.42	0.42
Sat Flow, veh/h	46	1803	1583	1108	347	1583	1774	1863	1583	1774	1863	1583
Grp Volume(v), veh/h	72	0	30	453	0	184	38	443	0	174	491	24
Grp Sat Flow(s),veh/h/ln	1850	0	1583	1455	0	1583	1774	1863	1583	1774	1863	1583
Q Serve(g_s), s	0.0	0.0	0.9	19.8	0.0	6.4	1.0	14.8	0.0	4.3	15.3	0.7
Cycle Q Clear(g_c), s	1.9	0.0	0.9	21.7	0.0	6.4	1.0	14.8	0.0	4.3	15.3	0.7
Prop In Lane	0.07		1.00	0.76		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	686	0	543	585	0	543	326	662	563	393	778	661
V/C Ratio(X)	0.10	0.00	0.06	0.77	0.00	0.34	0.12	0.67	0.00	0.44	0.63	0.04
Avail Cap(c_a), veh/h	780	0	625	659	0	625	552	862	733	509	862	733
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.5	0.0	16.2	22.8	0.0	18.0	15.4	20.0	0.0	13.9	16.9	12.7
Incr Delay (d2), s/veh	0.0	0.0	0.0	4.3	0.0	0.1	0.1	2.6	0.0	0.3	2.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	0.0	0.4	9.4	0.0	2.8	0.5	8.0	0.0	2.1	8.2	0.3
LnGrp Delay(d),s/veh	16.5	0.0	16.2	27.1	0.0	18.1	15.4	22.6	0.0	14.2	19.0	12.7
LnGrp LOS	B		B	C		B	B	C		B	B	B
Approach Vol, veh/h		102			637			481			689	
Approach Delay, s/veh		16.4			24.5			22.0			17.6	
Approach LOS		B			C			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	10.2	32.1		31.2	5.6	36.7		31.2
Change Period (Y+Rc), s	4.0	6.0		6.0	4.0	6.0		6.0
Max Green Setting (Gmax), s	11.0	34.0		29.0	11.0	34.0		29.0
Max Q Clear Time (g_c+I1), s	6.3	16.8		3.9	3.0	17.3		23.7
Green Ext Time (p_c), s	0.1	9.3		2.8	0.0	9.1		1.4

Intersection Summary	
HCM 2010 Ctrl Delay	21.0
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	17	112	81	106	64	128	60	478	163	119	406	16
Future Volume (veh/h)	17	112	81	106	64	128	60	478	163	119	406	16
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	18	122	88	115	70	139	65	520	0	129	441	0
Adj No. of Lanes	1	1	1	1	1	1	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	289	201	171	302	305	259	444	779	662	397	808	686
Arrive On Green	0.02	0.11	0.11	0.08	0.16	0.16	0.05	0.42	0.00	0.07	0.43	0.00
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	1863	1583	1774	1863	1583
Grp Volume(v), veh/h	18	122	88	115	70	139	65	520	0	129	441	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1863	1583	1774	1863	1583
Q Serve(g_s), s	0.6	4.2	3.5	3.7	2.2	5.4	1.3	15.1	0.0	2.7	11.7	0.0
Cycle Q Clear(g_c), s	0.6	4.2	3.5	3.7	2.2	5.4	1.3	15.1	0.0	2.7	11.7	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	289	201	171	302	305	259	444	779	662	397	808	686
V/C Ratio(X)	0.06	0.61	0.51	0.38	0.23	0.54	0.15	0.67	0.00	0.32	0.55	0.00
Avail Cap(c_a), veh/h	649	669	569	564	669	569	882	1087	924	808	1087	924
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	25.6	28.4	28.1	23.3	24.3	25.6	10.7	15.7	0.0	11.5	14.1	0.0
Incr Delay (d2), s/veh	0.0	1.1	0.9	0.3	0.1	0.6	0.1	2.1	0.0	0.2	1.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	2.2	1.6	1.8	1.1	2.4	0.6	8.1	0.0	1.3	6.3	0.0
LnGrp Delay(d),s/veh	25.6	29.5	29.0	23.6	24.4	26.3	10.7	17.8	0.0	11.7	15.3	0.0
LnGrp LOS	C	C	C	C	C	C	B	B		B	B	
Approach Vol, veh/h		228			324			585			570	
Approach Delay, s/veh		29.0			24.9			17.0			14.5	
Approach LOS		C			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.5	33.9	10.1	13.2	8.5	35.0	6.4	16.9
Change Period (Y+Rc), s	5.0	6.0	5.0	6.0	5.0	6.0	5.0	6.0
Max Green Setting (Gmax), s	20.0	39.0	15.0	24.0	20.0	39.0	15.0	24.0
Max Q Clear Time (g_c+I1), s	4.7	17.1	5.7	6.2	3.3	13.7	2.6	7.4
Green Ext Time (p_c), s	0.1	10.9	0.1	1.1	0.1	11.8	0.0	1.0

Intersection Summary	
HCM 2010 Ctrl Delay	19.3
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	215	171	49	61	266	275	33	100	37	281	162	267
Future Volume (veh/h)	215	171	49	61	266	275	33	100	37	281	162	267
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	234	186	41	66	289	49	36	109	27	305	176	235
Adj No. of Lanes	1	1	0	1	1	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	433	459	101	436	411	350	235	229	57	522	214	285
Arrive On Green	0.13	0.31	0.31	0.04	0.22	0.22	0.03	0.16	0.16	0.17	0.29	0.29
Sat Flow, veh/h	1774	1479	326	1774	1863	1583	1774	1442	357	1774	725	967
Grp Volume(v), veh/h	234	0	227	66	289	49	36	0	136	305	0	411
Grp Sat Flow(s),veh/h/ln	1774	0	1805	1774	1863	1583	1774	0	1800	1774	0	1692
Q Serve(g_s), s	5.8	0.0	6.2	1.8	8.9	1.5	1.0	0.0	4.3	8.3	0.0	14.1
Cycle Q Clear(g_c), s	5.8	0.0	6.2	1.8	8.9	1.5	1.0	0.0	4.3	8.3	0.0	14.1
Prop In Lane	1.00		0.18	1.00		1.00	1.00		0.20	1.00		0.57
Lane Grp Cap(c), veh/h	433	0	560	436	411	350	235	0	285	522	0	499
V/C Ratio(X)	0.54	0.00	0.41	0.15	0.70	0.14	0.15	0.00	0.48	0.58	0.00	0.82
Avail Cap(c_a), veh/h	938	0	1132	672	719	611	496	0	694	541	0	653
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	14.7	0.0	16.9	17.5	22.4	19.5	21.2	0.0	23.8	16.0	0.0	20.4
Incr Delay (d2), s/veh	1.1	0.0	0.5	0.2	2.2	0.2	0.3	0.0	1.2	1.5	0.0	6.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.9	0.0	3.2	0.9	4.8	0.7	0.5	0.0	2.2	4.2	0.0	7.4
LnGrp Delay(d),s/veh	15.8	0.0	17.4	17.6	24.5	19.7	21.5	0.0	25.1	17.5	0.0	27.0
LnGrp LOS	B		B	B	C	B	C		C	B		C
Approach Vol, veh/h		461			404			172			716	
Approach Delay, s/veh		16.6			22.8			24.3			22.9	
Approach LOS		B			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.3	15.9	6.7	25.3	5.9	24.3	12.3	19.7
Change Period (Y+Rc), s	4.0	6.0	4.0	6.0	4.0	6.0	4.0	6.0
Max Green Setting (Gmax), s	11.0	24.0	11.0	39.0	11.0	24.0	26.0	24.0
Max Q Clear Time (g_c+I1), s	10.3	6.3	3.8	8.2	3.0	16.1	7.8	10.9
Green Ext Time (p_c), s	0.1	3.5	0.1	3.7	0.0	2.3	0.6	2.8

Intersection Summary	
HCM 2010 Ctrl Delay	21.4
HCM 2010 LOS	C

Intersection	
Int Delay, s/veh	4.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Traffic Vol, veh/h	56	91	81	119	108	35
Future Vol, veh/h	56	91	81	119	108	35
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	61	99	88	129	117	38

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	217	0	-	0	374	153
Stage 1	-	-	-	-	153	-
Stage 2	-	-	-	-	221	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1353	-	-	-	627	893
Stage 1	-	-	-	-	875	-
Stage 2	-	-	-	-	816	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1353	-	-	-	597	893
Mov Cap-2 Maneuver	-	-	-	-	597	-
Stage 1	-	-	-	-	875	-
Stage 2	-	-	-	-	777	-

Approach	EB	WB	SB
HCM Control Delay, s	3	0	12.3
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1353	-	-	-	650
HCM Lane V/C Ratio	0.045	-	-	-	0.239
HCM Control Delay (s)	7.8	0	-	-	12.3
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.9

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	10	12	21	145	142	17
Future Vol, veh/h	10	12	21	145	142	17
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	13	23	158	154	18

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	367	164	173	0	-	0
Stage 1	164	-	-	-	-	-
Stage 2	203	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	633	881	1404	-	-	-
Stage 1	865	-	-	-	-	-
Stage 2	831	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	622	881	1404	-	-	-
Mov Cap-2 Maneuver	622	-	-	-	-	-
Stage 1	865	-	-	-	-	-
Stage 2	816	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10	1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1404	-	741	-	-
HCM Lane V/C Ratio	0.016	-	0.032	-	-
HCM Control Delay (s)	7.6	0	10	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	-	-

Intersection	
Int Delay, s/veh	2.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	50	39	38	117	120	76
Future Vol, veh/h	50	39	38	117	120	76
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	54	42	41	127	130	83

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	382	172	213	0	-	0
Stage 1	172	-	-	-	-	-
Stage 2	210	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	620	872	1357	-	-	-
Stage 1	858	-	-	-	-	-
Stage 2	825	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	600	872	1357	-	-	-
Mov Cap-2 Maneuver	600	-	-	-	-	-
Stage 1	858	-	-	-	-	-
Stage 2	798	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11	1.9	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1357	-	695	-	-
HCM Lane V/C Ratio	0.03	-	0.139	-	-
HCM Control Delay (s)	7.7	0	11	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.5	-	-

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	57	6	15	152	190	73
Future Vol, veh/h	57	6	15	152	190	73
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	50	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	62	7	16	165	207	79

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	444	246	286	0	-	0
Stage 1	246	-	-	-	-	-
Stage 2	198	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	571	793	1276	-	-	-
Stage 1	795	-	-	-	-	-
Stage 2	835	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	563	793	1276	-	-	-
Mov Cap-2 Maneuver	563	-	-	-	-	-
Stage 1	795	-	-	-	-	-
Stage 2	823	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12	0.7	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1276	-	563	793	-	-
HCM Lane V/C Ratio	0.013	-	0.11	0.008	-	-
HCM Control Delay (s)	7.9	0	12.2	9.6	-	-
HCM Lane LOS	A	A	B	A	-	-
HCM 95th %tile Q(veh)	0	-	0.4	0	-	-

APPENDIX C

LEVEL OF SERVICE CALCULATIONS

- Base Year 2018 AM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	25	25	15	100	15	45	5	705	90	145	720	10
Future Volume (veh/h)	25	25	15	100	15	45	5	705	90	145	720	10
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1900	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	27	27	4	109	16	28	5	766	95	158	783	7
Adj No. of Lanes	0	1	1	0	1	0	1	1	0	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	204	184	314	253	40	49	316	847	105	308	1135	965
Arrive On Green	0.20	0.20	0.20	0.20	0.20	0.20	0.00	0.52	0.52	0.09	0.61	0.61
Sat Flow, veh/h	705	925	1583	907	204	249	1774	1626	202	1774	1863	1583
Grp Volume(v), veh/h	54	0	4	153	0	0	5	0	861	158	783	7
Grp Sat Flow(s),veh/h/ln	1629	0	1583	1359	0	0	1774	0	1827	1774	1863	1583
Q Serve(g_s), s	0.0	0.0	0.2	7.2	0.0	0.0	0.1	0.0	36.3	3.0	24.1	0.1
Cycle Q Clear(g_c), s	2.0	0.0	0.2	9.2	0.0	0.0	0.1	0.0	36.3	3.0	24.1	0.1
Prop In Lane	0.50		1.00	0.71		0.18	1.00		0.11	1.00		1.00
Lane Grp Cap(c), veh/h	387	0	314	343	0	0	316	0	952	308	1135	965
V/C Ratio(X)	0.14	0.00	0.01	0.45	0.00	0.00	0.02	0.00	0.90	0.51	0.69	0.01
Avail Cap(c_a), veh/h	519	0	447	464	0	0	643	0	952	479	1135	965
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	0.80	0.80	0.80
Uniform Delay (d), s/veh	28.1	0.0	27.4	31.3	0.0	0.0	11.2	0.0	18.4	17.2	11.2	6.5
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.3	0.0	0.0	0.0	0.0	13.5	0.4	2.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.0	0.1	3.3	0.0	0.0	0.1	0.0	21.8	2.1	13.1	0.1
LnGrp Delay(d),s/veh	28.2	0.0	27.4	31.7	0.0	0.0	11.3	0.0	32.0	17.6	14.0	6.5
LnGrp LOS	C		C	C			B		C	B	B	A
Approach Vol, veh/h		58			153			866			948	
Approach Delay, s/veh		28.1			31.7			31.8			14.5	
Approach LOS		C			C			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	11.8	50.3		22.9	4.3	57.8		22.9
Change Period (Y+Rc), s	4.0	6.0		6.0	4.0	6.0		6.0
Max Green Setting (Gmax), s	16.0	29.0		24.0	16.0	29.0		24.0
Max Q Clear Time (g_c+I1), s	5.0	38.3		4.0	2.1	26.1		11.2
Green Ext Time (p_c), s	0.2	0.0		0.8	0.0	2.8		0.6

Intersection Summary	
HCM 2010 Ctrl Delay	23.6
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	135	60	290	55	225	20	425	435	275	380	10
Future Volume (veh/h)	35	135	60	290	55	225	20	425	435	275	380	10
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	38	147	19	315	60	87	22	462	0	299	413	7
Adj No. of Lanes	0	1	1	0	1	1	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	139	495	506	439	67	506	412	635	540	438	849	721
Arrive On Green	0.32	0.32	0.32	0.32	0.32	0.32	0.01	0.34	0.00	0.13	0.46	0.46
Sat Flow, veh/h	256	1547	1583	1100	210	1583	1774	1863	1583	1774	1863	1583
Grp Volume(v), veh/h	185	0	19	375	0	87	22	462	0	299	413	7
Grp Sat Flow(s),veh/h/ln	1804	0	1583	1310	0	1583	1774	1863	1583	1774	1863	1583
Q Serve(g_s), s	0.0	0.0	0.6	15.1	0.0	3.0	0.6	16.5	0.0	7.8	11.8	0.2
Cycle Q Clear(g_c), s	5.7	0.0	0.6	20.8	0.0	3.0	0.6	16.5	0.0	7.8	11.8	0.2
Prop In Lane	0.21		1.00	0.84		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	634	0	506	506	0	506	412	635	540	438	849	721
V/C Ratio(X)	0.29	0.00	0.04	0.74	0.00	0.17	0.05	0.73	0.00	0.68	0.49	0.01
Avail Cap(c_a), veh/h	739	0	603	586	0	603	642	832	707	466	849	721
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	19.6	0.0	17.8	24.7	0.0	18.6	16.1	22.0	0.0	14.9	14.5	11.3
Incr Delay (d2), s/veh	0.1	0.0	0.0	3.4	0.0	0.1	0.0	3.8	0.0	3.0	0.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.9	0.0	0.3	8.0	0.0	1.3	0.3	9.1	0.0	4.0	6.3	0.1
LnGrp Delay(d),s/veh	19.7	0.0	17.8	28.0	0.0	18.7	16.1	25.8	0.0	17.9	15.4	11.3
LnGrp LOS	B		B	C		B	B	C		B	B	B
Approach Vol, veh/h		204			462			484			719	
Approach Delay, s/veh		19.5			26.3			25.3			16.4	
Approach LOS		B			C			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	13.8	32.0		30.3	5.1	40.7		30.3
Change Period (Y+Rc), s	4.0	6.0		6.0	4.0	6.0		6.0
Max Green Setting (Gmax), s	11.0	34.0		29.0	11.0	34.0		29.0
Max Q Clear Time (g_c+I1), s	9.8	18.5		7.7	2.6	13.8		22.8
Green Ext Time (p_c), s	0.1	7.4		2.7	0.0	9.5		1.6

Intersection Summary		
HCM 2010 Ctrl Delay		21.5
HCM 2010 LOS		C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	265	165	240	30	190	95	200	480	15	45	415	95
Future Volume (veh/h)	265	165	240	30	190	95	200	480	15	45	415	95
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1545	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	379	179	64	33	207	15	217	522	0	49	451	0
Adj No. of Lanes	1	1	1	1	1	1	1	1	1	1	1	1
Peak Hour Factor	0.70	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	10	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	368	532	452	294	253	215	386	769	654	306	660	561
Arrive On Green	0.18	0.29	0.29	0.03	0.14	0.14	0.10	0.41	0.00	0.04	0.35	0.00
Sat Flow, veh/h	1472	1863	1583	1774	1863	1583	1774	1863	1583	1774	1863	1583
Grp Volume(v), veh/h	379	179	64	33	207	15	217	522	0	49	451	0
Grp Sat Flow(s),veh/h/ln	1472	1863	1583	1774	1863	1583	1774	1863	1583	1774	1863	1583
Q Serve(g_s), s	17.0	7.2	2.8	1.5	10.2	0.8	6.9	21.6	0.0	1.6	19.5	0.0
Cycle Q Clear(g_c), s	17.0	7.2	2.8	1.5	10.2	0.8	6.9	21.6	0.0	1.6	19.5	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	368	532	452	294	253	215	386	769	654	306	660	561
V/C Ratio(X)	1.03	0.34	0.14	0.11	0.82	0.07	0.56	0.68	0.00	0.16	0.68	0.00
Avail Cap(c_a), veh/h	368	532	452	559	473	402	590	927	788	613	927	788
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	30.3	26.7	25.1	33.4	39.7	35.6	18.2	22.6	0.0	19.4	26.0	0.0
Incr Delay (d2), s/veh	54.6	0.1	0.1	0.1	2.5	0.1	0.5	2.6	0.0	0.1	2.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.2	3.7	1.2	0.7	5.4	0.3	3.4	11.6	0.0	0.8	10.5	0.0
LnGrp Delay(d),s/veh	84.9	26.8	25.2	33.5	42.1	35.6	18.6	25.2	0.0	19.5	28.6	0.0
LnGrp LOS	F	C	C	C	D	D	B	C		B	C	
Approach Vol, veh/h		622			255			739			500	
Approach Delay, s/veh		62.1			40.6			23.3			27.7	
Approach LOS		E			D			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.6	45.0	7.9	33.0	14.1	39.5	22.0	18.9
Change Period (Y+Rc), s	5.0	6.0	5.0	6.0	5.0	6.0	5.0	6.0
Max Green Setting (Gmax), s	20.0	47.0	17.0	24.0	20.0	47.0	17.0	24.0
Max Q Clear Time (g_c+I1), s	3.6	23.6	3.5	9.2	8.9	21.5	19.0	12.2
Green Ext Time (p_c), s	0.0	11.4	0.0	1.5	0.2	12.0	0.0	0.7

Intersection Summary	
HCM 2010 Ctrl Delay	37.8
HCM 2010 LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	415	280	70	50	235	275	90	205	75	255	135	215
Future Volume (veh/h)	415	280	70	50	235	275	90	205	75	255	135	215
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1814	1863	1900	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	519	304	55	54	255	48	98	223	64	277	147	201
Adj No. of Lanes	1	1	0	1	1	1	1	1	0	1	1	0
Peak Hour Factor	0.80	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	580	626	113	324	343	292	291	297	85	388	209	285
Arrive On Green	0.26	0.41	0.41	0.04	0.18	0.18	0.06	0.21	0.21	0.14	0.29	0.29
Sat Flow, veh/h	1727	1536	278	1774	1863	1583	1774	1393	400	1774	714	976
Grp Volume(v), veh/h	519	0	359	54	255	48	98	0	287	277	0	348
Grp Sat Flow(s),veh/h/ln	1727	0	1814	1774	1863	1583	1774	0	1792	1774	0	1690
Q Serve(g_s), s	22.4	0.0	14.2	2.4	12.6	2.5	4.1	0.0	14.6	11.3	0.0	17.8
Cycle Q Clear(g_c), s	22.4	0.0	14.2	2.4	12.6	2.5	4.1	0.0	14.6	11.3	0.0	17.8
Prop In Lane	1.00		0.15	1.00		1.00	1.00		0.22	1.00		0.58
Lane Grp Cap(c), veh/h	580	0	739	324	343	292	291	0	382	388	0	494
V/C Ratio(X)	0.89	0.00	0.49	0.17	0.74	0.16	0.34	0.00	0.75	0.71	0.00	0.70
Avail Cap(c_a), veh/h	632	0	766	518	518	440	332	0	646	417	0	731
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	21.7	0.0	21.2	30.5	37.4	33.3	27.8	0.0	35.8	24.6	0.0	30.6
Incr Delay (d2), s/veh	14.5	0.0	0.5	0.2	3.2	0.3	0.7	0.0	3.0	5.3	0.0	1.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	12.9	0.0	7.2	1.2	6.7	1.1	2.1	0.0	7.5	6.0	0.0	8.6
LnGrp Delay(d),s/veh	36.2	0.0	21.7	30.8	40.6	33.6	28.5	0.0	38.8	29.9	0.0	32.5
LnGrp LOS	D		C	C	D	C	C		D	C		C
Approach Vol, veh/h		878			357			385			625	
Approach Delay, s/veh		30.3			38.2			36.2			31.3	
Approach LOS		C			D			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	17.4	26.7	7.4	45.6	9.7	34.4	29.1	23.9
Change Period (Y+Rc), s	4.0	6.0	4.0	6.0	4.0	6.0	4.0	6.0
Max Green Setting (Gmax), s	15.0	35.0	14.0	41.0	8.0	42.0	28.0	27.0
Max Q Clear Time (g_c+I1), s	13.3	16.6	4.4	16.2	6.1	19.8	24.4	14.6
Green Ext Time (p_c), s	0.2	4.1	0.1	4.4	0.0	4.4	0.7	3.3

Intersection Summary	
HCM 2010 Ctrl Delay	32.8
HCM 2010 LOS	C

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	50	205	80	105	235	70
Future Volume (vph)	50	205	80	105	235	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)		0%	0%		0%	
Storage Length (ft)	0			0	0	0
Storage Lanes	0			0	1	0
Taper Length (ft)	25				25	
Link Speed (mph)		25	25		25	
Link Distance (ft)		849	503		411	
Travel Time (s)		23.2	13.7		11.2	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Shared Lane Traffic (%)						

Intersection Summary	
Area Type:	Other

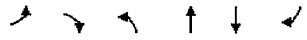
Intersection	
Int Delay, s/veh	8.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Traffic Vol, veh/h	50	205	80	105	235	70
Future Vol, veh/h	50	205	80	105	235	70
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	54	223	87	114	255	76

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	201	0	-	0	476	144
Stage 1	-	-	-	-	144	-
Stage 2	-	-	-	-	332	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1371	-	-	-	548	903
Stage 1	-	-	-	-	883	-
Stage 2	-	-	-	-	727	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1371	-	-	-	523	903
Mov Cap-2 Maneuver	-	-	-	-	523	-
Stage 1	-	-	-	-	883	-
Stage 2	-	-	-	-	694	-

Approach	EB	WB	SB
HCM Control Delay, s	1.5	0	19.2
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1371	-	-	-	579
HCM Lane V/C Ratio	0.04	-	-	-	0.573
HCM Control Delay (s)	7.7	0	-	-	19.2
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	3.6



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	25	20	5	170	270	10
Future Volume (vph)	25	20	5	170	270	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)	0	0	0			0
Storage Lanes	1	0	0			0
Taper Length (ft)	25		25			
Link Speed (mph)	25			25	25	
Link Distance (ft)	394			949	896	
Travel Time (s)	10.7			25.9	24.4	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						

Intersection Summary	
Area Type:	Other

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	25	20	5	170	270	10
Future Vol, veh/h	25	20	5	170	270	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	27	22	5	185	293	11

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	495	299	304	0	-	0
Stage 1	299	-	-	-	-	-
Stage 2	196	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	534	741	1257	-	-	-
Stage 1	752	-	-	-	-	-
Stage 2	837	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	532	741	1257	-	-	-
Mov Cap-2 Maneuver	532	-	-	-	-	-
Stage 1	752	-	-	-	-	-
Stage 2	834	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.4	0.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1257	-	608	-	-
HCM Lane V/C Ratio	0.004	-	0.08	-	-
HCM Control Delay (s)	7.9	0	11.4	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.3	-	-

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	75	80	15	180	205	35
Future Volume (vph)	75	80	15	180	205	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)	0	0	0			0
Storage Lanes	1	0	0			0
Taper Length (ft)	25		25			
Link Speed (mph)	25			25	25	
Link Distance (ft)	385			896	1395	
Travel Time (s)	10.5			24.4	38.0	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						

Intersection Summary	
Area Type:	Other

Intersection	
Int Delay, s/veh	3.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	75	80	15	180	205	35
Future Vol, veh/h	75	80	15	180	205	35
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	82	87	16	196	223	38

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	470	242	261	0	-	0
Stage 1	242	-	-	-	-	-
Stage 2	228	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	552	797	1303	-	-	-
Stage 1	798	-	-	-	-	-
Stage 2	810	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	544	797	1303	-	-	-
Mov Cap-2 Maneuver	544	-	-	-	-	-
Stage 1	798	-	-	-	-	-
Stage 2	799	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.5	0.6	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1303	-	651	-	-
HCM Lane V/C Ratio	0.013	-	0.259	-	-
HCM Control Delay (s)	7.8	0	12.5	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	1	-	-

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	100	25	5	250	215	35
Future Volume (vph)	100	25	5	250	215	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)	0	50	0			0
Storage Lanes	1	1	0			0
Taper Length (ft)	25		25			
Link Speed (mph)	25			25	25	
Link Distance (ft)	325			1395	848	
Travel Time (s)	8.9			38.0	23.1	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						

Intersection Summary	
Area Type:	Other

Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	100	25	5	250	215	35
Future Vol, veh/h	100	25	5	250	215	35
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	50	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	109	27	5	272	234	38

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	536	253	272	0	-	0
Stage 1	253	-	-	-	-	-
Stage 2	283	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	505	786	1291	-	-	-
Stage 1	789	-	-	-	-	-
Stage 2	765	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	502	786	1291	-	-	-
Mov Cap-2 Maneuver	502	-	-	-	-	-
Stage 1	789	-	-	-	-	-
Stage 2	761	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.2	0.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1291	-	502	786	-	-
HCM Lane V/C Ratio	0.004	-	0.217	0.035	-	-
HCM Control Delay (s)	7.8	0	14.1	9.7	-	-
HCM Lane LOS	A	A	B	A	-	-
HCM 95th %tile Q(veh)	0	-	0.8	0.1	-	-

APPENDIX C

LEVEL OF SERVICE CALCULATIONS

- Base Year 2018 PM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	25	10	10	120	20	135	10	650	145	125	600	20
Future Volume (veh/h)	25	10	10	120	20	135	10	650	145	125	600	20
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1900	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	27	11	2	130	22	110	11	707	149	136	652	12
Adj No. of Lanes	0	1	1	0	1	0	1	1	0	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	233	84	327	198	35	125	402	791	167	301	1132	963
Arrive On Green	0.21	0.21	0.21	0.21	0.21	0.21	0.01	0.53	0.53	0.09	0.61	0.61
Sat Flow, veh/h	796	406	1583	668	170	606	1774	1493	315	1774	1863	1583
Grp Volume(v), veh/h	38	0	2	262	0	0	11	0	856	136	652	12
Grp Sat Flow(s),veh/h/ln	1202	0	1583	1444	0	0	1774	0	1807	1774	1863	1583
Q Serve(g_s), s	0.0	0.0	0.1	14.0	0.0	0.0	0.3	0.0	38.1	2.7	19.0	0.3
Cycle Q Clear(g_c), s	1.9	0.0	0.1	16.0	0.0	0.0	0.3	0.0	38.1	2.7	19.0	0.3
Prop In Lane	0.71		1.00	0.50		0.42	1.00		0.17	1.00		1.00
Lane Grp Cap(c), veh/h	317	0	327	358	0	0	402	0	958	301	1132	963
V/C Ratio(X)	0.12	0.00	0.01	0.73	0.00	0.00	0.03	0.00	0.89	0.45	0.58	0.01
Avail Cap(c_a), veh/h	399	0	422	448	0	0	703	0	1082	365	1132	963
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	29.0	0.0	28.4	35.0	0.0	0.0	10.5	0.0	18.9	17.7	10.7	7.0
Incr Delay (d2), s/veh	0.1	0.0	0.0	3.2	0.0	0.0	0.0	0.0	10.1	0.4	1.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.0	0.0	6.6	0.0	0.0	0.1	0.0	21.5	1.9	10.0	0.1
LnGrp Delay(d),s/veh	29.1	0.0	28.4	38.2	0.0	0.0	10.5	0.0	29.0	18.1	11.8	7.0
LnGrp LOS	C		C	D			B		C	B	B	A
Approach Vol, veh/h		40			262			867			800	
Approach Delay, s/veh		29.1			38.2			28.8			12.8	
Approach LOS		C			D			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	11.7	53.8		24.6	4.7	60.8		24.6
Change Period (Y+Rc), s	4.0	6.0		6.0	4.0	6.0		6.0
Max Green Setting (Gmax), s	11.0	54.0		24.0	16.0	49.0		24.0
Max Q Clear Time (g_c+I1), s	4.7	40.1		3.9	2.3	21.0		18.0
Green Ext Time (p_c), s	0.1	7.7		1.2	0.0	21.6		0.7

Intersection Summary	
HCM 2010 Ctrl Delay	23.5
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	80	30	395	125	240	35	420	360	195	480	25
Future Volume (veh/h)	5	80	30	395	125	240	35	420	360	195	480	25
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	5	87	33	429	136	261	38	457	0	212	522	27
Adj No. of Lanes	0	1	1	0	1	1	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	60	709	618	503	135	618	264	585	497	351	731	621
Arrive On Green	0.39	0.39	0.39	0.39	0.39	0.39	0.02	0.31	0.00	0.10	0.39	0.39
Sat Flow, veh/h	36	1816	1583	1092	346	1583	1774	1863	1583	1774	1863	1583
Grp Volume(v), veh/h	92	0	33	565	0	261	38	457	0	212	522	27
Grp Sat Flow(s),veh/h/ln	1852	0	1583	1438	0	1583	1774	1863	1583	1774	1863	1583
Q Serve(g_s), s	0.0	0.0	1.1	29.4	0.0	9.9	1.2	18.3	0.0	6.2	19.4	0.9
Cycle Q Clear(g_c), s	2.6	0.0	1.1	32.0	0.0	9.9	1.2	18.3	0.0	6.2	19.4	0.9
Prop In Lane	0.05		1.00	0.76		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	769	0	618	638	0	618	264	585	497	351	731	621
V/C Ratio(X)	0.12	0.00	0.05	0.89	0.00	0.42	0.14	0.78	0.00	0.60	0.71	0.04
Avail Cap(c_a), veh/h	769	0	618	638	0	618	462	704	598	410	731	621
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.0	0.0	15.6	24.8	0.0	18.3	19.5	25.6	0.0	17.9	21.1	15.4
Incr Delay (d2), s/veh	0.0	0.0	0.0	13.6	0.0	0.2	0.1	6.4	0.0	0.9	4.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	0.0	0.5	15.1	0.0	4.3	0.6	10.4	0.0	3.1	10.7	0.4
LnGrp Delay(d),s/veh	16.1	0.0	15.6	38.4	0.0	18.4	19.6	32.0	0.0	18.8	25.2	15.5
LnGrp LOS	B		B	D		B	B	C		B	C	B
Approach Vol, veh/h		125			826			495			761	
Approach Delay, s/veh		15.9			32.1			31.0			23.1	
Approach LOS		B			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	12.3	31.8		38.0	5.9	38.2		38.0
Change Period (Y+Rc), s	4.0	6.0		6.0	4.0	6.0		6.0
Max Green Setting (Gmax), s	11.0	31.0		32.0	11.0	31.0		32.0
Max Q Clear Time (g_c+I1), s	8.2	20.3		4.6	3.2	21.4		34.0
Green Ext Time (p_c), s	0.1	5.5		3.9	0.0	6.3		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	27.8
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	115	85	110	65	130	65	560	165	120	465	20
Future Volume (veh/h)	20	115	85	110	65	130	65	560	165	120	465	20
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	22	125	92	120	71	141	71	609	0	130	505	0
Adj No. of Lanes	1	1	1	1	1	1	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	284	199	169	293	300	255	421	832	708	357	854	726
Arrive On Green	0.02	0.11	0.11	0.08	0.16	0.16	0.05	0.45	0.00	0.06	0.46	0.00
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	1863	1583	1774	1863	1583
Grp Volume(v), veh/h	22	125	92	120	71	141	71	609	0	130	505	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1863	1583	1774	1863	1583
Q Serve(g_s), s	0.8	4.7	4.0	4.2	2.4	5.9	1.5	19.5	0.0	2.8	14.6	0.0
Cycle Q Clear(g_c), s	0.8	4.7	4.0	4.2	2.4	5.9	1.5	19.5	0.0	2.8	14.6	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	284	199	169	293	300	255	421	832	708	357	854	726
V/C Ratio(X)	0.08	0.63	0.54	0.41	0.24	0.55	0.17	0.73	0.00	0.36	0.59	0.00
Avail Cap(c_a), veh/h	607	617	524	520	617	524	817	1002	852	733	1002	852
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	27.7	31.0	30.7	25.2	26.5	28.0	10.9	16.5	0.0	12.5	14.6	0.0
Incr Delay (d2), s/veh	0.0	1.2	1.0	0.3	0.1	0.7	0.1	3.3	0.0	0.2	1.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	2.5	1.8	2.1	1.3	2.6	0.7	10.7	0.0	1.4	7.8	0.0
LnGrp Delay(d),s/veh	27.7	32.2	31.7	25.5	26.7	28.7	11.0	19.8	0.0	12.7	16.0	0.0
LnGrp LOS	C	C	C	C	C	C	B	B		B	B	
Approach Vol, veh/h		239			332			680			635	
Approach Delay, s/veh		31.6			27.1			18.9			15.3	
Approach LOS		C			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.6	38.4	10.7	13.7	8.8	39.2	6.8	17.7
Change Period (Y+Rc), s	5.0	6.0	5.0	6.0	5.0	6.0	5.0	6.0
Max Green Setting (Gmax), s	20.0	39.0	15.0	24.0	20.0	39.0	15.0	24.0
Max Q Clear Time (g_c+I1), s	4.8	21.5	6.2	6.7	3.5	16.6	2.8	7.9
Green Ext Time (p_c), s	0.1	10.9	0.1	1.1	0.1	12.9	0.0	1.1

Intersection Summary	
HCM 2010 Ctrl Delay	20.8
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	230	235	65	80	330	325	65	185	70	325	215	285
Future Volume (veh/h)	230	235	65	80	330	325	65	185	70	325	215	285
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	250	255	48	87	359	86	71	201	59	353	234	277
Adj No. of Lanes	1	1	0	1	1	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	365	475	89	366	439	373	230	371	109	476	276	327
Arrive On Green	0.13	0.31	0.31	0.05	0.24	0.24	0.04	0.27	0.27	0.13	0.35	0.35
Sat Flow, veh/h	1774	1525	287	1774	1863	1583	1774	1385	406	1774	779	922
Grp Volume(v), veh/h	250	0	303	87	359	86	71	0	260	353	0	511
Grp Sat Flow(s),veh/h/ln	1774	0	1812	1774	1863	1583	1774	0	1791	1774	0	1700
Q Serve(g_s), s	8.5	0.0	11.7	3.1	15.4	3.7	2.4	0.0	10.5	11.0	0.0	23.4
Cycle Q Clear(g_c), s	8.5	0.0	11.7	3.1	15.4	3.7	2.4	0.0	10.5	11.0	0.0	23.4
Prop In Lane	1.00		0.16	1.00		1.00	1.00		0.23	1.00		0.54
Lane Grp Cap(c), veh/h	365	0	565	366	439	373	230	0	479	476	0	603
V/C Ratio(X)	0.68	0.00	0.54	0.24	0.82	0.23	0.31	0.00	0.54	0.74	0.00	0.85
Avail Cap(c_a), veh/h	556	0	644	565	529	450	385	0	827	476	0	785
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	20.7	0.0	24.0	22.6	30.6	26.1	22.6	0.0	26.5	20.0	0.0	25.1
Incr Delay (d2), s/veh	2.3	0.0	0.8	0.3	8.3	0.3	0.8	0.0	1.0	6.1	0.0	6.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.3	0.0	5.9	1.6	8.9	1.6	1.2	0.0	5.3	6.5	0.0	12.1
LnGrp Delay(d),s/veh	23.0	0.0	24.8	22.9	38.8	26.4	23.3	0.0	27.5	26.1	0.0	31.9
LnGrp LOS	C		C	C	D	C	C		C	C		C
Approach Vol, veh/h		553			532			331			864	
Approach Delay, s/veh		24.0			34.2			26.6			29.6	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.0	28.6	8.5	32.3	7.6	36.0	14.9	25.9
Change Period (Y+Rc), s	4.0	6.0	4.0	6.0	4.0	6.0	4.0	6.0
Max Green Setting (Gmax), s	11.0	39.0	14.0	30.0	11.0	39.0	20.0	24.0
Max Q Clear Time (g_c+I1), s	13.0	12.5	5.1	13.7	4.4	25.4	10.5	17.4
Green Ext Time (p_c), s	0.0	6.0	0.1	4.2	0.1	4.5	0.5	2.5

Intersection Summary	
HCM 2010 Ctrl Delay	28.9
HCM 2010 LOS	C

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	65	225	230	270	175	45
Future Volume (vph)	65	225	230	270	175	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)		0%	0%		0%	
Storage Length (ft)	0			0	0	0
Storage Lanes	0			0	1	0
Taper Length (ft)	25				25	
Link Speed (mph)		25	25		25	
Link Distance (ft)		849	503		411	
Travel Time (s)		23.2	13.7		11.2	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Shared Lane Traffic (%)						

Intersection Summary	
Area Type:	Other

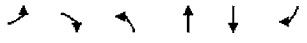
Intersection	
Int Delay, s/veh	7.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Traffic Vol, veh/h	65	225	230	270	175	45
Future Vol, veh/h	65	225	230	270	175	45
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	71	245	250	293	190	49

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	543	0	-	0	783	397
Stage 1	-	-	-	-	397	-
Stage 2	-	-	-	-	386	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1026	-	-	-	362	652
Stage 1	-	-	-	-	679	-
Stage 2	-	-	-	-	687	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1026	-	-	-	333	652
Mov Cap-2 Maneuver	-	-	-	-	333	-
Stage 1	-	-	-	-	679	-
Stage 2	-	-	-	-	632	-

Approach	EB	WB	SB
HCM Control Delay, s	2	0	30.9
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1026	-	-	-	370
HCM Lane V/C Ratio	0.069	-	-	-	0.646
HCM Control Delay (s)	8.8	0	-	-	30.9
HCM Lane LOS	A	A	-	-	D
HCM 95th %tile Q(veh)	0.2	-	-	-	4.3



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	10	15	25	290	225	20
Future Volume (vph)	10	15	25	290	225	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)	0	0	0			0
Storage Lanes	1	0	0			0
Taper Length (ft)	25		25			
Link Speed (mph)	25			25	25	
Link Distance (ft)	394			949	896	
Travel Time (s)	10.7			25.9	24.4	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						

Intersection Summary	
Area Type:	Other

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	10	15	25	290	225	20
Future Vol, veh/h	10	15	25	290	225	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	16	27	315	245	22

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	625	255	266	0	-	0
Stage 1	255	-	-	-	-	-
Stage 2	370	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	449	784	1298	-	-	-
Stage 1	788	-	-	-	-	-
Stage 2	699	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	438	784	1298	-	-	-
Mov Cap-2 Maneuver	438	-	-	-	-	-
Stage 1	788	-	-	-	-	-
Stage 2	682	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.3	0.6	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1298	-	596	-	-
HCM Lane V/C Ratio	0.021	-	0.046	-	-
HCM Control Delay (s)	7.8	0	11.3	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	-	-

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	50	40	40	265	205	80
Future Volume (vph)	50	40	40	265	205	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)	0	0	0			0
Storage Lanes	1	0	0			0
Taper Length (ft)	25		25			
Link Speed (mph)	25			25	25	
Link Distance (ft)	385			896	1395	
Travel Time (s)	10.5			24.4	38.0	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						

Intersection Summary	
Area Type:	Other

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	50	40	40	265	205	80
Future Vol, veh/h	50	40	40	265	205	80
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	54	43	43	288	223	87

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	641	266	310	0	-	0
Stage 1	266	-	-	-	-	-
Stage 2	375	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	439	773	1250	-	-	-
Stage 1	779	-	-	-	-	-
Stage 2	695	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	421	773	1250	-	-	-
Mov Cap-2 Maneuver	421	-	-	-	-	-
Stage 1	779	-	-	-	-	-
Stage 2	667	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.4	1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1250	-	528	-	-
HCM Lane V/C Ratio	0.035	-	0.185	-	-
HCM Control Delay (s)	8	0	13.4	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.7	-	-

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	60	10	15	300	275	75
Future Volume (vph)	60	10	15	300	275	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)	0	50	0			0
Storage Lanes	1	1	0			0
Taper Length (ft)	25		25			
Link Speed (mph)	25			25	25	
Link Distance (ft)	325			1395	848	
Travel Time (s)	8.9			38.0	23.1	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						

Intersection Summary	
Area Type:	Other

Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	60	10	15	300	275	75
Future Vol, veh/h	60	10	15	300	275	75
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	50	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	65	11	16	326	299	82

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	699	340	380	0	-	0
Stage 1	340	-	-	-	-	-
Stage 2	359	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	406	702	1178	-	-	-
Stage 1	721	-	-	-	-	-
Stage 2	707	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	399	702	1178	-	-	-
Mov Cap-2 Maneuver	399	-	-	-	-	-
Stage 1	721	-	-	-	-	-
Stage 2	695	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	15	0.4	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1178	-	399	702	-	-
HCM Lane V/C Ratio	0.014	-	0.163	0.015	-	-
HCM Control Delay (s)	8.1	0	15.8	10.2	-	-
HCM Lane LOS	A	A	C	B	-	-
HCM 95th %tile Q(veh)	0	-	0.6	0	-	-

APPENDIX C

LEVEL OF SERVICE CALCULATIONS

- Future Year 2018 AM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	25	25	15	100	15	45	5	705	90	145	720	10
Future Volume (veh/h)	25	25	15	100	15	45	5	705	90	145	720	10
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1900	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	27	27	4	109	16	28	5	766	95	158	783	7
Adj No. of Lanes	0	1	1	0	1	0	1	1	0	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	204	184	314	253	40	49	316	847	105	308	1135	965
Arrive On Green	0.20	0.20	0.20	0.20	0.20	0.20	0.00	0.52	0.52	0.09	0.61	0.61
Sat Flow, veh/h	705	925	1583	907	204	249	1774	1626	202	1774	1863	1583
Grp Volume(v), veh/h	54	0	4	153	0	0	5	0	861	158	783	7
Grp Sat Flow(s),veh/h/ln	1629	0	1583	1359	0	0	1774	0	1827	1774	1863	1583
Q Serve(g_s), s	0.0	0.0	0.2	7.2	0.0	0.0	0.1	0.0	36.3	3.0	24.1	0.1
Cycle Q Clear(g_c), s	2.0	0.0	0.2	9.2	0.0	0.0	0.1	0.0	36.3	3.0	24.1	0.1
Prop In Lane	0.50		1.00	0.71		0.18	1.00		0.11	1.00		1.00
Lane Grp Cap(c), veh/h	387	0	314	343	0	0	316	0	952	308	1135	965
V/C Ratio(X)	0.14	0.00	0.01	0.45	0.00	0.00	0.02	0.00	0.90	0.51	0.69	0.01
Avail Cap(c_a), veh/h	519	0	447	464	0	0	643	0	952	479	1135	965
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	0.80	0.80	0.80
Uniform Delay (d), s/veh	28.1	0.0	27.4	31.3	0.0	0.0	11.2	0.0	18.4	17.2	11.2	6.5
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.3	0.0	0.0	0.0	0.0	13.5	0.4	2.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.0	0.1	3.3	0.0	0.0	0.1	0.0	21.8	2.1	13.1	0.1
LnGrp Delay(d),s/veh	28.2	0.0	27.4	31.7	0.0	0.0	11.3	0.0	32.0	17.6	14.0	6.5
LnGrp LOS	C		C	C			B		C	B	B	A
Approach Vol, veh/h		58			153			866			948	
Approach Delay, s/veh		28.1			31.7			31.8			14.5	
Approach LOS		C			C			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	11.8	50.3		22.9	4.3	57.8		22.9
Change Period (Y+Rc), s	4.0	6.0		6.0	4.0	6.0		6.0
Max Green Setting (Gmax), s	16.0	29.0		24.0	16.0	29.0		24.0
Max Q Clear Time (g_c+I1), s	5.0	38.3		4.0	2.1	26.1		11.2
Green Ext Time (p_c), s	0.2	0.0		0.8	0.0	2.8		0.6

Intersection Summary	
HCM 2010 Ctrl Delay	23.6
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	135	60	290	55	235	20	425	435	280	380	10
Future Volume (veh/h)	35	135	60	290	55	235	20	425	435	280	380	10
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	38	147	19	315	60	97	22	462	0	304	413	7
Adj No. of Lanes	0	1	1	0	1	1	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	139	495	506	438	67	506	412	633	538	440	849	722
Arrive On Green	0.32	0.32	0.32	0.32	0.32	0.32	0.01	0.34	0.00	0.13	0.46	0.46
Sat Flow, veh/h	256	1547	1583	1100	209	1583	1774	1863	1583	1774	1863	1583
Grp Volume(v), veh/h	185	0	19	375	0	97	22	462	0	304	413	7
Grp Sat Flow(s),veh/h/ln	1804	0	1583	1309	0	1583	1774	1863	1583	1774	1863	1583
Q Serve(g_s), s	0.0	0.0	0.6	15.1	0.0	3.4	0.6	16.6	0.0	7.9	11.8	0.2
Cycle Q Clear(g_c), s	5.7	0.0	0.6	20.8	0.0	3.4	0.6	16.6	0.0	7.9	11.8	0.2
Prop In Lane	0.21		1.00	0.84		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	634	0	506	505	0	506	412	633	538	440	849	722
V/C Ratio(X)	0.29	0.00	0.04	0.74	0.00	0.19	0.05	0.73	0.00	0.69	0.49	0.01
Avail Cap(c_a), veh/h	738	0	602	584	0	602	642	830	706	463	849	722
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	19.6	0.0	17.9	24.7	0.0	18.8	16.2	22.1	0.0	15.0	14.5	11.3
Incr Delay (d2), s/veh	0.1	0.0	0.0	3.4	0.0	0.1	0.0	3.9	0.0	3.3	0.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.9	0.0	0.3	8.0	0.0	1.5	0.3	9.2	0.0	4.2	6.3	0.1
LnGrp Delay(d),s/veh	19.7	0.0	17.9	28.1	0.0	18.9	16.2	26.0	0.0	18.3	15.4	11.4
LnGrp LOS	B		B	C		B	B	C		B	B	B
Approach Vol, veh/h		204			472			484			724	
Approach Delay, s/veh		19.5			26.2			25.6			16.6	
Approach LOS		B			C			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	14.0	31.9		30.4	5.1	40.8		30.4
Change Period (Y+Rc), s	4.0	6.0		6.0	4.0	6.0		6.0
Max Green Setting (Gmax), s	11.0	34.0		29.0	11.0	34.0		29.0
Max Q Clear Time (g_c+I1), s	9.9	18.6		7.7	2.6	13.8		22.8
Green Ext Time (p_c), s	0.1	7.3		2.7	0.0	9.5		1.6

Intersection Summary		
HCM 2010 Ctrl Delay	21.6	
HCM 2010 LOS	C	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	270	165	245	30	190	95	210	485	15	45	415	95
Future Volume (veh/h)	270	165	245	30	190	95	210	485	15	45	415	95
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1545	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	386	179	69	33	207	15	228	527	0	49	451	0
Adj No. of Lanes	1	1	1	1	1	1	1	1	1	1	1	1
Peak Hour Factor	0.70	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	10	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	366	529	449	293	253	215	392	775	659	306	659	560
Arrive On Green	0.18	0.28	0.28	0.03	0.14	0.14	0.10	0.42	0.00	0.04	0.35	0.00
Sat Flow, veh/h	1472	1863	1583	1774	1863	1583	1774	1863	1583	1774	1863	1583
Grp Volume(v), veh/h	386	179	69	33	207	15	228	527	0	49	451	0
Grp Sat Flow(s),veh/h/ln	1472	1863	1583	1774	1863	1583	1774	1863	1583	1774	1863	1583
Q Serve(g_s), s	17.0	7.2	3.1	1.5	10.3	0.8	7.4	21.9	0.0	1.6	19.6	0.0
Cycle Q Clear(g_c), s	17.0	7.2	3.1	1.5	10.3	0.8	7.4	21.9	0.0	1.6	19.6	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	366	529	449	293	253	215	392	775	659	306	659	560
V/C Ratio(X)	1.06	0.34	0.15	0.11	0.82	0.07	0.58	0.68	0.00	0.16	0.68	0.00
Avail Cap(c_a), veh/h	366	529	449	556	470	399	586	920	782	611	920	782
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	30.6	27.0	25.5	33.7	40.0	35.9	18.3	22.6	0.0	19.5	26.2	0.0
Incr Delay (d2), s/veh	62.6	0.1	0.1	0.1	2.5	0.1	0.5	2.6	0.0	0.1	2.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.1	3.7	1.4	0.7	5.5	0.3	3.6	11.8	0.0	0.8	10.5	0.0
LnGrp Delay(d),s/veh	93.2	27.1	25.6	33.8	42.5	35.9	18.8	25.2	0.0	19.6	28.9	0.0
LnGrp LOS	F	C	C	C	D	D	B	C		B	C	
Approach Vol, veh/h		634			255			755			500	
Approach Delay, s/veh		67.2			41.0			23.3			28.0	
Approach LOS		E			D			C			C	

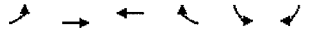
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.6	45.6	7.9	33.0	14.6	39.7	22.0	18.9
Change Period (Y+Rc), s	5.0	6.0	5.0	6.0	5.0	6.0	5.0	6.0
Max Green Setting (Gmax), s	20.0	47.0	17.0	24.0	20.0	47.0	17.0	24.0
Max Q Clear Time (g_c+I1), s	3.6	23.9	3.5	9.2	9.4	21.6	19.0	12.3
Green Ext Time (p_c), s	0.0	11.4	0.0	1.5	0.2	12.0	0.0	0.6

Intersection Summary	
HCM 2010 Ctrl Delay	39.5
HCM 2010 LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	415	280	75	50	235	275	100	220	80	255	140	215
Future Volume (veh/h)	415	280	75	50	235	275	100	220	80	255	140	215
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1814	1863	1900	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	519	304	61	54	255	48	109	239	69	277	152	201
Adj No. of Lanes	1	1	0	1	1	1	1	1	0	1	1	0
Peak Hour Factor	0.80	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	575	611	123	320	341	290	298	310	90	380	215	285
Arrive On Green	0.26	0.41	0.41	0.04	0.18	0.18	0.06	0.22	0.22	0.14	0.30	0.30
Sat Flow, veh/h	1727	1507	302	1774	1863	1583	1774	1390	401	1774	729	964
Grp Volume(v), veh/h	519	0	365	54	255	48	109	0	308	277	0	353
Grp Sat Flow(s),veh/h/ln	1727	0	1809	1774	1863	1583	1774	0	1792	1774	0	1693
Q Serve(g_s), s	23.1	0.0	15.0	2.5	12.9	2.6	4.7	0.0	16.1	11.5	0.0	18.5
Cycle Q Clear(g_c), s	23.1	0.0	15.0	2.5	12.9	2.6	4.7	0.0	16.1	11.5	0.0	18.5
Prop In Lane	1.00		0.17	1.00		1.00	1.00		0.22	1.00		0.57
Lane Grp Cap(c), veh/h	575	0	734	320	341	290	298	0	400	380	0	500
V/C Ratio(X)	0.90	0.00	0.50	0.17	0.75	0.17	0.37	0.00	0.77	0.73	0.00	0.71
Avail Cap(c_a), veh/h	615	0	743	506	504	428	327	0	628	404	0	712
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	22.5	0.0	22.1	31.5	38.6	34.4	27.8	0.0	36.4	25.0	0.0	31.3
Incr Delay (d2), s/veh	16.0	0.0	0.5	0.2	3.4	0.3	0.8	0.0	3.2	6.2	0.0	1.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	13.4	0.0	7.6	1.2	7.0	1.1	2.3	0.0	8.3	6.2	0.0	8.9
LnGrp Delay(d),s/veh	38.5	0.0	22.6	31.7	42.1	34.6	28.5	0.0	39.6	31.2	0.0	33.2
LnGrp LOS	D		C	C	D	C	C		D	C		C
Approach Vol, veh/h		884			357			417			630	
Approach Delay, s/veh		32.0			39.5			36.7			32.3	
Approach LOS		C			D			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	17.6	28.3	7.5	46.5	10.4	35.5	29.7	24.3
Change Period (Y+Rc), s	4.0	6.0	4.0	6.0	4.0	6.0	4.0	6.0
Max Green Setting (Gmax), s	15.0	35.0	14.0	41.0	8.0	42.0	28.0	27.0
Max Q Clear Time (g_c+I1), s	13.5	18.1	4.5	17.0	6.7	20.5	25.1	14.9
Green Ext Time (p_c), s	0.1	4.2	0.1	4.4	0.0	4.6	0.6	3.3

Intersection Summary	
HCM 2010 Ctrl Delay	34.1
HCM 2010 LOS	C



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	50	205	80	105	245	75
Future Volume (vph)	50	205	80	105	245	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)		0%	0%		0%	
Storage Length (ft)	0			0	0	0
Storage Lanes	0			0	1	0
Taper Length (ft)	25				25	
Link Speed (mph)		25	25		25	
Link Distance (ft)		849	503		411	
Travel Time (s)		23.2	13.7		11.2	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Shared Lane Traffic (%)						

Intersection Summary	
Area Type:	Other

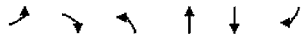
Intersection	
Int Delay, s/veh	9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Traffic Vol, veh/h	50	205	80	105	245	75
Future Vol, veh/h	50	205	80	105	245	75
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	54	223	87	114	266	82

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	201	0	-	0	476	144
Stage 1	-	-	-	-	144	-
Stage 2	-	-	-	-	332	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1371	-	-	-	548	903
Stage 1	-	-	-	-	883	-
Stage 2	-	-	-	-	727	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1371	-	-	-	523	903
Mov Cap-2 Maneuver	-	-	-	-	523	-
Stage 1	-	-	-	-	883	-
Stage 2	-	-	-	-	694	-

Approach	EB	WB	SB
HCM Control Delay, s	1.5	0	20.1
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1371	-	-	-	580
HCM Lane V/C Ratio	0.04	-	-	-	0.6
HCM Control Delay (s)	7.7	0	-	-	20.1
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	4



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	25	20	5	170	290	10
Future Volume (vph)	25	20	5	170	290	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)	0	0	0			0
Storage Lanes	1	0	0			0
Taper Length (ft)	25		25			
Link Speed (mph)	25			25	25	
Link Distance (ft)	394			949	896	
Travel Time (s)	10.7			25.9	24.4	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						

Intersection Summary	
Area Type:	Other

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	25	20	5	170	290	10
Future Vol, veh/h	25	20	5	170	290	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	27	22	5	185	315	11

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	517	321	326	0	-	0
Stage 1	321	-	-	-	-	-
Stage 2	196	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	518	720	1234	-	-	-
Stage 1	735	-	-	-	-	-
Stage 2	837	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	515	720	1234	-	-	-
Mov Cap-2 Maneuver	515	-	-	-	-	-
Stage 1	735	-	-	-	-	-
Stage 2	833	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.7	0.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1234	-	590	-	-
HCM Lane V/C Ratio	0.004	-	0.083	-	-
HCM Control Delay (s)	7.9	0	11.7	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.3	-	-

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	75	80	15	185	220	35
Future Volume (vph)	75	80	15	185	220	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)	0	0	0			0
Storage Lanes	1	0	0			0
Taper Length (ft)	25		25			
Link Speed (mph)	25			25	25	
Link Distance (ft)	385			896	1395	
Travel Time (s)	10.5			24.4	38.0	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						

Intersection Summary	
Area Type:	Other

Intersection	
Int Delay, s/veh	3.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	75	80	15	185	220	35
Future Vol, veh/h	75	80	15	185	220	35
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	82	87	16	201	239	38

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	492	258	277	0	-	0
Stage 1	258	-	-	-	-	-
Stage 2	234	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	536	781	1286	-	-	-
Stage 1	785	-	-	-	-	-
Stage 2	805	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	528	781	1286	-	-	-
Mov Cap-2 Maneuver	528	-	-	-	-	-
Stage 1	785	-	-	-	-	-
Stage 2	794	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.7	0.6	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1286	-	634	-	-
HCM Lane V/C Ratio	0.013	-	0.266	-	-
HCM Control Delay (s)	7.8	0	12.7	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	1.1	-	-

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	100	25	5	255	235	35
Future Volume (vph)	100	25	5	255	235	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)	0	50	0			0
Storage Lanes	1	1	0			0
Taper Length (ft)	25		25			
Link Speed (mph)	25			25	25	
Link Distance (ft)	325			1395	848	
Travel Time (s)	8.9			38.0	23.1	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						

Intersection Summary	
Area Type:	Other

Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	100	25	5	255	235	35
Future Vol, veh/h	100	25	5	255	235	35
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	50	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	109	27	5	277	255	38

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	562	274	293	0	-	0
Stage 1	274	-	-	-	-	-
Stage 2	288	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	488	765	1269	-	-	-
Stage 1	772	-	-	-	-	-
Stage 2	761	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	486	765	1269	-	-	-
Mov Cap-2 Maneuver	486	-	-	-	-	-
Stage 1	772	-	-	-	-	-
Stage 2	757	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.6	0.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1269	-	486	765	-	-
HCM Lane V/C Ratio	0.004	-	0.224	0.036	-	-
HCM Control Delay (s)	7.8	0	14.5	9.9	-	-
HCM Lane LOS	A	A	B	A	-	-
HCM 95th %tile Q(veh)	0	-	0.8	0.1	-	-

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	30	20	5	370	250	15
Future Volume (vph)	30	20	5	370	250	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)	0	0	0			0
Storage Lanes	1	0	0			0
Taper Length (ft)	25		25			
Link Speed (mph)	25			25	25	
Link Distance (ft)	215			848	335	
Travel Time (s)	5.9			23.1	9.1	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						

Intersection Summary	
Area Type:	Other

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	30	20	5	370	250	15
Future Vol, veh/h	30	20	5	370	250	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	33	22	5	402	272	16

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	693	280	288	0	-	0
Stage 1	280	-	-	-	-	-
Stage 2	413	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	409	759	1274	-	-	-
Stage 1	767	-	-	-	-	-
Stage 2	668	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	407	759	1274	-	-	-
Mov Cap-2 Maneuver	407	-	-	-	-	-
Stage 1	767	-	-	-	-	-
Stage 2	665	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.1	0.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1274	-	500	-	-
HCM Lane V/C Ratio	0.004	-	0.109	-	-
HCM Control Delay (s)	7.8	0	13.1	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.4	-	-

APPENDIX C

LEVEL OF SERVICE CALCULATIONS

- Future Year 2018 PM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	25	10	10	120	20	135	10	650	150	125	600	20
Future Volume (veh/h)	25	10	10	120	20	135	10	650	150	125	600	20
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1900	1863	1900	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	27	11	2	130	22	110	11	707	154	136	652	12
Adj No. of Lanes	0	1	1	0	1	0	1	1	0	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	233	84	327	198	35	125	403	787	171	297	1133	963
Arrive On Green	0.21	0.21	0.21	0.21	0.21	0.21	0.01	0.53	0.53	0.09	0.61	0.61
Sat Flow, veh/h	796	406	1583	668	170	606	1774	1483	323	1774	1863	1583
Grp Volume(v), veh/h	38	0	2	262	0	0	11	0	861	136	652	12
Grp Sat Flow(s),veh/h/ln	1202	0	1583	1444	0	0	1774	0	1806	1774	1863	1583
Q Serve(g_s), s	0.0	0.0	0.1	14.1	0.0	0.0	0.3	0.0	38.6	2.7	19.1	0.3
Cycle Q Clear(g_c), s	1.9	0.0	0.1	16.0	0.0	0.0	0.3	0.0	38.6	2.7	19.1	0.3
Prop In Lane	0.71		1.00	0.50		0.42	1.00		0.18	1.00		1.00
Lane Grp Cap(c), veh/h	316	0	327	358	0	0	403	0	958	297	1133	963
V/C Ratio(X)	0.12	0.00	0.01	0.73	0.00	0.00	0.03	0.00	0.90	0.46	0.58	0.01
Avail Cap(c_a), veh/h	398	0	421	447	0	0	703	0	1080	362	1133	963
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	29.1	0.0	28.5	35.1	0.0	0.0	10.5	0.0	19.0	17.9	10.7	7.0
Incr Delay (d2), s/veh	0.1	0.0	0.0	3.2	0.0	0.0	0.0	0.0	10.6	0.4	1.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.0	0.0	6.6	0.0	0.0	0.1	0.0	22.0	1.9	10.0	0.1
LnGrp Delay(d),s/veh	29.2	0.0	28.5	38.3	0.0	0.0	10.5	0.0	29.6	18.4	11.8	7.0
LnGrp LOS	C		C	D			B		C	B	B	A
Approach Vol, veh/h		40			262			872			800	
Approach Delay, s/veh		29.1			38.3			29.4			12.9	
Approach LOS		C			D			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	11.7	53.9		24.7	4.7	60.9		24.7
Change Period (Y+Rc), s	4.0	6.0		6.0	4.0	6.0		6.0
Max Green Setting (Gmax), s	11.0	54.0		24.0	16.0	49.0		24.0
Max Q Clear Time (g_c+I1), s	4.7	40.6		3.9	2.3	21.1		18.0
Green Ext Time (p_c), s	0.1	7.3		1.2	0.0	21.6		0.7

Intersection Summary	
HCM 2010 Ctrl Delay	23.9
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	80	30	395	125	245	35	420	360	205	480	25
Future Volume (veh/h)	5	80	30	395	125	245	35	420	360	205	480	25
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	5	87	33	429	136	266	38	457	0	223	522	27
Adj No. of Lanes	0	1	1	0	1	1	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	60	707	616	502	135	616	266	580	493	355	733	623
Arrive On Green	0.39	0.39	0.39	0.39	0.39	0.39	0.02	0.31	0.00	0.11	0.39	0.39
Sat Flow, veh/h	36	1816	1583	1092	346	1583	1774	1863	1583	1774	1863	1583
Grp Volume(v), veh/h	92	0	33	565	0	266	38	457	0	223	522	27
Grp Sat Flow(s),veh/h/ln	1852	0	1583	1438	0	1583	1774	1863	1583	1774	1863	1583
Q Serve(g_s), s	0.0	0.0	1.1	29.4	0.0	10.1	1.2	18.4	0.0	6.6	19.4	0.9
Cycle Q Clear(g_c), s	2.6	0.0	1.1	32.0	0.0	10.1	1.2	18.4	0.0	6.6	19.4	0.9
Prop In Lane	0.05		1.00	0.76		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	767	0	616	637	0	616	266	580	493	355	733	623
V/C Ratio(X)	0.12	0.00	0.05	0.89	0.00	0.43	0.14	0.79	0.00	0.63	0.71	0.04
Avail Cap(c_a), veh/h	767	0	616	637	0	616	463	702	597	406	733	623
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.1	0.0	15.7	24.9	0.0	18.4	19.7	25.9	0.0	18.0	21.0	15.4
Incr Delay (d2), s/veh	0.0	0.0	0.0	13.9	0.0	0.2	0.1	6.8	0.0	1.4	4.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	0.0	0.5	15.2	0.0	4.4	0.6	10.5	0.0	3.4	10.7	0.4
LnGrp Delay(d),s/veh	16.2	0.0	15.7	38.8	0.0	18.6	19.8	32.6	0.0	19.5	25.1	15.4
LnGrp LOS	B		B	D		B	B	C		B	C	B
Approach Vol, veh/h		125			831			495			772	
Approach Delay, s/veh		16.0			32.4			31.6			23.1	
Approach LOS		B			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	12.6	31.6		38.0	5.9	38.4		38.0
Change Period (Y+Rc), s	4.0	6.0		6.0	4.0	6.0		6.0
Max Green Setting (Gmax), s	11.0	31.0		32.0	11.0	31.0		32.0
Max Q Clear Time (g_c+I1), s	8.6	20.4		4.6	3.2	21.4		34.0
Green Ext Time (p_c), s	0.1	5.2		3.9	0.0	6.3		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	28.1
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	115	90	110	65	130	65	565	165	120	470	20
Future Volume (veh/h)	20	115	90	110	65	130	65	565	165	120	470	20
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	22	125	98	120	71	141	71	614	0	130	511	0
Adj No. of Lanes	1	1	1	1	1	1	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	284	199	169	293	300	255	418	835	710	355	856	728
Arrive On Green	0.02	0.11	0.11	0.08	0.16	0.16	0.05	0.45	0.00	0.06	0.46	0.00
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	1863	1583	1774	1863	1583
Grp Volume(v), veh/h	22	125	98	120	71	141	71	614	0	130	511	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1863	1583	1774	1863	1583
Q Serve(g_s), s	0.8	4.7	4.3	4.2	2.4	6.0	1.5	19.7	0.0	2.8	14.9	0.0
Cycle Q Clear(g_c), s	0.8	4.7	4.3	4.2	2.4	6.0	1.5	19.7	0.0	2.8	14.9	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	284	199	169	293	300	255	418	835	710	355	856	728
V/C Ratio(X)	0.08	0.63	0.58	0.41	0.24	0.55	0.17	0.74	0.00	0.37	0.60	0.00
Avail Cap(c_a), veh/h	605	614	522	518	614	522	812	998	848	729	998	848
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	27.8	31.2	31.0	25.3	26.6	28.1	10.9	16.5	0.0	12.5	14.6	0.0
Incr Delay (d2), s/veh	0.0	1.2	1.2	0.3	0.1	0.7	0.1	3.4	0.0	0.2	1.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	2.5	1.9	2.1	1.3	2.6	0.7	10.9	0.0	1.4	7.9	0.0
LnGrp Delay(d),s/veh	27.9	32.4	32.2	25.6	26.8	28.8	11.0	19.9	0.0	12.8	16.1	0.0
LnGrp LOS	C	C	C	C	C	C	B	B		B	B	
Approach Vol, veh/h		245			332			685			641	
Approach Delay, s/veh		31.9			27.2			19.0			15.4	
Approach LOS		C			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.6	38.6	10.8	13.8	8.8	39.5	6.8	17.7
Change Period (Y+Rc), s	5.0	6.0	5.0	6.0	5.0	6.0	5.0	6.0
Max Green Setting (Gmax), s	20.0	39.0	15.0	24.0	20.0	39.0	15.0	24.0
Max Q Clear Time (g_c+I1), s	4.8	21.7	6.2	6.7	3.5	16.9	2.8	8.0
Green Ext Time (p_c), s	0.1	10.9	0.1	1.1	0.1	13.0	0.0	1.1

Intersection Summary	
HCM 2010 Ctrl Delay	20.9
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	230	235	75	85	330	325	70	195	75	325	235	285
Future Volume (veh/h)	230	235	75	85	330	325	70	195	75	325	235	285
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	250	255	59	92	359	86	76	212	65	353	255	277
Adj No. of Lanes	1	1	0	1	1	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	359	448	104	352	435	369	227	386	118	471	296	322
Arrive On Green	0.13	0.31	0.31	0.06	0.23	0.23	0.05	0.28	0.28	0.13	0.36	0.36
Sat Flow, veh/h	1774	1464	339	1774	1863	1583	1774	1369	420	1774	818	888
Grp Volume(v), veh/h	250	0	314	92	359	86	76	0	277	353	0	532
Grp Sat Flow(s),veh/h/ln	1774	0	1803	1774	1863	1583	1774	0	1789	1774	0	1706
Q Serve(g_s), s	8.8	0.0	12.7	3.4	15.9	3.8	2.6	0.0	11.5	11.0	0.0	25.2
Cycle Q Clear(g_c), s	8.8	0.0	12.7	3.4	15.9	3.8	2.6	0.0	11.5	11.0	0.0	25.2
Prop In Lane	1.00		0.19	1.00		1.00	1.00		0.23	1.00		0.52
Lane Grp Cap(c), veh/h	359	0	552	352	435	369	227	0	504	471	0	619
V/C Ratio(X)	0.70	0.00	0.57	0.26	0.83	0.23	0.33	0.00	0.55	0.75	0.00	0.86
Avail Cap(c_a), veh/h	537	0	621	537	513	436	371	0	801	471	0	764
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	21.6	0.0	25.4	23.4	31.7	27.1	22.7	0.0	26.6	20.4	0.0	25.7
Incr Delay (d2), s/veh	2.4	0.0	1.0	0.4	9.3	0.3	0.9	0.0	0.9	6.5	0.0	8.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.5	0.0	6.5	1.7	9.3	1.7	1.3	0.0	5.7	6.6	0.0	13.2
LnGrp Delay(d),s/veh	24.0	0.0	26.4	23.8	41.0	27.4	23.5	0.0	27.5	26.9	0.0	34.0
LnGrp LOS	C		C	C	D	C	C		C	C		C
Approach Vol, veh/h		564			537			353			885	
Approach Delay, s/veh		25.3			35.9			26.7			31.2	
Approach LOS		C			D			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.0	30.5	8.9	32.7	7.9	37.6	15.3	26.3
Change Period (Y+Rc), s	4.0	6.0	4.0	6.0	4.0	6.0	4.0	6.0
Max Green Setting (Gmax), s	11.0	39.0	14.0	30.0	11.0	39.0	20.0	24.0
Max Q Clear Time (g_c+I1), s	13.0	13.5	5.4	14.7	4.6	27.2	10.8	17.9
Green Ext Time (p_c), s	0.0	6.3	0.1	4.2	0.1	4.4	0.5	2.4

Intersection Summary	
HCM 2010 Ctrl Delay	30.2
HCM 2010 LOS	C

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	70	225	230	280	180	45
Future Volume (vph)	70	225	230	280	180	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)		0%	0%		0%	
Storage Length (ft)	0			0	0	0
Storage Lanes	0			0	1	0
Taper Length (ft)	25				25	
Link Speed (mph)		25	25		25	
Link Distance (ft)		849	503		411	
Travel Time (s)		23.2	13.7		11.2	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Shared Lane Traffic (%)						

Intersection Summary	
Area Type:	Other

Intersection	
Int Delay, s/veh	8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Traffic Vol, veh/h	70	225	230	280	180	45
Future Vol, veh/h	70	225	230	280	180	45
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	76	245	250	304	196	49

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	554	0	-	0	799	402
Stage 1	-	-	-	-	402	-
Stage 2	-	-	-	-	397	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1016	-	-	-	355	648
Stage 1	-	-	-	-	676	-
Stage 2	-	-	-	-	679	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1016	-	-	-	324	648
Mov Cap-2 Maneuver	-	-	-	-	324	-
Stage 1	-	-	-	-	676	-
Stage 2	-	-	-	-	620	-

Approach	EB	WB	SB
HCM Control Delay, s	2.1	0	33.8
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1016	-	-	-	360
HCM Lane V/C Ratio	0.075	-	-	-	0.679
HCM Control Delay (s)	8.8	0	-	-	33.8
HCM Lane LOS	A	A	-	-	D
HCM 95th %tile Q(veh)	0.2	-	-	-	4.8

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	10	15	25	305	235	20
Future Volume (vph)	10	15	25	305	235	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)	0	0	0			0
Storage Lanes	1	0	0			0
Taper Length (ft)	25		25			
Link Speed (mph)	25			25	25	
Link Distance (ft)	394			949	896	
Travel Time (s)	10.7			25.9	24.4	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						

Intersection Summary	
Area Type:	Other

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	10	15	25	305	235	20
Future Vol, veh/h	10	15	25	305	235	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	16	27	332	255	22

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	652	266	277	0	-	0
Stage 1	266	-	-	-	-	-
Stage 2	386	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	433	773	1286	-	-	-
Stage 1	779	-	-	-	-	-
Stage 2	687	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	422	773	1286	-	-	-
Mov Cap-2 Maneuver	422	-	-	-	-	-
Stage 1	779	-	-	-	-	-
Stage 2	669	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.5	0.6	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1286	-	580	-	-
HCM Lane V/C Ratio	0.021	-	0.047	-	-
HCM Control Delay (s)	7.9	0	11.5	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	-	-

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	50	40	40	280	210	80
Future Volume (vph)	50	40	40	280	210	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)	0	0	0			0
Storage Lanes	1	0	0			0
Taper Length (ft)	25		25			
Link Speed (mph)	25			25	25	
Link Distance (ft)	385			896	1395	
Travel Time (s)	10.5			24.4	38.0	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						

Intersection Summary	
Area Type:	Other

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	50	40	40	280	210	80
Future Vol, veh/h	50	40	40	280	210	80
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	54	43	43	304	228	87

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	663	272	315	0	-	0
Stage 1	272	-	-	-	-	-
Stage 2	391	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	426	767	1245	-	-	-
Stage 1	774	-	-	-	-	-
Stage 2	683	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	408	767	1245	-	-	-
Mov Cap-2 Maneuver	408	-	-	-	-	-
Stage 1	774	-	-	-	-	-
Stage 2	654	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.6	1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1245	-	515	-	-
HCM Lane V/C Ratio	0.035	-	0.19	-	-
HCM Control Delay (s)	8	0	13.6	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.7	-	-

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	60	10	15	315	280	75
Future Volume (vph)	60	10	15	315	280	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)	0	50	0			0
Storage Lanes	1	1	0			0
Taper Length (ft)	25		25			
Link Speed (mph)	25			25	25	
Link Distance (ft)	325			1395	848	
Travel Time (s)	8.9			38.0	23.1	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						

Intersection Summary	
Area Type:	Other

Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	60	10	15	315	280	75
Future Vol, veh/h	60	10	15	315	280	75
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	50	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	65	11	16	342	304	82

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	720	345	386	0	-	0
Stage 1	345	-	-	-	-	-
Stage 2	375	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	395	698	1172	-	-	-
Stage 1	717	-	-	-	-	-
Stage 2	695	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	388	698	1172	-	-	-
Mov Cap-2 Maneuver	388	-	-	-	-	-
Stage 1	717	-	-	-	-	-
Stage 2	683	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	15.3	0.4	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1172	-	388	698	-	-
HCM Lane V/C Ratio	0.014	-	0.168	0.016	-	-
HCM Control Delay (s)	8.1	0	16.1	10.2	-	-
HCM Lane LOS	A	A	C	B	-	-
HCM 95th %tile Q(veh)	0	-	0.6	0	-	-

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	20	10	15	315	355	35
Future Volume (vph)	20	10	15	315	355	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)	0	0	0			0
Storage Lanes	1	0	0			0
Taper Length (ft)	25		25			
Link Speed (mph)	25			25	25	
Link Distance (ft)	215			848	335	
Travel Time (s)	5.9			23.1	9.1	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						

Intersection Summary	
Area Type:	Other

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	20	10	15	315	355	35
Future Vol, veh/h	20	10	15	315	355	35
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	22	11	16	342	386	38

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	780	405	424	0	-	0
Stage 1	405	-	-	-	-	-
Stage 2	375	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	364	646	1135	-	-	-
Stage 1	673	-	-	-	-	-
Stage 2	695	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	358	646	1135	-	-	-
Mov Cap-2 Maneuver	358	-	-	-	-	-
Stage 1	673	-	-	-	-	-
Stage 2	683	-	-	-	-	-

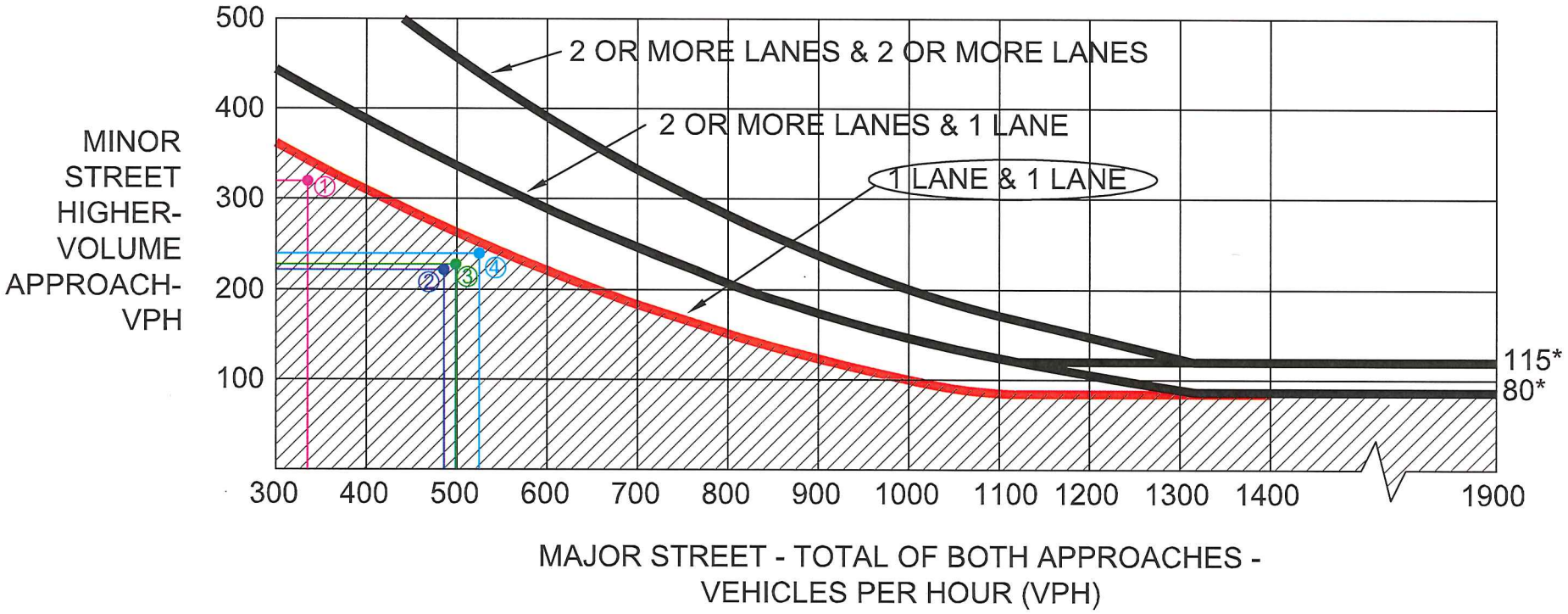
Approach	EB	NB	SB
HCM Control Delay, s	14.3	0.4	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1135	-	420	-	-
HCM Lane V/C Ratio	0.014	-	0.078	-	-
HCM Control Delay (s)	8.2	0	14.3	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.3	-	-

APPENDIX D

TRAFFIC SIGNAL WARRANT

Warrant 2, Four-Hour Vehicular Volume

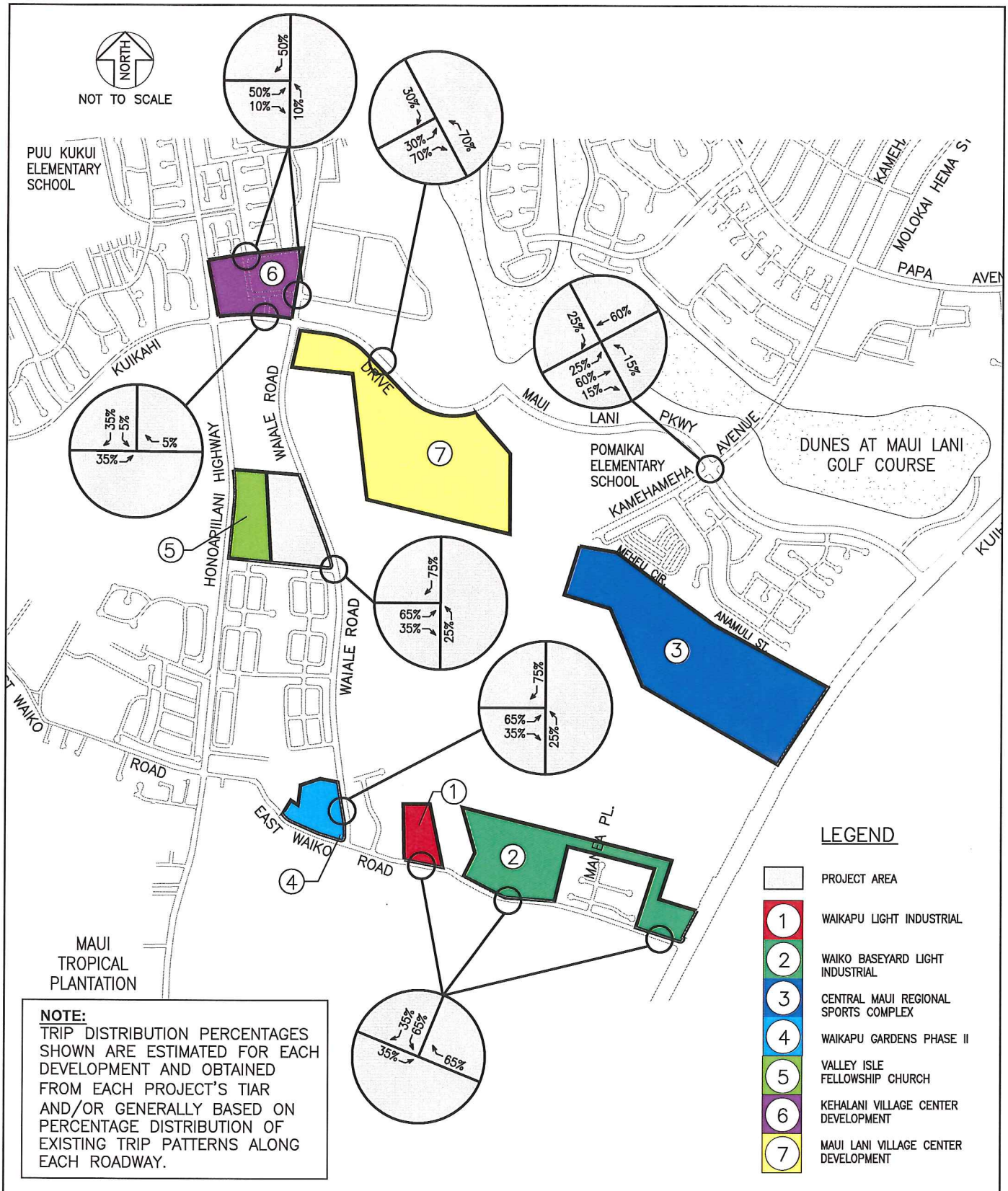


*Note: 115 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 80 vph applies as the lower threshold volume for a minor-street approach with one lane.

WAIALE AFFORDABLE HOUSING TIAR	AUSTIN, TSUTSUMI & ASSOCIATES, INC. ENGINEERS, SURVEYORS • HONOLULU, HAWAII **FUTURE YEAR 2018 CONDITIONS** **TRAFFIC SIGNAL WARRANT FOR WAIALE ROAD/E. WAIKO ROAD INTERSECTION**	FIGURE D-1

APPENDIX E

BACKGROUND DEVELOPMENT TRIP DISTRIBUTION PATTERNS



NOTE:
TRIP DISTRIBUTION PERCENTAGES SHOWN ARE ESTIMATED FOR EACH DEVELOPMENT AND OBTAINED FROM EACH PROJECT'S TIAR AND/OR GENERALLY BASED ON PERCENTAGE DISTRIBUTION OF EXISTING TRIP PATTERNS ALONG EACH ROADWAY.

WAIALE AFFORDABLE HOUSING TIAR

AUSTIN, TSUTSUMI & ASSOCIATES, INC.
ENGINEERS, SURVEYORS • HONOLULU, HAWAII

FIGURE E

DISTRIBUTION OF BACKGROUND DEVELOPMENT TRIPS IN PROJECT VICINITY

Appendix G

Biological Resources Survey

BIOLOGICAL RESOURCES SURVEY

for the

WAI'ALE 201-H AFFORDABLE HOUSING PROJECT

WAILUKU, MAUI, HAWAII

by

ROBERT W. HOBDY
ENVIRONMENTAL CONSULTANT
Kokomo, Maui
July 2015

Prepared for:
Frampton & Ward LLC.

FLORA AND FAUNA SURVEY
WAI'ALE 201-H AFFORDABLE HOUSING PROJECT
WAILUKU, MAUI, HAWAII

INTRODUCTION

The Wai'ale 201-H Affordable Housing project is located between Wailuku and Waikapu in central Maui. It lies along the west side of Wai'ale Road and encompasses 10.35 acres of undeveloped land TMK (2) 3-5-02:012 portion. It is adjacent to the northedge of the Waikapu Gardens & Subdivision. This biological resources study of the project area was initiated by the owner in fulfillment of environmental requirements of the planning process.

SITE DESCRIPTION

The project area lies on gently sloping land on the lower eastern slopes of the West Maui Mountains. The vegetation consists of dense grassland with scattered shrubs and small trees. Elevations range between 325 and 360 feet above sea level. The soil is characterized as Iao silty clay, 0 – 3% slopes (IaA) with moderate amounts of windblown sand intermixed (Foote et al, 1972). Rainfall averages 25 inches per year with winter maximums.

BIOLOGICAL HISTORY

The original vegetation in this area consisted of a dense low statured native forest and shrubland with such components as ʻōhiʻa (*Metrosideros polymorpha*), ʻaʻaliʻi (*Dodonaea viscosa*), olopua (*Nestegis sandwicensis*), lama (*Diospyros sandwicensis*), halapepe (*Chrysodracon auwahiensis*), and a variety of ferns, vines and herbaceous plants.

Hawaiians lived in the area for several centuries, farming in the valley bottoms and lowlands and utilizing forest plants for food, construction materials, tools, fiber and medicines. They altered the landscape somewhat through cultivation and burning. This area is situated on farming lands that were irrigated with waters from the ancient Kama Ditch.

During the mid-1800's this area was cleared for sugar cane agriculture and the area was plowed, planted, burned and harvested in continuous cycles for over 100 years. Native ecosystems were replaced by sugar cane and increasing numbers of agricultural weeds.

When sugar production ended in the 1990s this area was converted to cattle grazing. All of these practices, along with recent fires that have swept through the grass lands, have resulted in an environment that is now nearly totally lacking in native plants and animal species.

SURVEY OBJECTIVES

This report summarizes the findings of a flora and fauna survey of the proposed Wai'ale 201-H Affordable Housing project which was conducted in July 2015. The objectives of the survey were to:

1. Document what plant, and animal species occur on the property or may likely occur in the existing habitat.

2. Document the status and abundance of each species.

3. Determine the presence or likely occurrence of any native flora and fauna, particularly any that are Federally listed as Threatened or Endangered. If such occur, identify what features of the habitat may be essential for these species.

4. Determine if the project area contains any special habitats which if lost or altered might result in a significant negative impact on the flora and fauna in this part of the island.

SURVEY METHODS

A walk-through botanical survey method was used covering the entire project area. Notes were made on plant species, distribution and abundance as well as on terrain and substrate.

A special focus was on identifying any native species and ascertaining if there were any Endangered or Threatened species (USFWS, 2015) that would require special focus. A complete plant species list is presented herein.

DESCRIPTION OF THE VEGETATION

The vegetation within the project area was dominated by one species, Guinea grass (*Megathyrsus maximus*), which can grow in dense stands to eight feet deep. The other species that were common include koa haole (*Leucaena leucocephala*), castor bean (*Ricinus communis*) and glycine (*Neonotonia wightii*).

A total of 71 plant species were recorded during the survey in two visits to the project area. Just two of these were common native plants, ʻuhaloa (*Waltheria indica*) and ʻilima (*Sida fallax*) which are widespread in Hawaii as well as in many other tropical countries. The remaining 69 species were non-native agricultural weeds or pasture plants.

DISCUSSION AND RECOMMENDATIONS

The vegetation throughout the project area is dominated by non-native species that are of no particular environmental interest or concern. Just two common indigenous plant, ʻuhaloa and ʻilima were found growing in a recently disturbed area. No federally listed Endangered or Threatened plant species (USFWS, 2015) were found, nor do any plants that are candidates for such status occur on the project area. No special plant habitats occur on or near the project and no potential wetlands occur in this dry upland site.

This project is not expected to have any significant negative impacts on the botanical resources in this part of West Maui. No recommendations regarding botanical resources are deemed necessary or appropriate.

PLANT SPECIES LIST

Following is a checklist of all those vascular plant species inventoried during the field studies. Plant families are arranged alphabetically within each of two groups: Monocots and Dicots. Taxonomy and nomenclature of the flowering plants (Monocots and Dicots) are in accordance with Wagner et al. (1999).

For each species, the following information is provided:

1. Scientific name with author citation

2. Common English or Hawaiian name.

3. Bio-geographical status. The following symbols are used:

   endemic = native only to the Hawaiian Islands; not naturally occurring anywhere else in the world.
   indigenous = native to the Hawaiian Islands and also to one or more other geographic area(s).
   Polynesian = all those plants brought to Hawaii during the course of Polynesian migrations
   non-native = all those plants brought to the islands intentionally or accidentally after western contact.

4. Abundance of each species within the project area:

   abundant = forming a major part of the vegetation within the project area.
   common = widely scattered throughout the area or locally abundant within a portion of it.
   uncommon = scattered sparsely throughout the area or occurring in a few small patches.
   rare = only a few isolated individuals within the project area.

SCIENTIFIC NAME	COMMON NAME	STATUS	ABUNDANCE
MONOCOTS			
ARECACEAE (Palm Family)			

Washingtonia robusta H. Wendl.	Mexican desert palm	non-native	rare
CYPERACEAE (Sedge Family)			
Cyperus rotundus L.	nut sedge	non-native	rare
POACEAE (Grass Family)			
Cenchrus ciliaris L.	buffelgrass	non-native	uncommon
Cenchrus purpureus (Schumach) Morrone	Napier grass	non-native	uncommon
Chloris barbata (L.) Sw.	swollen fingergrass	non-native	uncommon
Cynodon dactylon (L.) Pers.	Bermuda grass	non-native	uncommon
Digitaria insularis (L.) Mez ex Ekman	sourgrass	non-native	uncommon
Eragrostis amabilis (L.) Wight & Arnott	Japanese lovegrass	non-native	rare
Eragrostis pectinacea (Michx.) Nees	Carolina lovegrass	non-native	rare
Megathyrsus maximus (Jacq.) Simon & Jacobs	Guinea grass	non-native	abundant
DICOTS			
AMARANTHACEAE (Amaranth Family)			
Alternanthera pungens Kunth	khaki weed	non-native	uncommon
Amaranthus spinosus L.	spiny amaranth	non-native	rare
ANACARDIACEAE (Mango Family)			
Schinus terebinthifolius Raddi	Christmas berry	non-native	rare
APOCYNACEAE (Dogbane Family)			
Calotropis procera (Aiton) Aiton	small crown flower	non-native	rare
ASTERACEAE (Sunflower Family)			
Bidens pilosa L.	Spanish needle	non-native	uncommon
Conyza bonariensis (L.) Cronq.	hairy horseweed	non-native	uncommon
Conyza canadensis (L.) Cronq.	horseweed	non-native	rare
Emilia fosbergii Nicolson	red pualele	non-native	uncommon
Lactuca sativa L.	prickly lettuce	non-native	rare
Pluchea carolinensis (Jacq.) G. Don	sourbush	non-native	uncommon
Senecio madagascariensis Poir.	fireweed	non-native	rare
Sonchus oleraceus L.	pualele	non-native	uncommon
Tridax procumbens L.	coat buttons	non-native	uncommon
Verbesina enceloides (Cav.) Benth. & Hook.	golden crown-beard	non-native	uncommon
ARALIACEAE (Ginseng Family)			
Schefflera actinophylla (Endl.) Harms	octopus tree	non-native	rare
BIGNONIACEAE (Bignonia Family)			
Spathodea campanulata P. Beauv.	African tulip tree	non-native	rare
BORAGINACEAE (Borage Family)			
Heliotropium procumbens Mill.	fourspike heliotrope	non-native	rare
BRASSICACEAE (Mustard Family)			
Lepidium bonariense L.	Brazilian pepperwort	non-native	rare
Lepidium virginicum L.	Virginia pepperwort	non-native	uncommon
Sisymbrium altissimum L.	tumble mustard	non-native	rare
SCIENTIFIC NAME	COMMON NAME	STATUS	ABUNDANCE
CONVOLVULACEAE (Morning Glory Family)			
Ipomoea obscura (L.) Ker	----------	non-native	rare
Ipomoea triloba L.	little bell	non-native	uncommon

EUPHORBIACEAE (Spurge Family)			
Euphorbia hirta L.	hairy spurge	non-native	uncommon
Euphorbia hypericifolia L.	graceful spurge	non-native	uncommon
Euphorbia prostrata Aiton	prostrate spurge	non-native	uncommon
Euphorbia thymifolia L.	thyme-leaved spurge	non-native	rare
Ricinus communis L.	Castor bean	non-native	common
FABACEAE (Pea Family)			
Chamaecrista nictitans (L.) Moench	partridge pea	non-native	rare
Clitoria ternatea L.	blue pea	non-native	rare
Crotalaria incana L.	fuzzy rattlepod	non-native	uncommon
Crotalaria pallida Aiton	smooth rattlepod	non-native	uncommon
Crotalaria retusa L.	rattlepod	non-native	rare
Desmanthus pernambucanus (L.) Thellung	slender mimosa	non-native	uncommon
Desmodium tortuosum (Sw.) DC.	Florida beggarweed	non-native	rare
Indigofera spicata Forssk.	creeping indigo	non-native	uncommon
Indigofera suffruticosa Mill.	inikō	non-native	rare
Leucaena leucocephala (Lam.) de Wit	koa haole	non-native	common
Macroptilium lathyroides (L.) Urb.	wild bean	non-native	uncommon
Neonotonia wightii (Wight & Arnott) Lackey	glycine	non-native	common
Pithcellobium dulce (Roxb.) Benth.	ōpiuma	non-native	uncommon
Prosopis pallida (Humb. & Bonpl. ex Willd.) Kunth	kiawe	non-native	uncommon
Samanea saman (Jacq.) Merr.	monkeypod	non-native	rare
LAMIACEAE (Mint Family)			
Hyptis pectinata (L.) Poit.	comb hyptis	non-native	rare
MALVACEAE (Mallow Family)			
Abutilon grandifolium	hairy abutilon	non-native	uncommon
Hibiscus x rosa-sinensis L.	hybrid hibiscus	non-native	rare
Malva parviflora L.	cheese weed	non-native	rare
Malvastrum coromandelianum (L.) Garcke	false mallow	non-native	uncommon
Sida ciliaris L.	bracted fanpetals	non-native	uncommon
Sida fallax *Walp.*	'ilima	indigenous	rare
Sida rhombifolia L.	arrowleaf sida	non-native	uncommon
Sida spinosa L.	prickly sida	non-native	rare
Waltheria indica L.	'uhaloa	indigenous	uncommon
MORACEAE (Mulberry Family)			
Broussonetia luzonicus (Blanca) Bureau	alokon	non-native	rare
Ficus lyrata Warburg	lyre-leaved fig	non-native	rare
MORINGACEAE (Drumstick Tree Family)			
Moringa oleifera Lamarck	marunggay, horeradish tree	non-native	uncommon

SCIENTIFIC NAME	COMMON NAME	STATUS	ABUNDANCE
MYRTACEAE (Myrtle Family)			
Syzygium cumini (L.) Skeels	Java plum	non-native	rare
NYCTAGINACEAE (Four-o'clock Family)			
Boerhavia coccinea Mill.	scarlet spiderling	non-native	uncommon

SAPINDACEAE (Soapberry Family)			
Filicium decipiens (Wight & Arnott) Thwaites	fern tree	non-native	rare
SOLANACEAE (Nightshade Family)			
Nicandra physalodes (L.) Gaertn.	apple of Peru	non-native	rare
VERBENACEAE (Verbena Family)			
Tectona grandis L. fil.	teak	non-native	rare
Verbena littoralis L.	hau ōwī	non-native	rare

FAUNA SURVEY REPORT

SURVEY METHODS

A walk-through survey method was conducted in conjunction with the botanical survey. All parts of the project area were covered. Field observations were made with the aid of binoculars and by listening to vocalizations. Notes were made on species, abundance, activities and location as well as observations of trails,

tracks scat and signs of feeding. In addition an evening visit was made to the area to record crepuscular activities and vocalizations and to see if there was any evidence of occurrence of the Hawaiian hoary bat (*Lasiurus cinereus semotus*) in the area.

RESULTS

MAMMALS

Just one non-native mammal the mongoose (*Herpestes auropunctatus*) was observed during two site visits. Several common non-native mammal species, however, could be occasionally expected to utilize this habitat. These include cats (*Felis catus*), domestic dogs (*Canis familiaris*), rats (*Rattus* spp.) and mice (*Mus domesticus*). These species can be difficult to detect because of the dense vegetation. Taxonomy and nomenclature follow Tomich (1986).

A special effort was made to look for the native Hawaiian hoary bat by making an evening survey of the area. When present in an area these bats can be easily identified as they forage for insects, their distinctive flight patterns clearly visible in the glow of twilight. No evidence of such activity was observed though visibility was excellent. In addition a bat detecting device was used at two locations, set to the frequency of 27,000 to 28,000 hertz which is the typical range within which these bats are known to echolocate for flying insect prey. No activity was detected using this device.

BIRDS

Birdlife was somewhat sparse around the project area due to the lack of habitat diversity. Just eight species of non-native birds were recorded during two site visits. Taxonomy and nomenclature follow American Ornithologists' Union (2012). Three species were common, house finch (*Carpodacus mexicanus*), zebra dove (*Geopelia striata*) and the common myna (*Acridotheres tristis*). Three other species were uncommon and two were rare (see species inventory). A few other non-native birds might occasionally be seen here but the habitat is not suitable for Hawaii's native birds because of the dense growth of grass and its low elevation.

INSECTS

Insect life was moderate in both species diversity and in total numbers. Eighteen non-native insect species were recorded during two site visits. Taxonomy and nomenclature follow Nishida et al (1992). Just two species were of common occurrence, the long tail blue butterfly (*Lampides boeticus*) and the cabbage butterfly (*Pieris rapae*). Five species were uncommon and eleven more were rare. No native species were found.

DISCUSSION AND RECOMMENDATIONS

The wildlife within and around this project area is composed entirely of non-native species. Of a total of one mammal, eight birds and eighteen insects no native animal species were found.

No Endangered or Threatened native animals were found during the survey, nor were any found that are candidates for such status. No special wildlife habitats were found either.

As a result of these findings, it is determined that there is little of environmental concern with regard to animal life within the proposed project. The development of this project is not expected to have a significant negative impact on the native wildlife resources in this part of West Maui.

While no protected seabirds were found on the property, the Endangered ua'u (*Pterodrama sanwichensis*) and Threatened 'a'o (*Puffinus newelli*) are known to overfly the area at dawn and dusk to their burrows high in the mountains between the months of March and November. In late fall young birds fledge from their burrows to take their first tentative flights out to sea. These inexperienced birds are easily confused and distracted by bright lights and often crash to the ground where they are particularly vulnerable to being run over by vehicles or killed by predators.

It is recommended that any significant outdoor lighting such as street lights or flood lights that are incorporated into the project design be shielded to direct the light downward so that it is not visible from above.

ANIMAL SPECIES LIST

Following is a checklist of the animal species inventoried during the field work. Animal species are arranged in descending abundance within three groups: Mammals, Birds and Insects.
For each species the following information is provided:

1. Common name

2. Scientific name

3. Bio-geographical status. The following symbols are used:

   endemic = native only to Hawaii; not naturally occurring anywhere else in the world.

   indigenous = native to the Hawaiian Islands and also to one or more other geographic area(s).

   non-native = all those animals brought to Hawaii intentionally or accidentally after western contact.

   migratory = spending a portion of the year in Hawaii and a portion elsewhere. In Hawaii the migratory birds are usually in the overwintering/non-breeding phase of their life cycle.

4. Abundance of each species within the project area:

   abundant = many flocks or individuals seen throughout the area at all times of day.

   common = a few flocks or well scattered individuals throughout the area.

   uncommon = only one flock or several individuals seen within the project area.

   rare = only one or two seen within the project area.

SCIENTIFIC NAME	COMMON NAME	STATUS	ABUNDANCE
MAMMALS			
Herpestes auropunctatus Hodgson	mongoose	non-native	rare
BIRDS			
Carpodacus mexicanus Muller	house finch	non-native	common
Acridotheres tristis	common myna	non-native	common
Geopelia striata	zebra dove	non-native	common
Lonchura punctulata L.	nutmeg mannikin	non-native	uncommon

Streptopelia chinensis	spotted dove	non-native	uncommon
Francolinus pondicerianus Gmelin	gray francolin	non-native	uncommon
Cardinalis cardinalis L.	northern cardinal	non-native	rare
Tyto alba Scopoli	barn owl	non-native	rare

SCIENTIFIC NAME	COMMON NAME	STATUS	ABUNDANCE
INSECTS			
Order ARANAE - true spiders			
ARANEIDAE (Orb Weaver Family)			
Araneus diadematus Clerck	European garden spider	non-native	rare
Argiope appensa Walkenaer	common garden spider	non-native	uncommon
Order DIPTERA - flies			
MUSCIDAE (Housefly Family)			
Musca sorbens Wiedemann	dung fly	non-native	rare

SYRPHIDAE (Hoverfly Family)			
Simosyrphus grandicornis Macquart	Australian hoverfly	non-native	rare
Order HETEROPTERA - true bugs			
APHIDIDAE (Aphid Family)			
Aphis craccivora Koch	cowpea aphid	non-native	rare
Order HYMENOPTERA - bees, wasps, ants			
APIDAE (Honey Bee Family)			
Xylocopa sonorina Smith	Sonoran carpenter bee	non-native	uncommon
FORMICIDAE (Ant Family)			
Paratrechina longicornis Latreille	crazy ant	non-native	rare
Order ISOPODA (Woodlouse Family)			
PORCELLIONIDAE (Sow Bug Family			
Porcellio laevis Latreille	sow bug	non-native	rare
Order LEPIDOPTERA (butterflies, moths)			
HESPERIDAE (Skipper Butterfly Family)			
Hylephila phyleus Drury	fiery skipper	non-native	rare
LYCAENIDAE (Gossamer-winged Butterfly Family)			
Lampides boeticus L.	long tail blue butterfly	non-native	common
NOCTUIDAE (Owlet Moth Family)			
Achaea janata L.	castor semi-looper	non-native	uncommon
NYMPHALIDAE (Brush-footed Butterfly Family)			
Danaus plexippus L.	monarch butterfly	non-native	rare
PIERIDAE (White and Sulphur Butterfly Family)			
Eurema nicippe Cramer	sleepy orange butterfly	non-native	uncommon
Phoebis agarithe Boisduval	large orange sulphur butterfly	non-native	uncommon
Pieris rapae L.	cabbage butterfly	non-native	common
PSYCHIDAE (Grass Bagworm Moth Family)			
Brachycyttarus griseus de Joannis	grass bagworm moth	non-native	rare

SCIENTIFIC NAME	COMMON NAME	STATUS	ABUNDANCE
Order MANTODEA - mantises			
MANTIDAE (Praying Mantis Family)			
Tenodera angustipennis Saussure	narrow-winged mantis	non-native	rare
Order ORTHOPTERA - grasshoppers, crickets			
ACRIDIDAE (Grasshopper Family)			
Schistocercis nitens Thunberg	gray bird grasshopper	non-native	rare

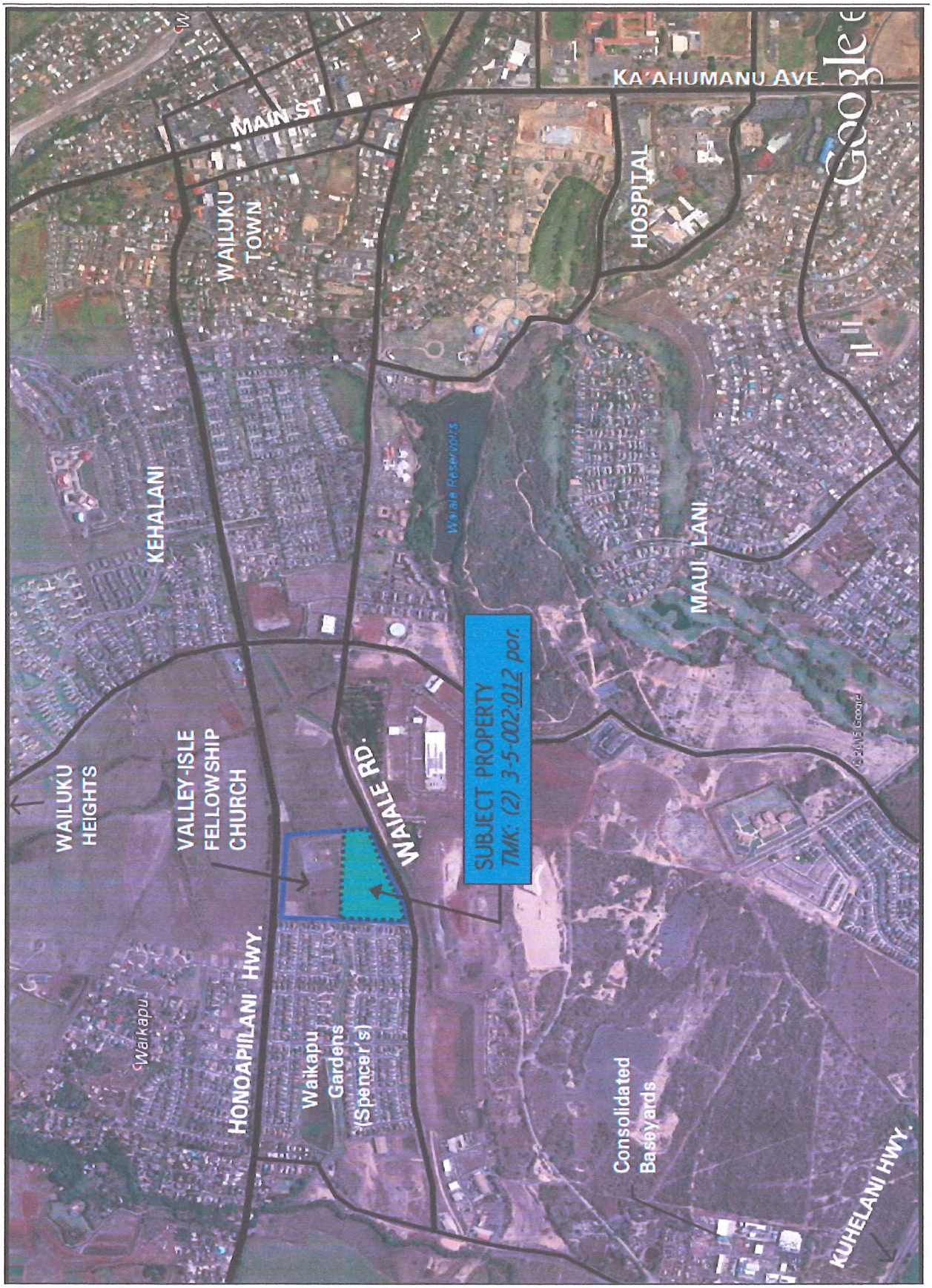


Figure 1. Project Area Location

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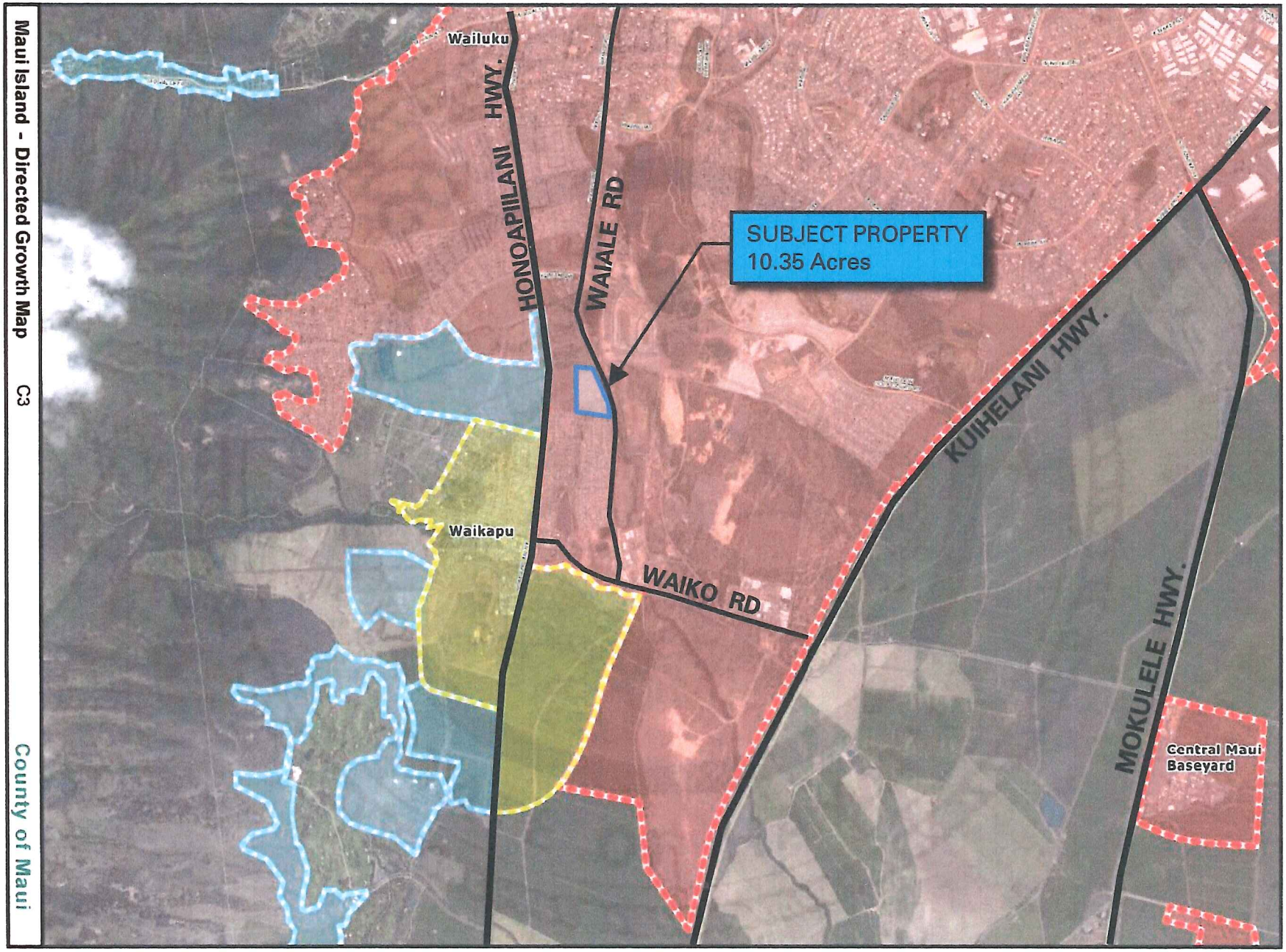
Appendix H

Maui Island Plan Map

PROPOSED 201-H AFFORDABLE HOUSING PROJECT
WAIKAPU, MAUI, HAWAII
TAX MAP KEY: (2) 3-5-002: 12 (portion)

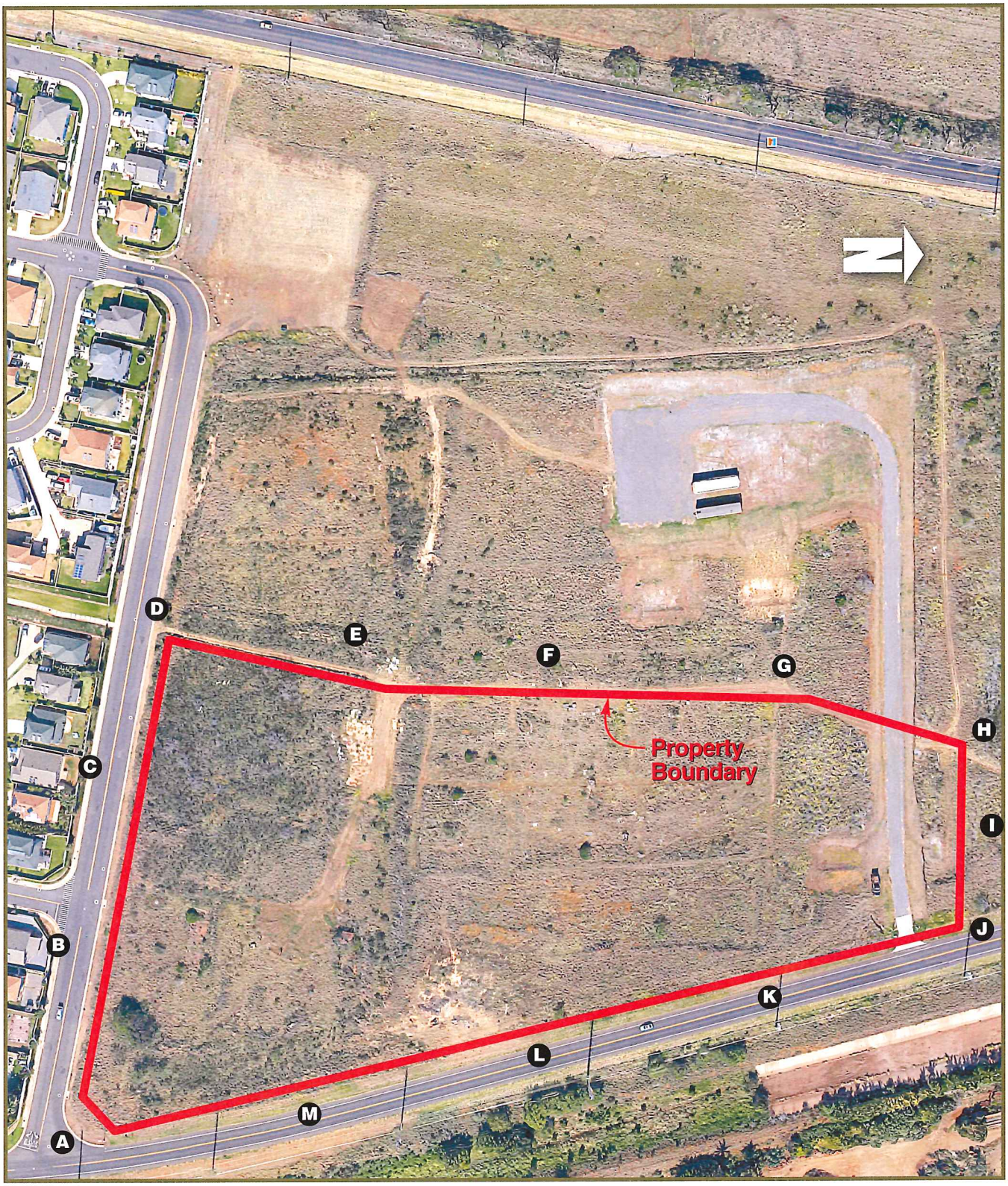


Appendix I

Aerial Photo and View Photos of Project Site

View Photos of Project Site

Aerial Photo of Project Site



Ⓐ View facing Northwest from corner of Kokilolio Street and Wai'ale Road

Ⓑ View facing North from South adjoining property on Kokilolio Street

C View facing North from South adjoining property on Kokilolio Street

D View facing North East from corner of Kokilolio Street and West adjoining property

Ⓔ View facing East from Western boundary of property

Ⓕ View facing East from Western boundary of property

Ⓖ View facing East from Western boundary of property

Ⓗ View facing South East from corner of Northern and Western boundary of property

I View facing South from Northern boundary of property

J View facing South West from corner of Wai'ale Road and Northern boundary of property

Ⓚ View facing West from Wai'ale Road

Ⓛ View facing West from Wai'ale Road

Ⓜ View facing West from Wai'ale Road

Appendix J

Market Demand Analysis Report

PREPARED FOR: MR. WILLIAM FRAMPTON
WAIALE ROAD 201, LLC
2035 Main Street, Suite 1
Wailuku, Hawaii 96793

EFFECTIVE DATE: August 25, 2015

A MARKET STUDY OF THE PROPOSED WAIALE 201-H SUBDIVISION, WAILUKU, ISLAND OF MAUI, HAWAII

ACM CONSULTANTS, INC.

ACM
CONSULTANTS, INC.

A Real Estate Appraisal, Research & Advisory Group

September 2, 2015 15-9089

MR. WILLIAM FRAMPTON
Waiale Road 201, LLC
2035 Main Street, Suite 1
Wailuku, Hawaii 96793

Re: Market Analysis for the Proposed Waiale Affordable Housing Subdivision, in Wailuku, Island and County of Maui

Dear Mr. Frampton:

In accordance with your request, we have inspected the above-referenced property in order to provide a defined scope market study of the proposed Waiale 201-H Subdivision, in Waikapu, District of Wailuku, Island and County of Maui. This *counseling report*, and the conclusions herein, are based on the on-site inspection of the property, a study of current political and economic conditions, and a historical review of the real estate market in the Central Maui region and on Maui overall.

The subject site will consists of approximately 10.35 acres of land and is currently zoned Agricultural District. This lot will be subdivided from the original 25.36-acre site identified as Tax Map Key 2/3-5-02-012. The project, which is still in its preliminary planning stage, is identified as the Waiale 201H Project and will be located on the northwestern corner of Waiale Road and Waiko Road. The lots within the project will possess primarily mountain views, with some potentially having partial ocean views. Preliminarily, this development will contain approximately 71 affordable homes targeted towards residents earning 80 to 140 percent of Maui County's family median income. The homes will consist of three- and four-bedroom homes ranging in size from approximately 1,375 to 1,875 square feet.

The focus of this assignment essentially has three parts: (1) to define and delineate the market area; (2) to identify and analyze the current supply and demand conditions specific to the subject's market; and (3) identify, measure and forecast the effect of anticipated developments or other factors on future supply.

The following report presents a narrative review of the market study and our analysis of data along with other pertinent materials on which this report is predicated. It contains data and exhibits gathered in our investigations, and will include a description of the analytical process and our conclusions, as of August 25, 2015.

Thank you for allowing us the opportunity to work on this interesting assignment.

Respectfully submitted,
ACM Consultants, Inc.

Dominic Suguitan
Certified General Appraiser
State of Hawaii, CGA-576
Expiration: December 31, 2015

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PART I – INTRODUCTION

A. EXECUTIVE SUMMARY

Background

The proposed Waiale 201-H Project is located at the northwestern corner of Kokilolio and Waiale Road in Waikapu, District of Wailuku, Island and County of Maui. The subject parcel consists of 10.35 acres and is identified as Lot B-2 of a proposed two lot subdivision from approximately 25.36 acres of land. Lot B-2 is currently zoned Agricultural District and the project, which is still in its planning stage, will consist of approximately 71 affordably-priced single-family residential units. Ordinance No. 3599 approved by the County of Maui indicates the remaining14.99 acres of the parcel is zoned P1 Public/Quasi-Public District (conditional zoning).

It is anticipated the proposed single family homes will be one- or two-story, ranging in size from 1,375 square feet for a three-bedroom/two-bath home to 1,875 square feet for a four-bedroom/two-bath home. Lot sizes will range from 4,000 to 4,500 square feet. All single family residences will be priced in accordance with the County of Maui Department of Housing and Human Concerns Affordable Sales Price Guidelines.

Study Objectives

ACM Consultants, Inc. has been retained by Mr. William Frampton of Frampton & Ward, LLC. to analyze the residential real estate market as it relates to this proposed project. In particular, we studied economic trends and demographics, and supply and demand factors for residential property which includes single family house lots, and residences, as well as condominium units. In the process, we have gathered as much information as possible on real estate sales on Maui while focusing on the Central Maui market.

The objectives of the market analysis were as follows: (1) to define and delineate the market area; (2) to identify and analyze the current supply and demand conditions specific to the subject's market; and (3) identify, measure and forecast the effect of anticipated developments or other factors on future supply.

Conclusion

Maui has seen growth in its population, tourism and economy over the past two decades. Similar to many real estate markets on the mainland, Maui's real estate market saw significant increases up to mid-2006. Between then and 2011, however, median prices and sales volume declined, while marketing times increased. Whereas many projects were sold out in weeks, or even days in some cases, developers of market priced housing units have had to carry inventory for longer periods of time, subsequent to 2006.

There are several ongoing residential projects that will provide the immediate supply in the market. Of all the ongoing projects on Maui, there are approximately 880 units that are available. In addition to the projects currently under construction or in their

financing phase, there are more projects on Maui that may add inventory to the market in coming years, but are still in the process of gaining governmental approvals.

Beside the subject, the Consultant has identified seven large (100 units or more) developments that could potentially bring over 7,000 new housing units to the Central Maui estate market over the next decade. These include A&B Properties' Waiale and Aina O Kane projects, Maalaea Plantation, Pu'unani, and Hale Mua. Also included in this total are the remaining entitled, but un-built units within the Maui Lani and Kehalani Project Districts. Historically, many potential projects have been met with governmental or community resistance, leading to long delays. Meanwhile, others were never completed for various reasons. Passage of the Workforce Housing Ordinance and the Water Availability Ordinance are considered by many residential developers as being the most difficult barriers to entry. The Urban Growth Boundary will only add to the number of land use controls facing developers. In this light, it is difficult to determine which future projects will actually be brought to the market.

A survey of projects developed on Maui within the past 10 years indicated that a total of 4,832 new units have been absorbed within this period. This includes single family residences, condominium units, residential house lots as well as agricultural lots. The average number of units sold was approximately 483 units per year over the past 10 years. It should be noted that this period also included years in which the real estate market was weak. Based on this historical absorption rate, the current short term supply of 871 new units (**Page 31**) will last approximately 1.8 years.

The demand for housing still exists, although it is currently being stifled by still-fragile local and national economies. The return of the visitor industry in 2011 has provided a significant boost to Maui's recovery. The increase of large projects on the island in 2012 has put many in the construction industry back to work; however, there is still an absence of residential project development, keeping some tradesmen on the bench.

As these backbones of the island's economy continue to strengthen, so will consumer confidence. Prior to this, even though property values had fallen to a level that is within the affordable price guidelines, many potential homebuyers were reluctant to purchase property, due to unemployment or a lack of job security.

Many who are willing to buy in today's market are finding it easier to obtain financing, as compared to the late 2000's. Interest rates are still at near-record lows which increases the purchasing power for buyers in all market segments.

It is safe to assume that as economic conditions continue to improve, housing units within the affordable and workforce segments will be the most sought after.

The subject will still need to go through entitlement, design and construction processes before sales can occur. As such, release of the subject's 71 single-family homes may be very well timed with the on-going economic and market recovery, and significant demand can be expected for this project.

The project can expect to see heightened demand, due to its Central Maui location and affordable price points. Statistical evidence has clearly shown that under all market conditions, this segment has the most demand. Although the exact pricing of the project units has not been determined, the 71 single-family residences will be targeted towards residents earning 80 to 140 percent of Maui County's median income in accordance with the County of Maui Department of Housing and Human Concerns Affordable Sales Price Guidelines. This development will give entry-level market participants an opportunity for home ownership. After consideration of current economic and real estate market conditions, in addition to forecasts by Hawaii economists, it is our opinion the proposed Waiale 201H Affordable Project will receive substantial interest.

B. PURPOSE OF THE REPORT

The purpose of this report, as of August 25, 2015, is to generate a market analysis with respect to the proposed Waiale 201H Affordable Project.

C. INTENDED USE OF THE REPORT

The intended use or function of this report is to provide real property information and real estate market data in support of a Section 201H-38, HRS affordable housing project.

D. SCOPE OF THE REPORT

The Consultant has agreed to provide a current market analysis of this project by (1) defining and delineating the market area; (2) identifying and analyzing the current supply and demand conditions that make up the specific real estate market; and (3) identifying, measuring and forecasting the effect of anticipated developments or other changes on future supply. The market analysis will be developed and prepared in conformity with, and subject to, the requirements of the Code of Professional Ethics and the Standards of Appraisal Practice of the Appraisal Institute, and the Uniform Standards of Professional Appraisal Practice.

E. STATEMENT OF COMPETENCY

ACM Consultants, Inc. (formerly ACM Real Estate Appraisers, Inc.) has been actively involved in the real estate appraisal and consulting business since 1982. Our business emphasis has focused mainly on the research, consultation and valuation of residential and commercial properties located within the State of Hawaii. The company considers itself competent to conduct a market analysis for a proposed residential project in Wailuku, Island and County of Maui.

F. EXTRAORDINARY ASSUMPTIONS AND HYPOTHETICAL CONDITIONS

As of August 2015, the subject was still in the preliminary stages of planning. A preliminary conceptual map from the Developer provided a visual indication of the proposed layout of the subdivision. The Consultant is not liable for any changes in the project plan past this date, nor for information that has not been released or communicated to the Consultant.

The Consultant has no control over economic conditions and other international events that could have an effect upon Hawaii's economy and the Maui real estate market. As a result, this report has not made any assumptions regarding potential conflicts with other nations, or global external factors affecting economic conditions on Maui.

The counseling report is also subject to standard "Limiting and Contingent Conditions" located in the pages following.

G. CONFIDENTIALITY PROVISION

The contents of this market study are confidential. Release of this counseling report by ACM Consultants, Inc. is limited to you and for your preparation and submission of an Environmental Impact Statement for the proposed Waiale 201H Project. The intended users of this report include Mr. William Frampton, Frampton & Ward, LLC, and the appropriate government agencies to which this report will be submitted. Any further release of this report, or portions herein, is strictly prohibited and you shall accept the risk and liability for any such release without the previous written consent of ACM Consultants, Inc. Further, you shall indemnify and defend ACM Consultants, Inc., and its individual consultants/appraisers, from any claims arising out of any such unauthorized disclosure.

H. CERTIFICATION

The undersigned does hereby certify that except as other-wise noted in this appraisal report:

1. The Consultant's compensation is not contingent upon the reporting of a predetermined value or direction in value that favors the cause of the client, the amount of the value estimate, the attainment of a stipulated result, or the occurrence of a subsequent event.

2. The Consultant has no present or prospective interest in the property that is the subject of this report, and no personal interest or bias with respect to the parties involved. Any "Estimate(s) of Market Value" in the consulting report is not based in whole or in part upon the race, color, or national origin of the prospective owners or occupants of the properties in the vicinity of the property appraised.

3. The Consultant has personally inspected the property, and are signatories of this Certification.

4. To the best of the Consultant's knowledge and belief, all statements of fact and information in this report are true and correct, and the Consultant(s) have not knowingly withheld any significant information.

5. Michelle DuBach, Appraiser Trainee at ACM Consultants, Inc. gathered factual data and conducted preliminary market research. No other person provided significant professional assistance to the person(s) signing this report.

6. The reported analyses, opinions and conclusions are limited only by the reported assumptions and limiting conditions, and are the Consultants' personal unbiased professional analyses, opinions and conclusions.

7. All analyses, opinions and conclusions were developed, and this report has been prepared, in conformity with the Uniform Standards of Appraisal Practice.

8. This counseling report is subject to and in conformance with the Code of Professional Ethics and Standards of Professional Conduct of the Appraisal Institute.

9. This counseling report is to be used only in its entirety and no part is to be used without the whole report. All conclusions and opinions concerning the real estate are set forth in the counseling report were prepared by the Consultant(s) whose signature(s) appears on the counseling report. No change of any item in the counseling report shall be made by anyone

other than the Consultant, and the Consultant shall have no responsibility for any such unauthorized change.

10. The Appraisal Institute, of which this Consultant is a member, has a legal right to review this report.

11. The qualifications of this Consultant, including completed educational requirements of his/her candidacy are located in the Addendum to this report. Any member signing the report has completed the requirements of the Appraisal Institute's continuing education program.

ACM Consultants, Inc.

Dominic Suguitan
Certified General Appraiser,
State of Hawaii, CGA-576
Expiration: December 31, 2015

I. LIMITING AND CONTINGENT CONDITIONS

1) This is a Counseling Report which is intended to comply with the reporting requirements set forth under Standards Rule 5 of the Uniform Standards of Professional Appraisal Practice for a Counseling Report. The information contained in this report is specific to the needs of the client and for the intended use stated in this report. The Consultant is not responsible for unauthorized use of this report.

This report has not been prepared for federally-related mortgage financing purposes, and has not been prepared in compliance with the requirements of Title XI of the Federal Financial Institutions Reform, Recovery, and Enforcement Act of 1989.

2) No responsibility is assumed for legal or title considerations. Title to the property is assumed to be good and marketable unless otherwise stated in this report.

3) The property analyzed is free and clear of any or all lines and encumbrances unless otherwise stated in this report.

4) Responsible ownership and competent property management are assumed unless otherwise stated in this report.

5) The information furnished by others is believed to be reliable. However, no warranty is given for its accuracy.

6) All engineering is assumed to be correct. Any plot plans and illustrative material in this report are included only to assist the reader in visualizing the property.

7) It is assumed that there are no hidden or unapparent conditions of the property, subsoil, or structures that render it more or less valuable. No responsibility is assumed for such conditions or for arranging for engineering studies that may be required to discover them.

8) It is assumed that there is full compliance with all applicable federal, state, and local environmental regulations and laws unless otherwise stated in this report.

9) It is assumed that all applicable zoning and use regulations and restrictions have been complied with, unless a non-conformity has been stated, defined, and considered in this counseling report.

10) It is assumed that all required licenses, certificates of occupancy or other legislative or administrative authority from any local, state, or national governmental or private entity or organization have been or can be obtained or renewed for any use on which the value estimates contained in this report are based.

11) Any sketch in this report may show approximate dimensions and is included to assist the reader in visualizing the property. Maps and exhibits found in this report are provided for reader reference purposes only. No guarantee as to accuracy is expressed or implied unless otherwise stated in this report. No survey has been made for the purpose of this report.

12) It is assumed that the utilization of the land and improvements is within the boundaries or property lines of the property described and that there is no encroachment or trespass unless otherwise stated in this report.

13) The Consultant is not qualified to detect hazardous waste and/or toxic materials. Any comment by the Consultant that might suggest the possibility of the presence of such substances should not be taken as confirmation of the presence of hazardous waste and/or toxic materials. Such determination would require investigation by a qualified expert in the field of environmental assessment. The presence of substances such as asbestos, urea-formaldehyde foam insulation, or other potentially hazardous materials may affect the value of the property. The Consultant's value estimate is predicated on the assumption that there is no such material on or in the property that would cause a loss in value unless otherwise stated in this report. No responsibility is assumed for any environmental conditions, or for any expertise or engineering knowledge required to discover them. The Consultant's descriptions and resulting comments are the result of the routine observations made during the analysis process.

14) Unless otherwise stated in this report, the subject property is evaluated without a specific compliance survey having been conducted to determine if the property is or is not in conformance with the requirements of the Americans with Disabilities Act. The presence of architectural and communications barriers that are structural in nature that would restrict access by disabled individuals may adversely affect the property's value, marketability, or utility.

15) Any proposed improvements are assumed to be completed in a good workmanlike manner in accordance with the submitted plans and specification.

16) The distribution, if any, of the total valuation in this report between land and improvements applies only under the stated program of utilization. The separate allocations for land and buildings must not be used in conjunction with any other appraisal and are invalid if so used.

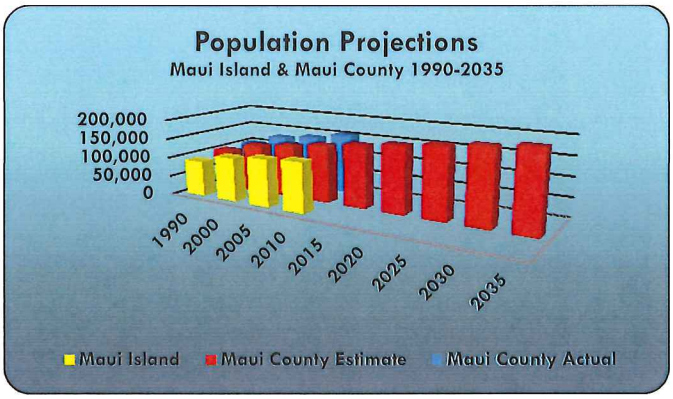
17) Possession of this report, or a copy thereof, does not carry with it the right of publication. It may not be used for any purpose by any person other than the party to whom it is addressed without the written consent of the consultant, and in any event, only with property written qualification and only in its entirety.

18) Neither all nor any part of the contents of this report (especially any conclusions as to value, the identity of the Consultant, or the firm with which the Consultant is connected) shall be disseminated to the public through advertising, public relations, news sales, or other media without prior written consent and approval of the Consultant.

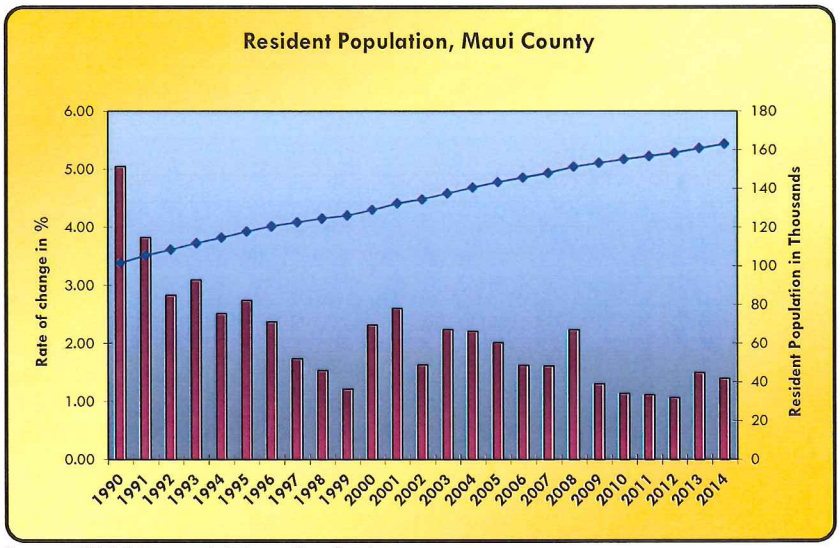
PART II – FACTUAL DATA

A. REGIONAL DATA - MAUI COUNTY

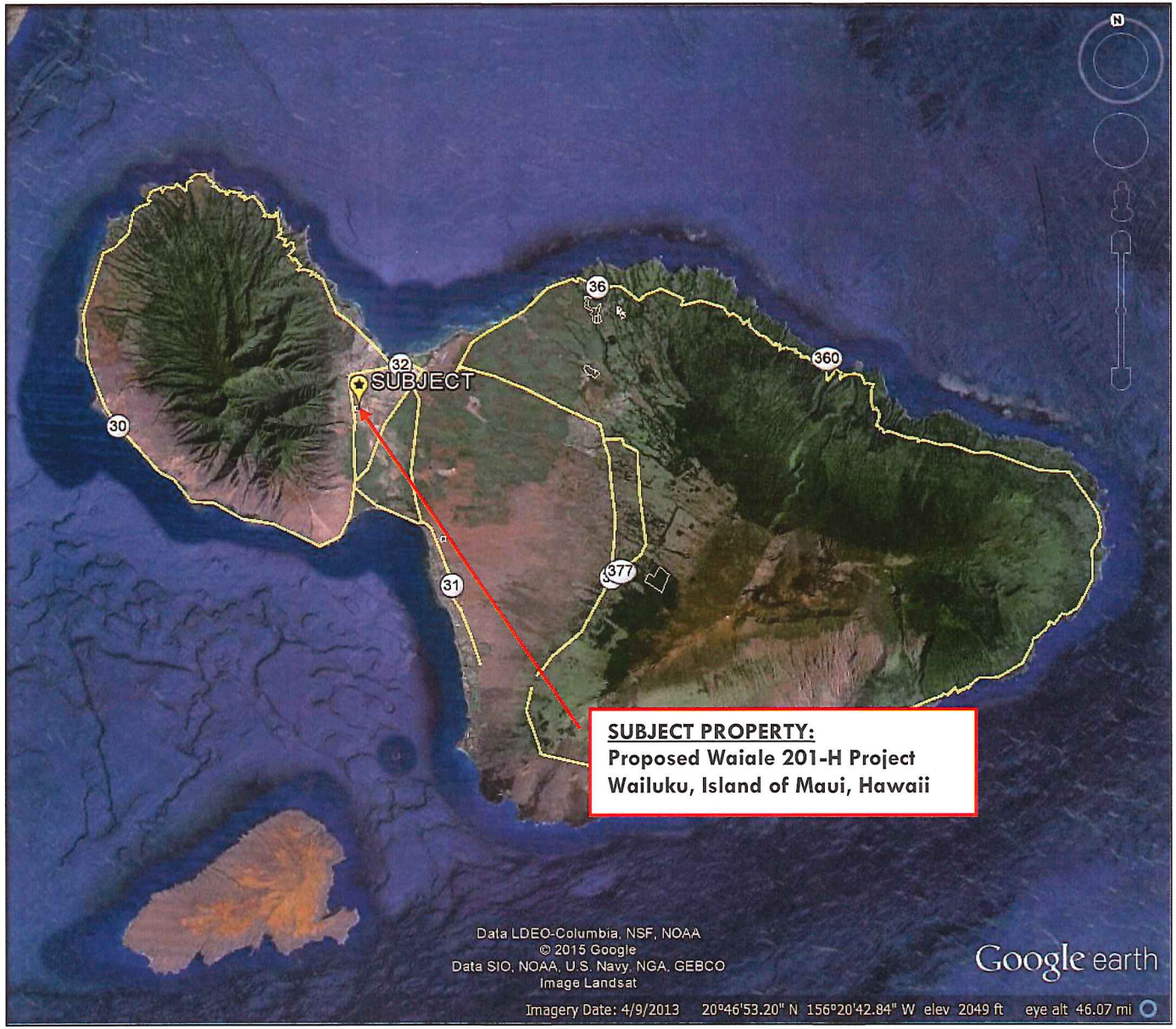
Maui County is the third most populous of the four counties of Hawaii, with a total resident population of 154,834 (2010 Census); a change of 20.1 percent from 2000 and 52.2 percent since 1990. Maui County consists of the islands of Maui, Molokai, Lanai, and Kahoolawe. Ninety percent (90%) of County residents live on the island of Maui, which consists of a total of 734.5 square miles, or 470,080 acres. Population Projections for Maui County and the Island Maui are illustrated on the table below.



The following graph illustrates the resident population change in Maui County from 1990 through 2014. The graph indicates that although Maui's population has been steadily growing, it is now rising at a lower rate.



Source: UHERO Economic Information Service


SUBJECT
30
32
36
360
31
377
SUBJECT PROPERTY:
Proposed Waiale 201-H Project
Wailuku, Island of Maui, Hawaii
Data LDEO-Columbia, NSF, NOAA
© 2015 Google
Data SIO, NOAA, U.S. Navy, NGA, GEBCO
Image Landsat
Imagery Date: 4/9/2013 20°46'53.20" N 156°20'42.84" W elev 2049 ft eye alt 46.07 mi
Google earth

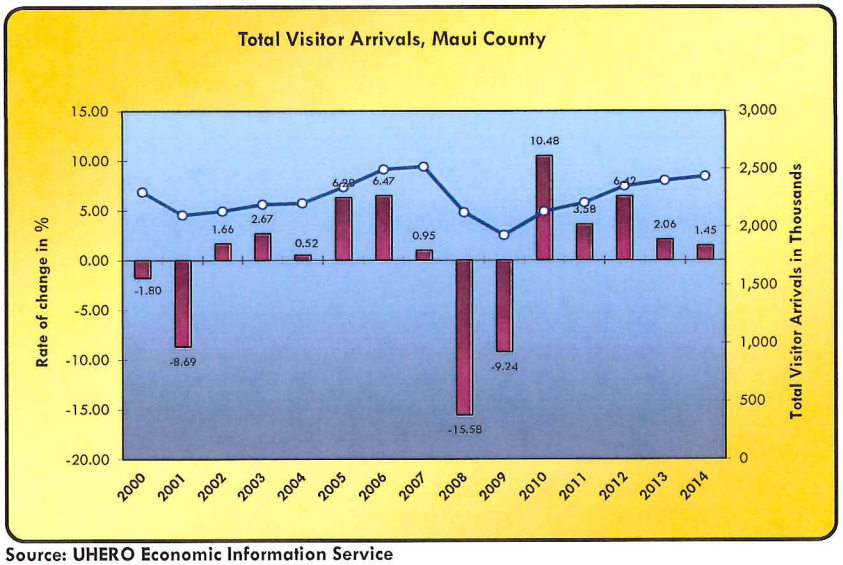
Like all the Hawaiian Islands, Maui, Molokai and Lanai are blessed by warm air temperatures year-round, and ocean waters that range from 72-77°F in winter to 77-81°F in summer. The islands' distance from other continents, the moderating effects of the surrounding water and the tropical location combine to create this pleasant climate. Hawaii's topography, particularly the mountains and valleys and location of each island, contributes to the great variety of microclimates within very small areas. On Maui, the West Maui Mountains and Haleakala are the primary geological features affecting the weather. Due in part to the above geographical factors, Maui, for twenty out of the last twenty-two years, was selected "Best Island in the World" by readers of Condé Nast Traveler magazine.

Visitor Industry

Historically, Maui hotel occupancies typically exceed any area in the state with the exception of Waikiki. Its popularity is due to a number of factors. Maui receives the good fortune of location and climate. The island also has the infrastructure in place to move tourists to a diverse variety of activities, and offers a wide range of visitor accommodations to offer any traveler, from premier, upscale resorts to condominiums available for families and groups on a budget. Resort accommodations on Maui have consistently ranked above other Hawaii resort destinations. In the Condé Nast Traveler magazine, eleven (11) of the "Top 25 Hawaii Resorts" for 2014 were Maui County resorts. The Wailea Beach Villas topped the list; while other Maui County resorts garnering honors included: Honua Kai Resort & Spa (3rd); Andaz Maui at Wailea Resort (4th); Four Seasons Resort Maui at Wailea (6th); The Fairmont Kea Lani (9th); Ritz-Carlton, Kapalua (13th); Grand Wailea (15th); Westin Maui Resort & Spa (18th); Hyatt Regency Maui Resort & Spa (22nd); Makena Beach & Golf Resort (24th) and Travaasa Hana (25th).

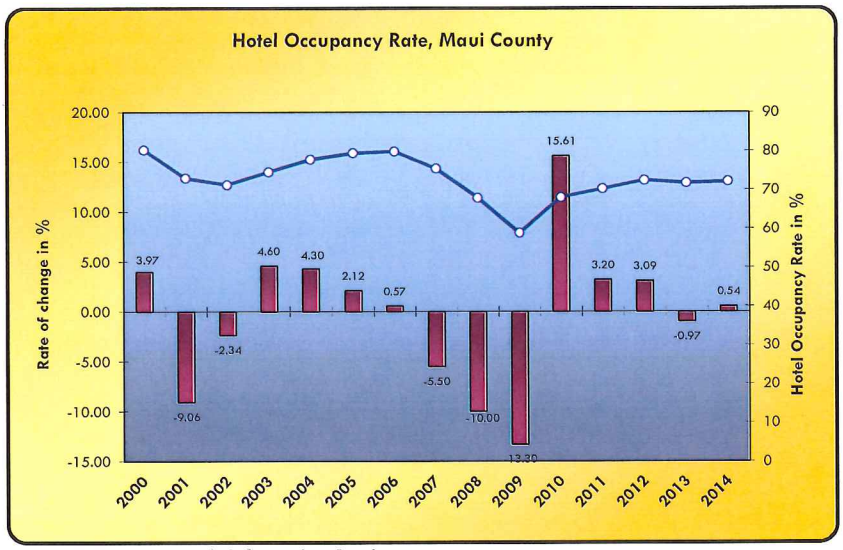
Cultivating a worldwide image as a premier, upscale tropical island destination, Maui is highly dependent on tourism. It is the only county government in Hawaii that spends money to support the tourism industry.

Tracking the tourism counts during this decade begins with the effects of the Great Recession, which began in late 2007. The financial crisis, led by the crash of the housing market, affected the financial sectors in the United States and overseas, and had a drastic impact on the tourism industry, causing tourism counts and hotel occupancy rates to fall significantly. In 2008, the number of visitor arrivals to Maui dropped 15.6 percent over the prior year to 2,129,040. In 2009, the number of visitors dropped 9.2 percent over 2008, to 1,932,360. However, in 2010, transition in the economy from recession to recovery began and visitor arrivals to Maui experienced a 10.5 percent increase. As economic conditions show signs of stability, visitor arrivals on Maui continued to increase from 2011 through 2014.



Source: UHERO Economic Information Service

In 2014, Maui County had the second highest occupancy rate of all the Hawaii counties at 72.2 percent, behind Oahu at 84.5 percent. Meanwhile, Kauai showed occupancy of 70.1 percent and Big Island at 61.8 percent. Maui's hotel occupancy rate steadily increased from 2010 to 2012. In 2013 and 2014, hotel occupancy rates on Maui experienced minimal change with a one percent decrease and a one percent increase year over year, respectively. Both tourism counts and hotel occupancy rates are increasing, but the numbers are still below pre-recession years.



Source: UHERO Economic Information Service

Maui offers a variety of tourism activities, including ocean recreation, helicopter tours, biking down Haleakala, zip lining and golfing, among other numerous activities. With 120 miles of coastline and 30 miles of beaches, Maui's ocean recreation industry

include windsurfing, snorkeling, scuba diving and sailing cruises, which leave regularly from Lahaina and Maalaea Harbors.

Maui also features theme destinations, such as the Maui Tropical Plantation, Maui Nui Botanical Gardens, Alii Kula Lavender Farm, and Surfing Goat Dairy. The premier theme destination on the island is the Maui Ocean Center. This center, featuring the marine environment of the Hawaiian Islands, is modeled after five other aquarium parks developed by Coral World International. The ocean center is located just behind the Maalaea Boat Harbor, and is easily accessible from Kahului/Wailuku, and the resort areas of Lahaina/Kaanapali and Kihei/Wailea. The Maui Ocean Center anchors the 18-acre Maalaea Harbor Village, which also includes a retail strip shopping center, restaurants and other services.

As the global economy continues to recover, it is anticipated that Maui will continue to be a favored destination for mainland and international tourists. In June 2015, U.S. News and World Report named Maui "#1 Destination in the United States". Maui was also named "Best Island in the United States" and "Second Best Island in the World" in TripAdvisor's 2015 Traveler's Choice Awards.

Real Estate

Residential real estate on Maui can be divided into three broad categories (single-family homes, condominiums and residential lots) and five important geographic regions (Central, East, West, South and Upcountry).

All of the neighborhoods have single-family housing and residential lots. However, several neighborhoods such as Kapalua, Kaanapali, and Wailea are comprised mainly of luxury housing. Areas such as Kahului and Wailuku have minimal luxury housing, and all other areas on the island contain a mix.

Condominium units may be found in all areas of the island, except Upcountry and East Maui, where condominium properties are virtually non-existent. South Maui and Central Maui have very few leasehold condominiums. West Maui has a mixture of both fee simple and leasehold condominiums.

Areas such as Upcountry and East Maui are made up primarily of agricultural and rural properties. All other areas are limited in this property type.

Owner-occupied housing on Maui accounts for 58 percent of all occupied housing units. The total housing stock grew at a rate of about 1,000 units a year in the 1980's. The total accelerated to 1,500-2,000 new units in the 1990's, well short of demand. Housing inventory growth remained at about this level prior to the recession. The population on Maui has expanded tremendously for the past 10 to 12 years, but as the economy recovers from the recession, housing supply has expanded at a slower pace than

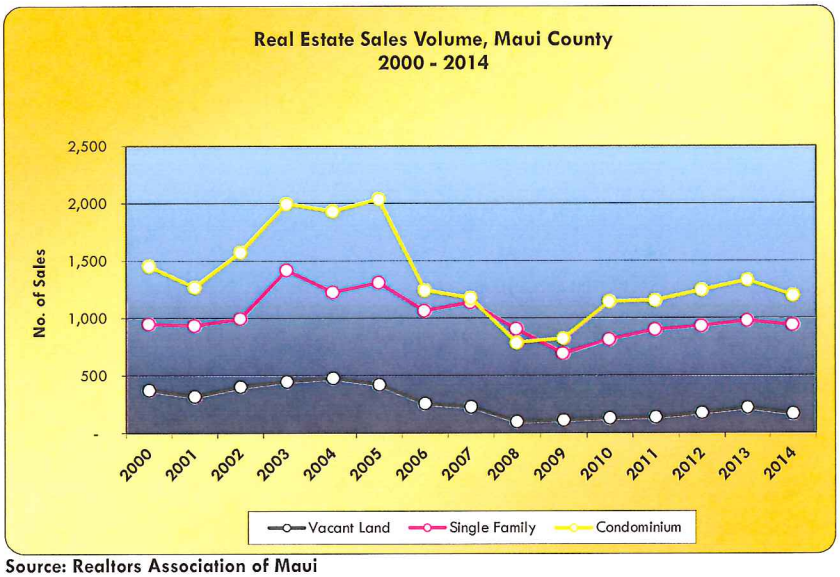
historic trends. As a result, demand for housing has outpaced supply and home prices and rents continue to rise.

Prices in the Maui residential real estate market peaked in 2006, when the median sales price for a single family home was $706,640. Prices declined year over year from 2007 through 2011, with the highest percent decrease of 13.9 percent occurring in 2009. The median sale price for a single-family home bottomed out in 2011 at $435,000. Since then, prices increased, with year over year increases to $567,750 in 2014.

Average 30 year mortgage rates in the United States declined steadily from 6.4 percent in 2006 to 3.7 percent in 2012. Rates moderately increased to 4 percent in 2013 and 4.2 percent in 2014.

The following summarizes a sales volume history for Maui County from 1990 to 2014, which includes resales and new project sales.

Year	Vacant Land	Single Family	Condominium
1990	298	560	1,459
1991	116	430	593
1992	120	382	496
1993	121	361	461
1994	148	404	592
1995	118	331	495
1996	126	451	577
1997	182	507	812
1998	276	641	999
1999	408	965	1,348
2000	372	951	1,456
2001	318	938	1,274
2002	402	997	1,578
2003	447	1,420	2,001
2004	477	1,228	1,935
2005	421	1,311	2,041
2006	255	1,066	1,247
2007	226	1,138	1,179
2008	97	907	788
2009	110	693	826
2010	127	814	1,147
2011	134	901	1,157
2012	173	933	1,248
2013	218	980	1,334
2014	166	942	1,201

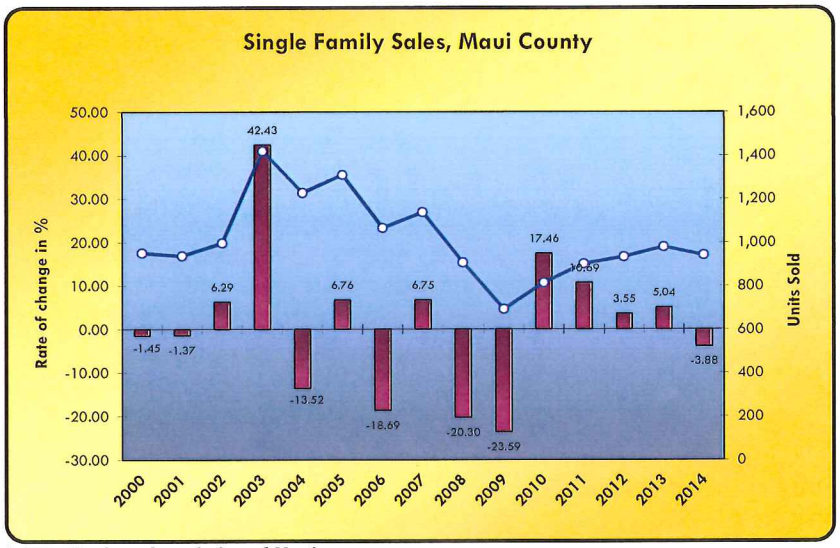


Source: Realtors Association of Maui

The number of single family home sales increased significantly between 2002 and 2006. Single-family sales saw noteworthy increases in 2003, where the number of single-family sales leaped upwards of 42 percent. There was a 13 percent dip in 2004, followed by a rebound of almost 7 percent in 2005. For 2006, there was a decrease of 18 percent, with a subsequent upward bounce of almost 7 percent in 2007. Then, with the eroding economic conditions and financial crisis in 2008 and 2009, Maui County experienced a 20 and 23 percent drop in sales in each of the respective years. This was the biggest decline in sales since 1991, when sales of single-family homes dropped by 25 percent.

From 2010 through 2013, the number of single family sales increased year over year, due to historically low interest rates and improved demand. In 2014, there was a four percent decrease in the number of single family sales, which may be attributed to low supply in the housing market.

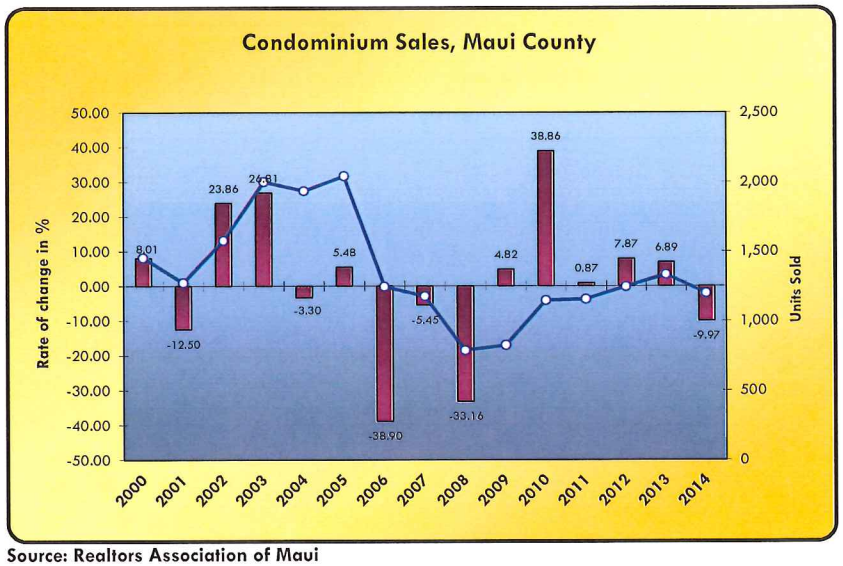
The following graph further illustrates the single-family sales volume history for Maui County from 2000 to 2014.



Source: Realtors Association of Maui

The number of condominium sales peaked in 2005, with 2,041 sales. A decrease in the number of condominium sales occurred in 2006, with a 39 percent decrease from 2005. The number of condominium sales continued to decrease year over year through 2008, with 788 sales. 2009 experienced an increase of 5 percent from 2008, and in 2010, the number of condominium sales were up by 39 percent from 2009. Growth in this category of homes continued year over year through 2013. In 2014, there was a 10 percent decrease in the number of condominium sales.

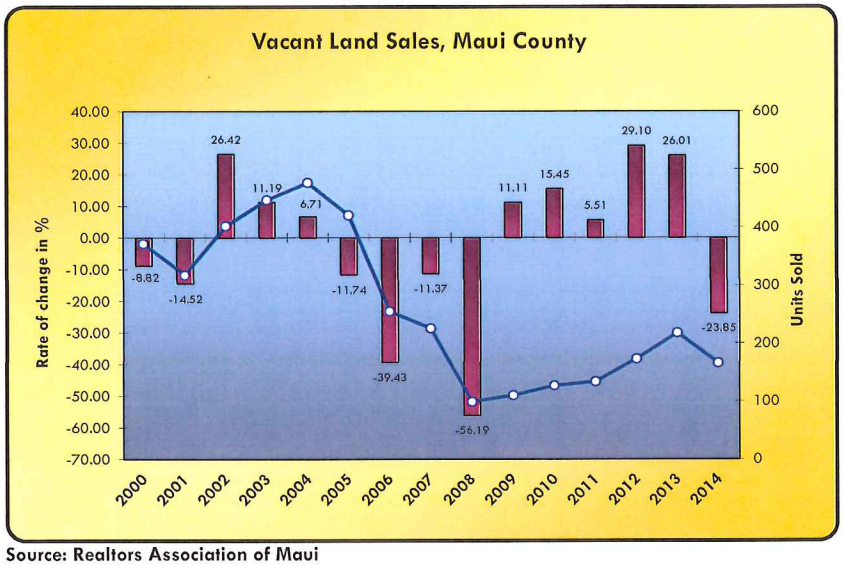
The following graph further illustrates the condominium sales volume history for Maui County from 2000 to 2014.



Source: Realtors Association of Maui

From 2005, the number of land sales on Maui followed a downward trend until hitting a low of 97 sales in 2008, a decrease of 56 percent from 2007. The first increase in four years was witnessed in 2009, as vacant land sales volume increased by 13 percent and again increased in 2010 by 15 percent. In 2011, the volume of land sales increased again but at a slower pace of about 5 percent. In 2012, the pace of sales increased with 29 percent greater sales volume than in 2011, while 2013 saw sales increase at a rate of 26 percent over 2012. In 2014, a decrease in the number of vacant land sales decreased by 24 percent from 2013. Many developers, realtors and lenders conclude the passage of the Workforce Housing Ordinance (December 2006; revised 2007, 2008, 2010 and 2014) and the Water Availability Ordinance (December 2007; revised 2011 and 2012) contributed to the severe decline in sales of vacant land.

The following graph further illustrates the vacant land sales volume history for Maui County from 2000 to 2014.



Source: Realtors Association of Maui

Median prices continued to rise until 2006 for all categories of real estate. The average monthly median prices in 2006, for land parcels, single-family homes and condominium units, increased 29 percent, 2 percent and 33 percent, respectively. In 2007, average monthly median prices for land and single-family property decreased 19 percent and 10 percent, respectively, while the average median price for a condominium increased 6 percent. It should be noted that the average condominium median price was heavily influenced upward by December closings in Honua Kai, a luxury oceanfront property. For 2008, the average monthly median prices for single-family homes retreated by 8 percent. Vacant land saw a gain of about 4 percent over 2007, while condominiums decreased by 6 percent. In 2009, vacant land median price again increased by little over 3 percent. However,

single-family and condominium properties decreased by 13 and 12 percent, respectively. As the economic recession continued into 2010, the median sales price for all property types declined. Vacant land showed the largest drop of 33 percent from 2009 levels, and single family and condominium properties decreased by 7 and 16 percent, respectively. Median prices continued to decline in 2011, with vacant land leading the pack at 27 percent, condominiums at 18 percent, and single-family prices at 6 percent. Since 2012, median prices for all property types have been gradually recovering although it is still far from the market peak of 2006-2007.

Construction and Development

Maui's construction industry is gradually recovering, with values still well below pre-recession levels. The value of total private permits decreased by 11.4 percent in 2013 from 2012, and increased in 2014 by 36.5 percent. In 2013, the Commercial and Industrial category experienced a strong year of growth, with a 45.9 percent increase of permit value over 2012. The main contributor to the growth was the Maui Hyatt Vacation Club project, which included a $75 million permit for a hotel building and a $12 million permit for a spa and pool. The Residential category increased by 8 percent in 2014 from 2013. The Additions and Alterations category increased in 2014 by 150.3 percent from 2013. The significant increase to the Additions and Alterations category may be from photovoltaic panel installations, as the state legislature recently passed a bill calling for 100 percent renewable energy by 2045.

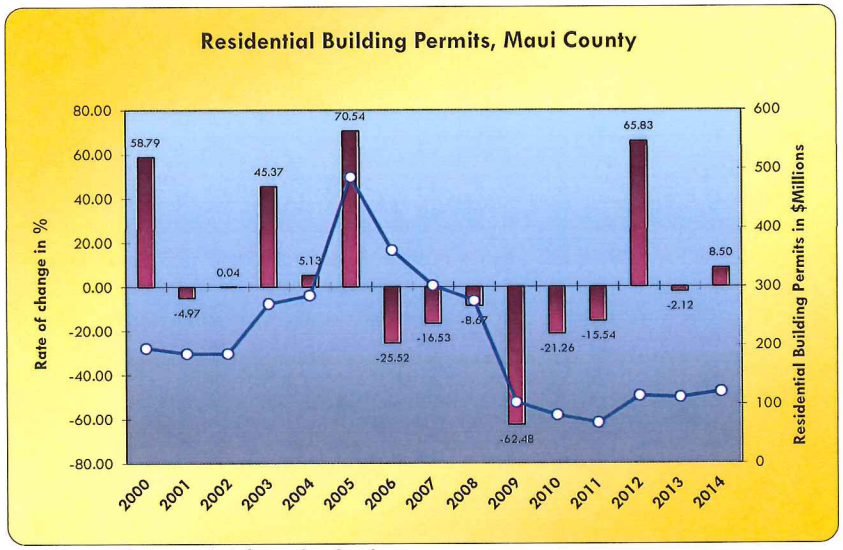
Recently completed or currently developing commercial projects in Central Maui include Puunene Shopping Center, Maui Lani Shopping Center, and Kehalani Village Center. Puunene Shopping Center in Kahului features a 141,241 square foot Target store, which opened in March 2015. At completion, the center will contain a total of 275,000 square feet of total leasable retail space. Kehalani Village Center, located in Wailuku, includes Longs Drugs, Foodland, McDonalds and Aloha Petroleum gas station, with additional parcels available for sale or under development. The Maui Lani Shopping Center, also in Wailuku, was completed in 2013, and added 103,249 square feet of leasable space, including a new 58,770 square foot Safeway.

The most recent commercial development in West Maui opened in 2013. The Outlets of Maui is the first outlet center on Maui and second in the state, and features 29 outlet retailers, all new to the community. In 2008, The Lahaina Gateway was completed and injected an additional 137,000 square feet of retail space.

South Maui's established commercial developments include The Shops at Wailea, Wailea Town Center, Piilani Village Shopping Center and Wailea Gateway Center. Wailea Gateway Center

opened in 2012 and is the most recent addition to South Maui. It contains offices and retail tenants. The Shops at Wailea and Wailea Town Center target the high-end residents of this resort community and Wailea's upscale visitors. Phase I of Wailea Town Center was completed in 2006 while Phase II was completed in 2007. It contains neighborhood services which include retail and office owner-occupants, as well as commercial condominium units and residential units. Current condo owners in this project include Coldwell Banker and First Hawaiian Bank. Piilani Village Center features a Safeway, Outback Steakhouse, Hilo Hattie and Starbucks.

The following graph illustrates the trend of residential building permits in Maui County from 2000 through 2014. As shown, residential permit values peaked in 2005 at the height of the real estate market. Although the economic recession has played a big part in the decrease of construction of residential properties; the enactment of two ordinances—the Workforce Housing Ordinance (December 2006; revised 2007, 2008, 2010 and 2014) and the Water Availability Ordinance (December 2007; revised 2011 and 2012), which have forced stringent requirements on developers, has also greatly affected construction on Maui.



Source: UHERO Economic Information Service

In Central Maui, the majority of the recent residential construction is within the Kehalani and Maui Lani project districts. Situated in the Kehalani district are Koa, which offers both house lots and single-family homes; Akolea and Cottages, both consisting of house and lot packages; Villas at Kehalani and Milo Court, which are townhouse condominium developments. Recently completed projects include Na Hoku and Traditions (single-family homes), Sand Hills Estates (house lots), and Parkways (both house lots and single-family homes). Presently, there are two ongoing projects at Maui

Lani including New Traditions at Maui Lani and Parkways at Maui Lani.

In 2008, Spencer Homes completed construction of an affordable housing project, Waikapu Gardens, which includes 410 single-family homes. Approximately half of the houses met County affordable housing pricing requirements. This project was welcomed by the community as "affordable" prices were stated to be below $300,000. This project gained approval by the Maui Nui Affordable Housing Taskforce which was set up in response to the growing need for affordable housing on Maui. Phase II of Waikapu Gardens is currently in the process of being developed with 56 additional single-family homes south of the existing Waikapu Gardens project.

Up to 2006, Kihei experienced an upswing in residential development brought upon by ongoing residential projects including Ke Alii Ocean Villas (townhouse condominiums) and Moana Estates (single-family homes) by Towne Development, Kamalii Alayna (single-family homes) by Betsill Brothers, Inc., and Signature Homes' Hokulani Golf Villas (residential condominiums). Other current South Maui projects are Kilohana Waena (house lots) and Kai Ani (townhouse condominiums).

Retailing

The most recent significant retail development on Maui is Puunene Shopping Center. In March 2015, a 141,000 square foot Target store celebrated their grand opening. The center will offer a total of 275,000 square feet of leasable space upon completion.

In 2013, The Outlets of Maui, located on the famous Front Street in Lahaina opened. The 148,000 square foot mall is Maui's only outlet mall, and the world's only outlet mall located in a historic oceanfront location. Retailers include Michael Kors, Coach, Gap, Carter's, Banana Republic, Crocs and Skechers.

The Maui Lani Shopping Center, located in Wailuku, opened in 2012. This center contains 103,000 square feet and is anchored by a new 59,000 square foot Safeway store. Other tenants include Supercuts and Ululani's Hawaii Shave Ice.

In 2007, the Lahaina Gateway opened. Situated along Honoapiilani Highway across from the Lahaina Cannery Mall, it was dubbed as a "lifestyle center" with specialty retail shops, services and restaurants. This 137,000 square foot center includes anchor tenants such as Office Max, Barnes & Noble, and Lahaina Farms, a supermarket owned by Foodland's Sullivan family.

The 150,000-square foot Shops at Wailea opened in 2000, offering upscale shopping in its high-end retail shops. Tenants include Louis Vuitton, Coach, Bally, Fendi, Tiffany & Co., Banana Republic, and Georgiou. Restaurants in this mall include Ruth Chris

Steak House, Tommy Bahama Café and Emporium, and Longhi's. Other retailers include Crazy Shirts, Hot Topix, Gap, Wolf Camera, and Whalers General Store.

In 1997, Maui Marketplace on Dairy Road was built, with 275,000 square feet, modeled after Oahu's successful Waikele Center. This center contains the likes of Lowe's Hardware, Office Max, Sports Authority, Old Navy, Petco, Pier One Imports, Burger King and Starbucks Coffee.

Wal-Mart and Home Depot are also located on Dairy Road, immediately west of the Maui Marketplace. These outlets joined earlier arrivals Costco and Kmart, as well as Alexander & Baldwin's neighboring Triangle Square.

In Kaanapali, Whalers Village has taken a turn toward the luxury market popular with Japan tourist. After completing a $3 million renovation and a change in its tenant mix, this oceanfront center now aims for both westbound and eastbound visitors. Visitors from Japan are targeted with Duty Free Shoppers, Louis Vuitton, Prada, Loewe and other high-end shops.

Agriculture

Agriculture on Maui has historically been dominated by larger operations like Maui Land & Pineapple Company and Alexander & Baldwin's Hawaii Commercial and Sugar (HC&S).

HC&S survives as Hawaii's only remaining sugar operation due in part to its economies of scale, its land configuration (a relatively compact and contiguous land area in the isthmus of the Valley isle), and its commitment and ability over the years to reinvest and upgrade plant and equipment. However, the last active sugar plantation in the state is facing other hardships, namely water. Drought conditions on Maui between 2007 and 2009 contributed to low sugar yields. According to HC&S, future viability is dependent on continued stream diversion; however, there has been opposition to this continued practice. HC&S continues to re-evaluate its operations to remain viable, including consideration of potential biofuels and other energy alternatives.

Pineapple now confronts more foreign competition from places like Thailand. In 2007, Maui Land & Pineapple Company shut down the canning portion of its operation to rely solely on the more profitable fresh fruit segment. Downsizing of the plantation occurred in 2008, which resulted in a reduction of over 200 employees. In December 2009, Maui Land & Pineapple Company announced that it would be shutting down its agricultural arm, citing continued annual losses. A new company, Haliimaile Pineapple Company, was formed the following week and was able to take over a portion of the pineapple operations.

In addition to sugar and pineapple cultivation, Maui also offers opportunities for agricultural diversification by small farmers and large agribusinesses. Top among new agricultural products are: papaya, cut flowers, coffee, Kula onions and strawberries, and Chinese cabbage from Kula. Molokai offers its sweet potatoes, Molokai lettuce and alfalfa, as well as taro.

High-Tech

Maui's contribution to Hawaii's high-tech industry remains pre-eminent in the state. It also represents genuine diversification of the economy. The Maui Research and Technology Park in Kihei has its entire infrastructure in place, and has five office buildings, totaling 180,000 square feet of lab, office and data center space. Most important, it houses one of the country's most powerful supercomputers. The park now hosts over 20 companies and approximately 400 employees on 415 acres.

With access to one of the most powerful supercomputers in the world, funded by the U.S. Air Force, the Maui Research and Technology Park is continuing its efforts to diversify the Maui economy into something fundamentally different from what exists in the county or anywhere else in the state.

The park is sticking to its long-run strategic plan to capitalize on its location at the center of the Pacific Basin. Its extensive fiber-optic network to the U.S. Mainland makes it one of the most fiber-rich environments in the world, greater than many facilities actually located on the Mainland.

Build-out at the park has been slower than anticipated. Besides the five office buildings previously discussed, the only additional development has been a production facility for local beer manufacturer Maui Brewing Company, completed in 2014. Kihei Charter School has secured funding to build a new campus within the park. However, a proposed skilled nursing and intermediate care facility was denied a certificate of need in March 2015. To stimulate grown within the subdivision, the developers are currently petitioning the county to amend the Kihei Research and Technology Park District zoning ordinance. Notable changes being sought are a wider array of allowable uses and smaller minimum lot sizes.

County Government

Maui County is unique in having several inhabited islands in its jurisdiction: Maui, Molokai, as well as Lanai, and the uninhabited island of Kahoolawe.

Maui County has an elected Mayor and County Council, and the Liquor Control Commission is semi-autonomous with appointed directors. Although all courts are conducted by the State, the County is responsible for prosecution and the mayor appoints the prosecutor. The council has nine members, each residing in one of nine districts; however, voters cast ballots for all nine seats. Unlike other states, Hawaii has only two layers of government: State and

County. The State is responsible for many functions that elsewhere come under the jurisdiction of municipalities, such as schools, hospitals, and airports. Also, unlike other states, Hawaii has statewide zoning implemented by the State Land Use Commission. The County has zoning authority within the boundaries established by the commission.

The lack of affordable housing continues to be a concern within the County of Maui. Maui is one of the most expensive counties for single-family home buyers. A record high median price of $780,000 was set in July 2006 for a single-family home. Since then, the median price for a single-family home fell through 2011, with an average monthly median sales price of $435,000 in 2011. From 2012 to 2014, the median single-family sales price increased year over year to $567,750 in 2014. According to the latest State of Hawaii Data Book, 41.4 percent of the households pay more than the recommended limit of 30 percent of their income on housing. In fact, 27.1 percent pay more than 40 percent on housing.

This heightened effort by the County resulted in the passage of Ordinance 3418 on December 5, 2006, under which all proposed developments are subject to review if they are to contain five or more units or lots. Under this ordinance, if the average sales price is projected to be less than $600,000, 40 percent of the total units must be priced to meet the various affordable categories. If the average sales price in the project is $600,000 or more, then 50 percent of the units must be affordably priced. An alternative to providing the affordable units is to pay an in-lieu fee equal to 30 percent of the average projected sales price of the market rate units multiplied by the number of affordable units required in the development. Or, the owner may elect to provide land which is equal in value to the in-lieu fee. This ordinance has had a profound effect on residential development since its passage. The subsequent reduction in proposed projects had many in the building and real estate industries questioning whether the ordinance created too much of an obstacle for developers.

In an effort to stimulate residential construction, the ordinance was revised by the County Council as Ordinance No. 3719, effective February 26, 2010, reducing the amount of required affordable housing units built on site to 25 percent, provided the average sales price of the market units is projected to be less than $600,000. If the average sales price in the project is $600,000 or more, then 50 percent of the units must be affordably priced. The new law also clarified the calculation of required affordable units built off site; based on 50 percent of the total number of on-site market units, regardless of their projected average sales price.

The water availability ordinance is another law that has made an impact on the development community. On December 14, 2007,

the County of Maui passed into law Ordinance 3502. As a result, the Department of Water Supply (DWS) is presently restricting the issuance of meters for all uses in the central and south Maui service areas and this bill restricts issuance of any building permits until the DWS can issue a meter consistent with the provisions of the bill. In order to do so, the DWS director needs to provide verifiable, long-term supply of water to the property. Landowners and professionals in the development community have been openly critical of the ordinance, some calling it a de facto moratorium on housing. Not surprisingly, sales of vacant development lands have been impacted.

The ordinance was revised by the County Council as Ordinance No. 3818, effective April 5, 2011, exempting infill development (10 residential dwellings or less) within areas already developed and having consistent land use; residential workforce housing units built by a qualified housing provider; residential development projects with 100 percent affordable units; and public or quasi-public development projects. The exemptions are only applicable within areas serviced by the Water Department's Central or West Maui water systems. An April 10, 2012 revision by the County Council, Ordinance No. 3934, allows developers to defer conformance with the WAO until subdivision construction plans are to be approved, rather than upon submittal. Time will tell if the latest versions of both ordinances will help to achieve their intended goals.

B. NEIGHBORHOOD DESCRIPTION

Since real estate is fixed in location, its marketability and rentability are strongly influenced by economic and social trends in its immediate environment. The continuing attractiveness of this neighborhood environment to potential users and tenants, and its competitive relation to those of substitute properties, must therefore be evaluated and forecast by the consultant. In particular, perceived neighborhood trends affect both the quality and quantity of the revenues the subject property can reasonably be expected to generate.

A neighborhood of income-producing properties is a geographic area characterized by similarity of uses and/or users, within which any change has a direct and immediate effect on the subject property and its value.

The geographic area surrounding the subject property is defined by physical and man-made boundaries, and encompasses an area known as Wailuku-Kahului. This region is located on the north shore of the Island of Maui and encompasses the civic and business centers of Wailuku and Kahului. The island's major seaport and primary airport are also contained within the boundaries of this region. The surrounding agricultural land of Central Maui, and the eastern half of the West Maui Mountains are also within the Wailuku-Kahului neighborhood.

The boundaries of the Wailuku-Kahului region are the northern shoreline from Poelua Bay to Baldwin Park on the north, Kailua Gulch and Lowrie Ditch on the east, Spanish Road to Waikapu Road to Honoapiilani Highway to Pohakea Gulch on the south, and the Wailuku Judicial District boundary on the west.

Population is concentrated in the urban centers of the region. Wailuku has maintained its role as the civic-financial-cultural center while Kahului has strengthened its role in recent years as the business and industrial center.

In addition to the urban centers of Wailuku-Kahului, the region also includes the more rural settlements of Waihee to the north and Waikapu and Puunene to the southeast. Agricultural lands are adjacent on the lower slopes of the West Maui Mountains and in the central plain south and east of Kahului. This green border is a significant part of the settlement pattern because of its open space and economic value. Kahului Harbor and Airport are major land users along the Kahului shoreline. As major ports of entry for people and goods, they serve as an important center of jobs and economic activity.

The major thoroughfares through Kahului and Wailuku are Kaahumanu Avenue which begins in Kahului and provides primary access to Wailuku as well as Lahaina and Kihei; Hana Highway, which is a continuation of Kaahumanu Avenue, leads from Kahului to the eastern or "upcountry" portions of the island; and Puunene Avenue which provides access to all major areas in Kahului and ultimately leads to Kuihelani Highway which provides by-pass access to Lahaina and Kihei. Kaahumanu Avenue also runs into Main Street, and via secondary access, runs into Waiehu Beach Road and Lower Main Street.

Kahului, adjacent to Wailuku, is situated on the northwest portion of the island of Maui, and is the central commercial, industrial and residential area of Maui. Kahului Town contains Maui's major shopping centers, centralized industrial areas, financial institutions, medical office facilities and business offices. Additionally, the Kahului Airport and Kahului Harbor are located in Kahului proper and centrally provides the majority of firms providing various goods and services throughout the island, as well as to Lanai and Molokai. Consistent with its central location, post office facilities, community library, parks, schools (elementary, intermediate, high school and a community college), churches of various denominations, entertainment facilities, food outlets and a fire station are located in Kahului.

Wailuku, at one time, was the heart of Maui's business activities. Decentralization of business to nearby Kahului and lack of maintenance and modernization of buildings to keep up with the new shopping habits brought about a gradual decline. However, since the creation of the municipal parking area in Wailuku, several new buildings have been built or renovated and a rejuvenation of the Wailuku Town is being experienced. The Kahului-Wailuku Community Plan envisions Wailuku as the "governmental, cultural and professional center of Maui". Located in Wailuku are the various government agencies, courts, hospital, major recreational facilities and police station.

Wailuku Fire Station sits in the heart of Wailuku Town, and until the opening of the Kahului Fire Station, was the only one in Central Maui. Kahului Fire Station is a 21,300 square foot facility that includes two main buildings and is situated on Dairy Road.

The Maui Memorial Medical Center, which is Maui's primary facility of medical and emergency service, is located between the connecting boundaries of Kahului and Wailuku. In 2006, work was completed on a new wing for the hospital. The Police Station is also conveniently located nearby.

Numerous pre-schools, elementary, grade and high schools are located throughout Kahului and Wailuku, with the University of Hawaii Maui College located on Kaahumanu Avenue.

In order to fully understand and appreciate Kahului and Wailuku's potential for expansion, as well as factors that could limit the growth of this region, a brief summary of recent or proposed developments in Central Maui, along with a few important issues facing future development are in order.

RESIDENTIAL

The residential districts surrounding these two centers are significantly different in character. Wailuku Town is comprised of older residential areas, intermixed with business uses, varying lot sizes, and a more haphazard street pattern representative of older subdivisions. Surrounding Wailuku Town are more modern residential subdivisions, primarily within the Kehalani Project District. The residential areas in Kahului are also varied. The older projects feature wide curvilinear streets and larger lots; whereas the newer subdivisions, primarily within the Maui Lani Project District, features smaller lots, narrow roadways, and some zero lot line development. There are also several gated communities with golf-course frontage.

Kahului

Currently in Kahului, the major residential area is represented by Alexander & Baldwin, Inc.'s Kahului Town Development. This subdivision consists of 14 increments that were built between 1951 and 1981. There are a total of 3,400 lots within the 14 increments. Kahului Town is distinguished as the first planned "new town" in Hawaii to provide quality housing at affordable prices.

Today, Kahului Town is a bustling residential community. The ongoing Maui Lani Project District development will include up to 3,000 new residential units, ranging from executive golf homes to affordable units and span 1,000 acres on the south side of Kahului and east side of Wailuku. In addition to single-family and multi-family residential units, the Maui Lani development includes a golf course, churches, a school and a recreational center. Already, several phases have been constructed and sold over the past several years including The Greens, The Grand Fairways, The Bluffs, The Islands, Sandhills Estates, Legends Phase I and II and Na Hoku. New developments in Maui Lani include New Traditions, a 153 house-and-lot single-family subdivision being developed by Schuler Homes, and the on-going Parkways at Maui Lani, a 201-lot single-family subdivision that recently commenced construction of Phase I by Towne Development.

Wailuku

In Wailuku, the older residential homes are mixed with small businesses throughout central Wailuku. There are three primary residential subdivisions on the outskirts of the town including Wailuku Heights, Waiehu Terrace and Leisure Estates.

The older Wailuku Heights area was extended by two exclusive and prestigious phases. The first extension offers 270 lots while the

second phase offers an additional 130 lots to the subdivision. Once verdant pastureland, Wailuku Heights is nestled in the West Maui Mountains and offers underground utilities, scenic views and a landscaped park.

Directly below the Wailuku Heights neighborhood is the Kehalani Project District. Single-family residential developments in this area include the Ohia and Maunaleo subdivisions. These projects, by Towne Development and Stanford Carr Development, were sold strictly as house-and-lot packages. Kehalani Gardens and Iliahi at Kehalani, both condominium projects, were also built by the same developers and were completed shortly after in 2005.

Two other single-family projects were then constructed in Kehalani 2006 and 2007. These included Koa at Kehalani (72 residential lots) and Akolea at Kehalani (97-unit house and lot subdivision), developed by Towne Development. In 2008, Stanford Carr Development developed the Cottages at Kehalani (114-unit house and lot subdivision). In 2010, the Kehalani Project District saw the completion of Milo Court, a 97-unit duplex-style condominium developed by Towne Development, and the Villas at Kehalani a 103-unit townhouse condominium developed by Stanford Carr Development.

In addition to construction in the Kehalani Project District, residential development spread southerly to the Waikapu a small community in Wailuku proper. Jesse Spencer completed the last home in Waikapu Gardens at the end of 2008, a 410-unit affordable housing project. The Waikapu Gardens Phase II is currently being developed which will add an additional 56 affordable homes to the neighborhood. In 2007, two house lot subdivisions also came to market in Waikapu, Waiolani Pikake (37 lots) by KSD Hawaii and Waiolani Mauka (105 lots) by Scott Nunokawa. Another unique subdivision that was constructed in the Wailuku area is the Wailuku Country Estates Subdivision, which consisted of 184 agriculture lots located near the Puuohala Camp neighborhood just north of Wailuku Town.

COMMERCIAL

Commercial development in Kahului is concentrated along the major thoroughfares in strip fashion, while Wailuku's main commercial activity is concentrated in the central core of the town. Due to the central location of these communities, there is has historically been strong demand for commercial space in Central Maui, and vacancies within established projects in this region tended to be very low. However, the recent downturn has resulted in less demand for commercial spaces and higher vacancies, as well as reduced rental rates.

Kahului

There are four major shopping centers in Kahului. Maui Mall, opened in late 1971 contains a gross leasable area of 181,500

square feet on a 25-acre site. It is anchored by tenants such as Longs Drug Store, and the Maui Mall Megaplex, by Wallace Theater Corporation. Star Market closed its doors in March 2008, but was replaced by a new Whole Foods supermarket in 2010. The largest center, Queen Kaahumanu Center, opened in 1973 and had 300,000 square feet of gross leasable area. Extensive renovations were completed in 1995, which included a two-level shopping wing, a six-screen movie theater, expanding the major stores, renovating the existing mall and adding a parking structure and access road. The project expanded the center to 500,000 square feet. It is currently anchored by Macy's and Sears.

The Maui Marketplace on Dairy Road is home to a number of big-box retailers including Lowes Hardware, Sports Authority, Office Max, Pier One Imports, Starbucks Coffee, Jamba Juice, Bank of Hawaii and Burger King. Finally, Kahului Shopping Center, the oldest major shopping center which opened in 1951, was partially destroyed by fire in 2005 and plans are underway to redevelop the entire block into Kahului Town Center. This development will consist of retail, office and condominium living. In addition to these centers, Kahului is home to other large retailers including Costco, Home Depot and Kmart. All of the major financial institutions and the large automobile dealerships are also located in Kahului. Bank of Hawaii recently completed construction of its new main branch at the corner of Kamehameha Avenue and Puunene Avenue. American Savings Bank is planning to build a new main branch at the corner of Pakaula Street and Hookele Street across from the new Target and Walmart.

The Maui Arts and Cultural Center was built in 1993 and includes a 1,200-seat theater, a 250-seat studio theater, an art gallery, meeting rooms, dance studios, an event lawn, administrative offices and a restaurant/gift shop. In 2011, the original stage that serviced the 5,000 person grass amphitheater was replaced by the $13 million-dollar, state-of-the-art, Yokouchi Pavilion. The Maui Arts and Cultural Center sits on 12-acres at Keopuolani Park, which is located between the University of Hawaii Maui College and the Maui Botanical Garden.

A new shopping center is currently being developed in Kahului at the corner of Puunene Avenue and Hookele Street which will be anchored by a 141,000 square foot Target. This shopping center, to be known as Puunene Shopping Center, is planned to add a total of 275,000 square feet of retail space to Kahului. For now, Target is the only completed building which opened in March 2015.

Wailuku

The hub of commercial activity in Wailuku is concentrated in an area along Market Street and Main Streets. Known as Old Wailuku Town, this neighborhood is characterized by older, low-rise buildings consisting of small, individual shops and offices. Civic

uses surrounding this area of Wailuku include the State Office Building, the County office buildings, and the judicial building.

The town is home to numerous professionals in the fields of architecture, engineering, law, financial management, real estate and banking. All of the major financial institutions have branches in Wailuku Town. Notable office buildings in Wailuku include One Main Plaza, Wailuku Executive Center, Maui Realty Suites, the Trask Building, and Wells Professional Plaza. Between 2008 and early 2010 Wailuku's office market also felt the effects of the economic slowdown, evidenced by higher vacancies and decreasing rents. This downward trend subsequently subsided; however, recovery has been sluggish.

Two major commercial developments are occurring in Maui Lani and Kehalani. Maui Lani Shopping center is a new 103,000 square foot shop center that was recently completed in 2013, and is anchored by a 59,000 square foot Safeway. It is located at the corner of Maui Lani Parkway and Kaahumanu Avenue across the street from Kaiser Medical Maui Lani and Baldwin High School. Another on-going development is Kehalani Village Center, which is currently developed with a new Longs Drugs. An Aloha Petroleum gas station was completed in 2013, and a new Foodland supermarket recently opened in June 2014. Construction of a new McDonalds commenced in July 2014 next to Longs Drugs. Other pad sites are available for sale for commercial development. A new Walgreens was recently completed in Maui Lani at the corner of Kuikahi Drive and Waiale Road, directly across from the existing Longs Drugs.

INDUSTRIAL

Vacant industrial space has typically been difficult to acquire, due to the lack of inventory in the market. Much of the vacant land in Central Maui's industrial parks is being held by business owners, some of whom are waiting for more ideal conditions to build new facilities. Others may be looking for a turnaround in the real estate market before putting their property up for sale. However, the same economic downturn that has significantly impacted demand for commercial space in Central Maui has taken its toll on industrial space. Vacancies have risen, while at the same time warehouse rents and land prices have declined.

Kahului

There are several industrial parks in Kahului, but the largest and most established of them all is the Maui (Kahului) Industrial Park, which is bordered by Hana Highway, Puunene Avenue, Dairy Road and Kamehameha Avenue. It includes low-rise warehouse and commercial uses and is occupied with a mixture of industrial, retail and office tenants.

Maui Business Park, Phase I-A and I-B (76 acres) has also attracted commercial, office and industrial users along Dairy Road and

Hookele Street. Phase II of Maui Business Park was recently completed, which adds approximately 179 acres of light industrial land surrounding the first phase.

Other industrial subdivisions include the Airport Triangle on about 13 acres, the 36-lot Kamehameha Parkway No. 2, and the Central Maui Baseyard on Mokulele Highway.

Wailuku

Existing industrial subdivisions in Wailuku include Wailuku Industrial Park, The Millyard, Waiko Baseyard and Consolidated Baseyard. Wailuku Industrial Park is an improved light industrial subdivision with 74 fee simple lots off of Lower Main Street in Wailuku. Lots range from 10,106 square feet to a parcel 3.089 acres in size. This subdivision is approximately 95 percent developed and includes the Wailuku Town Center anchored by Sack 'n Save.

The Millyard was developed in 1985 as an improved light industrial subdivision located at the old Wailuku Sugar Mill site. This industrial subdivision contains 57 lots, and is home to the Wailuku Post Office which opened there during the late-1990s. Approximately 84 percent of this subdivision has been developed with a mixture of commercial and light industrial uses. The Millyard Plaza is one of the largest complexes in this subdivision. Also, several dentists and veterinarians have seen fit to build their own free-standing facilities in The Millyard, which has developed into more of an office park than an industrial center.

Completed in 2006, the Waiko Baseyard in Waikapu consists of 19 lots on approximately 15 acres of land. This subdivision was immediately sold prior to subdivision completion. Consolidated Baseyards, also in Waikapu, was completed in 2007. Built on about 23 acres of land, the 35 lots in this light industrial park saw very strong interest and were sold quickly. The majority of purchasers within both subdivisions were local business owners who intended to relocate their operations. These subdivisions were geared toward true industrial users.

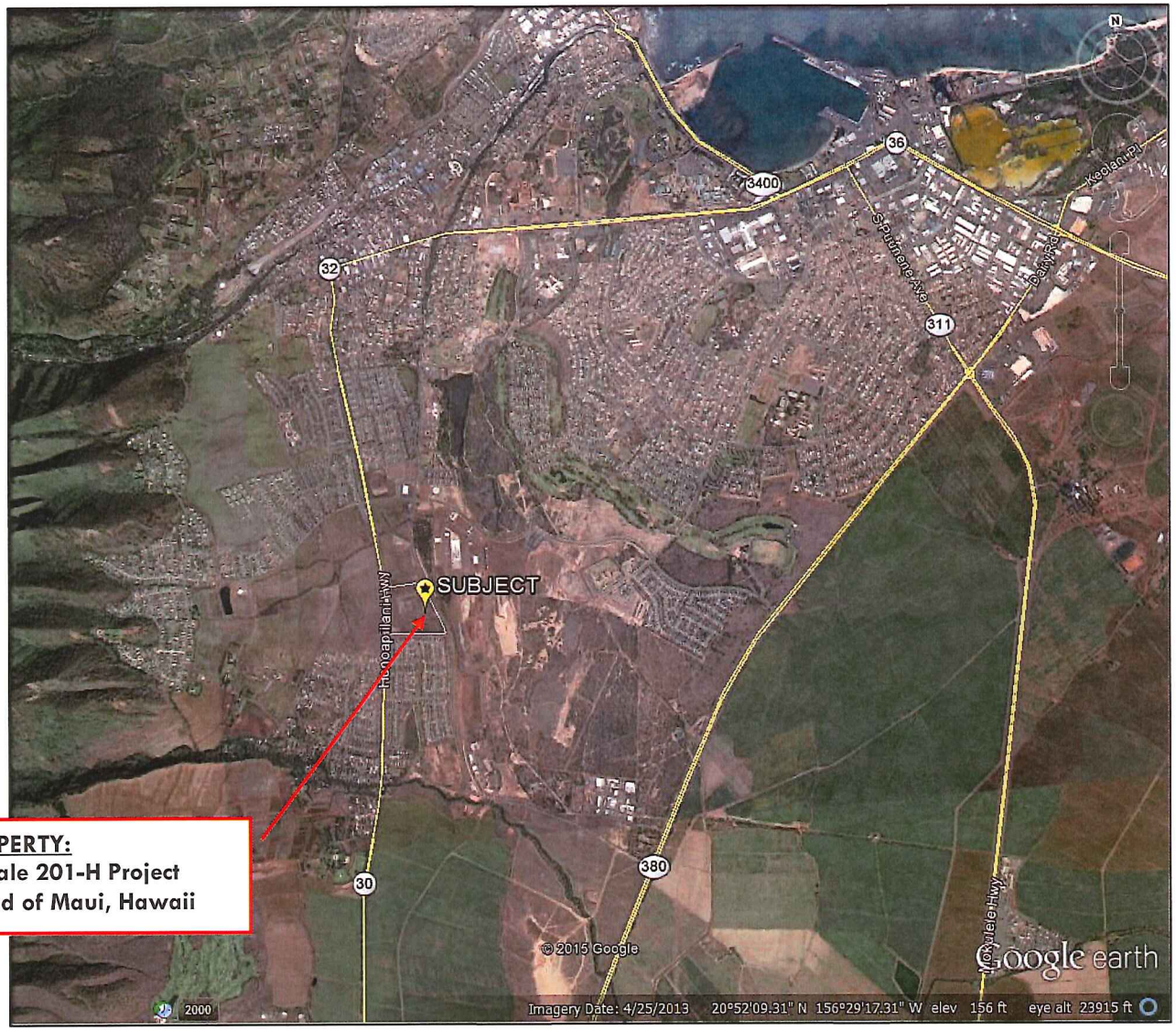
The most recent development in the Wailuku area is the Maui Lani Village Center. This project completed construction in 2009 and features 78 lots zoned Village-Mixed Use Commercial/Residential. This zoning allows for a mixture of commercial, industrial, and residential use on each property. Businesses that currently occupy or intend to occupy this subdivision include Paradise Beverage, Ace Hardware, Menehune Water, 76 Gas Station, Oceanic Time Warner Cable, Times Supermarket, Walgreens, etc. However, only a handful of transactions have actually closed to date. Absorption in this project is moving at a slow pace, which is directly attributed to the economic recession.

CONCLUSION

All public utilities including electricity, water, telephone, and sewer service are available in Kahului and Wailuku, as is police, fire and ambulance services. Propane gas is not a public utility, however, is available. All charges for public services are standardized for Kahului as well as for the Island of Maui.

With the increase of public transportation now available on Maui, Kahului and Wailuku are easily accessible from most parts of the island. This and the fact that it is central to airport and harbor facilities, commercial and industrial establishments, properties located in this area are ideal.

Due to this region being the center of County, State and Federal offices, as well as community services, properties in these areas are anticipated to be in greater demand in the years ahead. Based on the desirability of this area and forecasted demand here, property values are expected to continue their appreciation in the long-term future.



SUBJECT PROPERTY:
Proposed Waiale 201-H Project
Wailuku, Island of Maui, Hawaii

NEIGHBORHOOD MAP

C. PROJECT DATA

Environs

The subject is located at the northwestern corner of Waiale Road and Kokilolio Street in Waikapu, District of Wailuku, Island and County of Maui. Waiale Road runs in a general north-south direction, beginning at Lower Main Street to the north and ending at its intersection with Waiko Road to the south. Waiko Road connects Honoapiilani Highway to the west with Kuihelani Highway to the east. Kokilolio Street runs in a general east-west direction off of Waiale Road and provides access to the neighboring Waikapu Gardens Subdivision.

The neighborhood along the western end of Waiale Road is known as Waikapu, primarily a residential suburb. In addition to the Waikapu Gardens single-family residential subdivision to the southwest, the area immediately surrounding the subject consists of agricultural uses and vacant public/quasi-public tracts. Further north is Kehalani Village Center, a newly developed commercial project consisting of tenants such as Longs Drugs, Aloha Petroleum gas station, Foodland and McDonalds. A new Walgreens was recently completed in Maui Lani at the corner of Kuikahi Drive and Waiale Road, directly across from the existing Longs Drugs.

The towns of Wailuku and Kahului are located approximately one mile away and contain the majority of the civic, financial, shipping and business areas for Central Maui. Police, fire and ambulance services are also readily available.

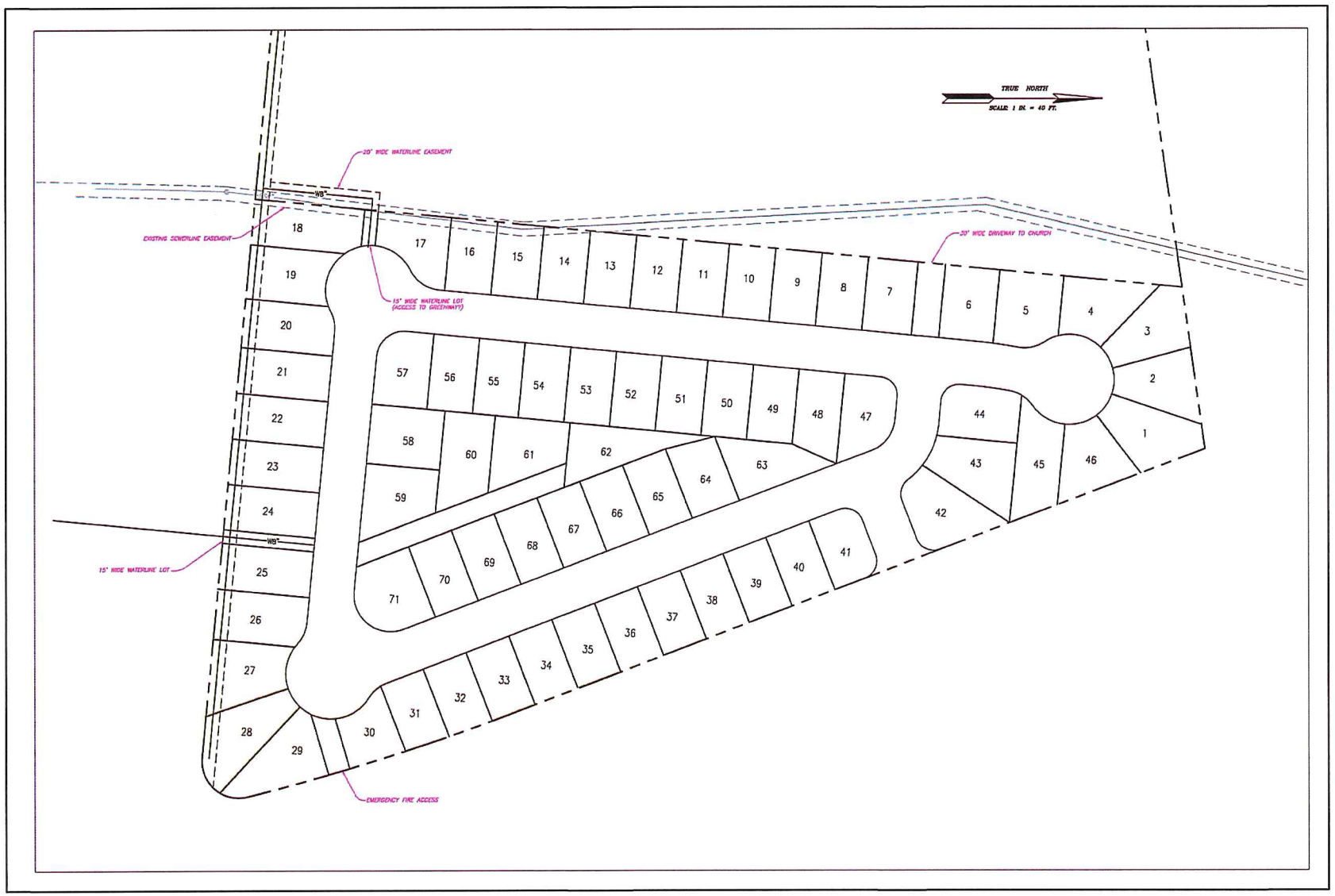
Description of the Proposed Project

The proposed Waiale 201-H Project will be located at the northwestern corner of Waiale Road and Kokilolio Street in Waikapu. The subject consists of approximately 10.35 acres of land currently zoned Agricultural by the County of Maui and designated Agriculture within the Wailuku-Kahului Community Plan. The project, which is still in its preliminary planning stage, will possess primarily mountain views, with some potential for partial ocean views.

The Consultant has gleaned project information from a preliminary plat map, as well as through discussions with the Developer. The subject's project will consist of approximately 71 affordably-priced single-family residential units. Potable water and sewer service will be provided by County systems. According to the Developer, the proposed land use is as follows:

It is anticipated the proposed single family homes will be one or two story, ranging in size from 1,375 square feet for a three-bedroom/two-bath home to 1,875 square feet for a four-bedroom/two-bath home. Lot sizes will range from 4,000 to 4,500 square feet. All single family residences will be priced in

accordance with the County of Maui Department of Housing and Human Concerns Affordable Sales Price Guidelines.



Not necessarily to scale!

PRELIMINARY CONCEPTUAL PLANS

PART III – ANALYSIS AND CONCLUSIONS

A. MARKET ANALYSIS

For the purpose of estimating the market response to this project, a market study was conducted to determine how current supply and demand for residential homes might be affected by the development of the subject's 71 units. The extent of our survey encompassed new, ongoing and proposed residential developments on Maui to give the reader the best perspective of the overall market.

OVERVIEW

One of the more difficult factors in determining the success of a proposed project is estimating future absorption rates. There are two components to this. The first is the design and pricing of the proposed project. This, of course, is well within the developer's control. The second is the overall market environment at the time of pre-sale and project completion. This is, obviously, more difficult to define because it involves forecasting such variables as interest rates, overall market conditions, and general and specific sector real estate market conditions.

The added complication with most projects is the time frames and time lags involved. Since most subdivisions or condominium projects take several years between conception and completion, market and interest rate conditions can change significantly. Thus, a project may commence in a favorable environment and be completed in an unfavorable one (or vice versa). Furthermore, real estate is a cyclical industry and sales activity tends to move in spurts. It is not unusual for a new project to sell half its units in the first year of marketing and require 2 to 3 years (or longer) to sell the remaining half. Of course, these time periods could expand or contract depending upon market conditions. Thus, the notion of a linear sales rate may be deemed unrealistic for practical purposes, but is a useful and convenient tool for planning.

RESIDENTIAL SUPPLY CHARACTERISTICS

The Waiale 201-H Project is centrally located and has relatively uniform travel times to each of the major population centers on Maui. It follows that the subject's primary market area is the Central Maui region, while South Maui and West Maui are expected to be secondary markets. Central Maui is home to the County and State government offices and is the industrial center of the island with convenient access to the major transportation facilities. South Maui has become a visitor destination with its expansive beaches and retail establishments targeted towards the tourist industry. The city of Kihei contains the region's urban core, with the master planned resorts of Wailea and Makena situated further south. West Maui is also a major tourist destination and is home to the famous Front Street retail corridor which allows for

pedestrian access to numerous retail establishments within Old Lahaina Town. Further north of Lahaina are the Kaanapali and Kapalua master planned resorts. Clearly, the subject's Waikapu location is highly convenient with respect to all of the major population centers.

Available New Project Residential Supply

Research was conducted in order to determine the number of housing units in new developments that are currently available in the market. According to this survey, there are 871 housing units, which are currently for sale on the Maui market within on-going projects, as well as units from developments which are planned for construction within the next one to two years. Based solely on historical annual absorption rates of other new projects (approximately 483 units per year), the short-term market supply would be expected to last approximately 1.8 years. Of course, a multitude of other factors can influence the capture rate. For instance, the larger percentage of affordable units in the future supply points to a faster-than-normal absorption. Also, the number of buyers from the U.S. mainland and from foreign countries can fluctuate from year to year, and their presence in the market is not as predictable as the demand from local residents.

Shown in the table on **Page 31** is the list of projects representing the short-term housing supply for the Island of Maui. Those that have not begun construction are undergoing their financing processes and are expecting to commence construction in the short-term future. Included in this list are both single-family and condominium units from the island's four major population centers: Central Maui (Wailuku-Kahului); South Maui (Kihei-Wailea); Upcountry (Pukalani-Makawao-Kula) and West Maui (Lahaina to Kapalua).

Of the projects named in the following table, Sandhills Estates, Waiolani Mauka, Villas at Kehalani, Traditions at Maui Lani, Parkways at Maui Lani, Waikapu Gardens, Kilohana Waena, Hokulani Golf Villas, Piiholo South, Makani O Kula, Lanikeha, Kaanapali Coffee Estates, Opukea, and Honua Kai have already begun closing sales of their units.

The number of units indicated in the table reflects the number of remaining units that have not closed, but may be under contract.

Table 1 – Available Supply in Ongoing Projects on Maui

Maui Projects 2015				
Name	Location	Number of Units		Type of Development
		Total	Remaining	
CENTRAL MAUI				
Sandhills Estates	Maui Lani Proj Dist	108	7	Residential House Lots
Waiolani Mauka	Waikapu	105	8	Residential House Lots
Villas at Kehalani	Kehalani Proj Dist	103	39	Townhouse Condominiums
New Traditions at Maui Lani (Schuler)	Maui Lani Proj Dist	144	5	SF Homes
Wai'olu Estates	Kehalani Proj Dist	60	60	Residential House Lots
Parkways at Maui Lani (Towne)	Maui Lani Proj Dist	201	170	SF Homes
Kamani at Kehalani	Kehalani Proj Dist	138	138	Duplex Condominiums
Waikapu Gardens Phase II	Waikapu	56	42	SF Homes
SOUTH MAUI				
Kilohana Waena	South Kihei	31	2	Residential House Lots
Hokulani Golf Villas	Central Kihei	152	72	Luxury Residential Condominiums
Keala O Wailea	Wailea	70	70	Luxury Lowrise Condominiums
Nuu Aina, Phase I	Wailea	26	26	Luxury Residential Condominiums
UPCOUNTRY/EAST MAUI				
Piiholo South	Olinda	11	9	Agricultural Lots
Makani O Kula	Kula	6	4	Agricultural Lots
Omaopio Estates	Kula	20	20	Agricultural Lots
Kula `I`o	Kula	35	35	Agricultural Lots
WEST MAUI				
Lanikeha	Kaanapali	139	20	Residential House Lots
Kaanapali Coffee Estates	Kaanapali	52	18	Agricultural Lots
Opukea	Lahaina	114	32	Lowrise Condominiums
Honua Kai	Honokowai	700	94	Luxury Condominiums
Total Short Term Supply Units			871	
Represents units that have not closed, may include contracted units				

Central Maui's Ongoing Residential Projects

It is also important to discuss the developments on Maui that could be brought to the market over the next 5 to 10 years. As mentioned earlier, many external factors, such as economic or social factors, could affect the supply and demand for real estate in the future. These factors cannot be controlled by developers who must constantly assess market conditions for their prospective construction and sales periods.

Most of the new residential development in Central Maui is occurring within two project districts: Maui Lani and Kehalani. Maui Lani is situated between the existing Kahului and Wailuku communities, while Kehalani is found in Wailuku.

Maui Lani consists of approximately 1,012 acres of land in the Central Maui plains. Completed phases include the Greens, Grand Fairways North, Grand Fairways, Sandhills Estates, The Island and The Bluffs, The Legends and Na Hoku. New projects under construction at Maui Lani are New Traditions and Parkways; both are single-family residential subdivisions. To date, there have been approximately 1,200 units constructed in the Maui Lani project district. Based on the maximum density allowed, there are almost 2,500 units remaining.

New Traditions is a single-family subdivision being developed by DR Horton-Schuler Homes. It consists of 144 house and lot packages containing 1,063 to 1,502 square feet of living area. Since marketing began in October 2012, there have been 139 developer sales, at an average 4.2 sales per month, with prices ranging from $387,057 to $520,000. Of the 5 remaining developer units, 3 are under contract with asking prices between $492,450 and $542,747. The project's absorption rate has seen year-over-year increases, with average monthly closings at 2.3 units in 2012, 4.4 units in 2013, 5 units in 2014 and 3.4 units per month from January to July 2015. Average sales price trended upward by 4.5 percent from 2013 to 2014. The average sales price of the year to date developer unit closings in 2015 is 10.5 percent higher than the 2014 average.

Parkways at Maui Lani, built by Towne Development, is a 201 house and lot package single-family subdivision. The homes feature living areas ranging from 1,385 to 2,404 square feet. Phase I was made available pre-construction in December 2013 and there have been 31 developer sales, or an average of 1.6 sales per month. It should be noted that the pace of closings has increased significantly now that construction is fully underway. For example, there were 7 sales between October and December 2014, or an average of 2.3 units per month; but from January to July 2015 there were 23 sales, or an average of 3.8 developer units sold per month. Sales prices have ranged from $475,250 to

$674,670. In addition, Phase I has 9 units under contract with asking prices between $506,000 and $736,900. Phase II, which began selling in February 2015, has 14 units under contract with asking prices between $539,500 and $673,000. Residences with golf course frontage and/or larger floor plans make up the high end of the price range.

A 50-lot single-family residential subdivision, Fairways, was also completed in 2008. However, this project ran into legal trouble regarding building height restrictions and the development was subsequently acquired by the County of Maui.

Kehalani is situated at the base of the West Maui mountain range in Wailuku and consists of approximately 550 acres of developable land area. Completed single-family residential subdivisions include Kaimana, Nanea, Olena, Ohia, Maunaleo, Koa, Akolea, and Cottages; while Iliahi and Kehalani Gardens make up the sold out multi-family projects. Ongoing developments are limited to multi-family projects such as Milo Court, Villas and Ho'olea Terrace. A 60-unit single-family residential house lot subdivision, Wai'olu Estates, has also been marketed, but has had no closings. In addition, future development includes a school, commercial center, and the potential of approximately 1,000 more residential units remaining within this project district.

Pu'u Kukui Elementary School was completed in mid-2013 and services the Kehalani and Waikapu communities. Construction in the Kehalani Village Center continues, with Longs Drugs, Aloha Gas, McDonald's, Foodland, and Coffee Bean & Tea Leaf already open for business.

Waikapu Gardens, Phase II is being developed by Jesse Spencer's JES Corporation. This single family residential subdivision is an extension of the existing Waikapu Gardens Subdivision. Upon completion, this project will consist of 56 three and four bedroom homes on lots ranging between 5,200 and 8,400 square feet. All of the homes are being offered as affordable units with resale restrictions. The 56 initial buyers were selected in October 2014 from a list with reportedly over 800 interested parties. As of the effective date, sixteen of the subdivision's home were completed and 14 homes closed escrow. The Appraiser was not able to glean the price points contained in the Affordable Housing Agreement.

Wai'ale, is a 545-acre master-planned community to be developed by A&B Properties, Inc., located along the western side of Kuihelani Highway, just south of the existing Maui Lani Project District. Plans for Waiale include 2,250 housing units, as well as commercial and light industrial components. An intermediate school, community center, parks and cultural preservation areas are also planned during the 10-year build out anticipated for the project. A 40-acre site is being donated to the County of Maui, who intends

to develop up to 300 affordable housing units there. In May 2012, the State Land Use Commission approved reclassification of the land from Agricultural to Urban. As of the effective date, the project is being reviewed for rezoning and community plan amendment.

Pu'unani is a proposed 752-unit project district located west of, and bordering, Honoapiilani Highway in Wailuku. The site consists of approximately 210 acres of land and will possess views of the ocean, as well as the West Maui Mountains and Haleakala. According to a Conceptual Land Use Plan, the subject will contain rural zoned lots, residential zoned lots, and multi-family units. As of the effective date, the project was still in the early entitlement process.

Maalaea Plantation is still in the planning and approval phase, and may add approximately 58 affordable single-family house lots and 55 market-priced 1- to 2-acre rural lots to the Maalaea neighborhood of Central Maui. Located on the mauka, or mountain, side of Honoapiilani Highway, this proposed project will also include a 2.8 acre neighborhood park and 85 acres will be kept in agriculture. Although the property already is designated as a project district, a district boundary amendment and change in zoning at the County level is still needed before development can begin.

Hale Mua is a 466-unit proposed subdivision, set upon approximately 240 acres. Preliminary plans for this project called for 238 affordable house-and-lot packages ranging in size from 5,001 to 11,292 square feet; 209 market lots ranging from 10,000 to 16,693 square feet in size. In addition, there were to be a total of 19 large lots ranging from 2.02 to 21.40 acres in size. State Land Use Urban designation was to be sought for the large lots. These lots would not have had the ability to be further subdivided and improvements will be limited to a main and accessory dwelling. However, in March 2012, the developer was foreclosed upon and this status of this proposed project is unknown.

Single-Family Residential Resale Active Listings

Besides the properties available in the projects, the number of resale listings on Maui is a good indication of real estate market conditions. This market evidence is generally viewed as a "counter-cyclical" indicator, which means that it is typically lower in strong markets and higher in weak ones. As previously indicated, the subject's primary market is determined to be Central Maui. The Appraiser researched listings of single-family homes in this region (**Exhibit B**). The investigation of the Maui Multiple Listing Service revealed the following:

As of the effective date, there are 68 resale listings in Central Maui residential properties in the Multiple Listing Service. This total was broken down as follows:

Range of Prices	No. of Listings	Average DOM
Less Than $300,000	1	69
$300,000 to under $500,000	14	85
$500,000 to under $700,000	29	143
$700,000 to under $1,000,000	14	123
$1,000,000 and Above	10	176

There was one (1) listing in the "Less Than $300,000" category. This property is a three-bedroom/one-bathroom 864 square foot home, on a 13,721 square foot lot, built circa 1940. The bank owned property was listed at $259,000 and has a marketing time of 69 days.

From $300,000 to under $500,000, there were a total of fourteen (14) listings with the lowest priced being $316,200 for a three-bedroom/one-bath, 1,140 square foot dwelling on a 4,029 square foot lot, built circa 1929. This Wailuku Town bank-owned property had a marketing time of 30 days. The high end was represented by a 1,017 square foot, three-bedroom/one and one half-bath home on a 9,503 square foot lot, built circa 1955 in Kahului Town. This home was listed for $492,000 and had a marketing time of 8 days.

This price range is generally considered to be the market segment that is affordable to Maui's workforce households. Many of the properties in this segment are priced lower than the median price range for residential properties on Maui. It is noted that the monthly median price for a single family property in Central Maui averaged $445,000 in 2014, which is 7.71 percent higher than 2013. The average median price for January through July 2015 is about $510,000, or 19 percent higher than the same period last year.

From $500,000 to under $700,000, there are a total of twenty-nine (29) listings with an average "Days on Market" of 143 days. Prior to 2009, the median sales price for single-family homes in Central Maui fell within this price range. From 2005 to 2007, the luxury and second home markets were well represented by new projects. Sales of these high-end homes pushed real estate prices to new heights, and left the working class unable to afford to purchase homes.

From $700,000 to under $1,000,000, there are a total of fourteen (14) listings with an average marketing time of 123 days. Before the last market peak, it was unheard of to find a non-oceanfront residential property in Central Maui selling for more than $800,000. Properties priced in this range were typically found in

The Islands, The Bluffs, Wailuku Heights, Wailuku Country Estates, Waiehu Heights, Sandhills, and even Wailuku Town.

At $1,000,000 and above, there were ten (10) listings with the highest being $1,950,000 for a six bedroom/four bath property on Lower Waiehu Beach Road with 2,800 square feet of living area on a 11,513 square foot lot. This oceanfront home was built circa 1989. The average marketing time in this category is 176 days.

After the onset of the Great Recession in 2008, the market became flooded with troubled properties. Short sale and bank-owned inventory listings were available at various price points and in all parts of the island. Since 2011, however, these properties have become less abundant. Research revealed only eight bank-owned properties and four potential short sales, representing 12 and 6 percent of the aforementioned 68 active listings in Central Maui, respectively.

Residential House Lot Listings

The Appraiser also investigated the number of single-family house lots on the market in Central Maui. Potential buyers in the market will look at the house lots on the market while considering the option of purchasing land and building a home versus buying a home already constructed.

The Appraiser searched for finished house lots within a range of 3,000 to 5,000 square feet. This range was considered reasonable, in light of the subject's proposed lots being between 4,000 to 4,500 square feet. Research found no active listings in Central Maui within this range. Active listings closest in size include a 2,431 square foot lot with a listing price of $89,000 as well as a 6,277 square foot lot with a listing price of $219,000. Both listings are located in Happy Valley and the average marketing time for these listings is 140 days.

New Construction

According to the Maui County Data Book 2013, new single-family construction, which fell from its high in 1988, appeared to recover somewhat in the 1990's and peaked in 2004.

Table 2 – New Single-Family Construction, Maui County

Year	Number of New Single-Family Units	Five-Year Average
1980	803	
1981	398	
1982	530	
1983	547	
1984	638	
Subtotal	2,916	583

1985	984	
1986	911	
1987	1,119	
1988	1,453	
1989	1,136	
Subtotal	5,603	1,121
1990	1,068	
1991	694	
1992	810	
1993	660	
1994	673	
Subtotal	3,905	781
1995	473	
1996	601	
1997	532	
1998	574	
1999	650	
Subtotal	2,830	566
2000	842	
2001	767	
2002	807	
2003	889	
2004	1,160	
Subtotal	4,465	893
2005	971	
2006	1,083	
2007	1,062	
2008	535	
2009	280	
Subtotal	3,931	786
2010	212	
2011	203	
2012	251	
2013	329	
2014	331	
Subtotal	1,326	265

Source: Maui County Data Books 2002 through 2013 and State Data Book 2014

New single-family construction averaged 583 units during the five years between 1980 and 1984. During the next five years, 1985 to 1989, single-family housing starts increased significantly to an average of 1,121 per year. During 1990, house construction was also good at 1,068 units, but declined significantly following the

Persian Gulf War and the economic slowdowns on the U.S. mainland and in Japan. Consequently, between 1990 and 1994, there was an average of 781 new single-family units built per year. From 1995 to 1999, construction of these units declined even more, with an average of only 566 units per year. In 2000, the number increased significantly to 842 units and then declined in 2001 to 767 units. The number of units increased in 2002 and 2003, with 807 and 889 units, respectively. Single family building permits in 2004 reached a total of 1,160, which is its highest level since the late 1980's, prior to declining to 971 in 2005. A small rebound to 1,083 was realized in 2006 and remained generally stable in 2007, with 1,062 single-family housings starts. In 2008, this number fell to 535 new units. The number of single-family residential permits continued to decline through 2011 before reversing course in 2012. The average from 2010 to 2014 was only 265 units per year, down from the average 786 units per year in the previous five years. This clearly shows the limited number of new homes built since 2009, which has certainly contributed to the current "affordable" home crisis on Maui. (Refer to **Table 2**, on the preceding page).

From 2010 to 2012, there was an average of 222 permits for new single-family units in Maui County. As of the effective date, revisions to the Urban Growth Boundary are being considered by the County Council. Land located outside the boundary may have a more difficult time becoming entitled, which would translate into less project starts. Without an adequate supply of new construction projects, the resulting shortage of housing typically causes prices to move up. As a result, those at the bottom end of the income scale usually find it most difficult to purchase real estate. Historically, supply has lagged demand and is a significant limiting factor in the affordability of real estate in the Maui market.

Maui County Workforce Housing Ordinance

In December 2006, the Maui County Council enacted the Residential Workforce Housing Ordinance. The purpose of the ordinance is to enhance the public welfare by ensuring that the housing needs of the County are addressed. The intent of the policy is to encourage the provision and maintenance of residential workforce housing units, for both purchase and rental, to meet the needs of income-qualified households for the workforce, students, and special housing target groups.

Essentially, all applicable residential development after the passage of this ordinance, including the subdivision of land and/or the construction of single-family dwelling units; two-family dwelling units; multifamily dwelling units; or hotels; shall be subject to the policy upon final subdivision or building permit approval. Applicable residential development includes, in part: five or more dwelling units, excluding farm labor dwellings or a second farm dwelling, not part of a condominium property regime; five or more

new lots; a combination of dwelling units and new lots totaling five or more.

Prior to final subdivision approval or issuance of a building permit for a development, the developer is to enter into a residential workforce housing agreement that requires forty percent of the total number of units and/or lots shall be sold or rented to residents within established income-qualified groups, when more than fifty percent of the dwelling units and/or new lots in the development are offered for sale for less than $600,000. When fifty percent or more of the dwelling units and/or new lots in the development are offered for sale for $600,000 or more, fifty percent of the total number of units and/or lots shall be sold or rented to residents within established income-qualified groups.

Landowners who had already received entitlements, or were at least in the approval or permitting process, were granted an exemption from these requirements; and clearly have an advantage over those who began their entitlement process post passage. One of the primary concerns to developers is the reduction in sales revenue. Coupled with unprecedented increases in construction costs, potential projects could become financially unfeasible.

Since the passage of the original ordinance, there was a notable decrease in new residential construction project starts. Granted, the downward trend of the real estate market, mixed with declining national and local economic conditions, has also led to less construction. However, many in the building industry were of the opinion that the Workforce Housing Ordinance had the opposite effect from its original intent.

In 2014, the Maui County Council revisited this ordinance and made several revisions, including reducing the amount of required affordable housing units built on site to 25 percent of the total number of market-priced units. The income group distribution of affordable homes shall be 30 percent for "below-moderate income" residents, 50 percent for "moderate income" residents, and 20 percent for "above-moderate income" residents.

The Developer has stated that <u>all</u> 71 single-family residences will be affordably priced towards families earning between 80 and 140 percent of Maui County's median family income in accordance with the County of Maui Department of Housing and Human Concerns Affordable Sales Price Guidelines.

Maui County Water Availability Ordinance

In December 2007, the Maui County Council enacted the "water availability policy", identified as Title 14 of the Maui County Code. The purpose of the ordinance is to acknowledge and affirm that water is a natural and cultural resource that must be protected, preserved and managed as a public trust, and requires verification of a long-term, reliable supply of water before subdivisions are approved. This policy applies to all new subdivisions with the exception of family subdivisions and subdivisions that will not be regulated by a public water system.

The ordinance was revised in April 2011, exempting infill development (10 residential dwellings or less) within areas already developed and having consistent land use; residential workforce housing units built by a qualified housing provider; residential development projects with 100 percent affordable units; and public or quasi-public development projects. The exemptions are only applicable within areas serviced by the Water Department's Central or West Maui water systems.

The proposed Waiale 201H Project is a 100 percent affordable housing project. As such, it is not subject to the Water Availability Ordinance.

Affordable Price Analysis

All of the subject's 71 single-family residential units will be priced towards families earning between 80 and 140 percent of Maui's median income in accordance with the Affordable Sales Price Guidelines issued by the County of Maui Department of Housing and Human Concerns.

Based on the 2015 Affordable Sales Price Guidelines issued by the County of Maui Department of Housing and Human Concerns, the affordable price range for three- to four-bedroom homes on the Island of Maui (excluding Hana) is from $372,600 to $666,425. This price range is based on a prevailing annual interest rate of 4.00 percent, for "Below Moderate" to "Above Moderate" income groups, which will be the targeted market for the subject's homes. It should be noted that the 2015 median household income for the Island of Maui (excluding Hana) is $75,100.

As of the effective date, there are 40 Central Maui resale listings that fall within the aforementioned affordable price range. These listings had an average living area of 1,637 square feet, with an average marketing time of 124 days. Only three (3) homes are available in Central Maui that are priced less than $372,000.

The results of this study indicate that the decline in the residential real estate market during the Great Recession forced both private homeowners and developers to lower their asking price expectations. Price levels dropped to the point where developers'

"market" homes were within the affordable price range. However, real estate prices during a market uptrend tend to appreciate at a higher rate than increases to the affordable price range, which is set by median household income. Consequently, as market conditions continue to improve on Maui, price points for new "market" units will eventually exceed the affordable range once again creating even greater demand for "affordable" housing. Consensus amongst government officials on Maui is that demand for "affordable" housing has reached a "critical" level.

RESIDENTIAL DEMAND CHARACTERISTICS

Demand is analyzed from two perspectives: The first is "demographic" demand, the number of units needed for a given market or employment base. Second is "effective" demand, the financial demand equation which involves looking at the number of buyers who would be qualified and interested in purchasing residential real estate.

Population

Population growth on Maui over the past 20 years (1990 to 2010) has been exceptionally high, and had outpaced the County's ability to provide adequate infrastructure and housing for this added number of people. Overall, population growth for the County of Maui during 1990 to 2010 was 52.2 percent (Source: US Census). With this growth in population came a surge in real estate prices in the mid-2000s. This increase, driven primarily by foreign and domestic investment and speculation, put the price of homes in Maui County well above the reach of many local residents, and affordable housing has become a major concern to everyone.

The 2010 Census figures indicate that population in Maui County increased by 20.1 percent between 2000 and 2010. During this period, Maui County was the second fastest growing county in the state, being outpaced by only Hawaii County at 24.1 percent. Leading the growth was the Central Maui region at 30.8 percent over the 10-year period. The West Maui region indicated a growth factor of 23.5 percent, while the South Maui region registered population growth of 19.2 percent.

Interestingly, household growth for these regions has not always been proportionate to its respective change in population. While Central Maui households increased by 32.6 percent, generally similar to its change in population, South Maui household numbers outpaced population, with a 25.5 percent gain. Conversely, the increase in West Maui households has lagged population growth, with a rise of only 14.5 percent.

According to the Population and Economic Projections for the State of Hawaii to 2035 (Source: State of Hawaii, Department of Business, Economic Development and Tourism), the projected population of Maui County is expected to be 198,724 by the year

2035. This represents a 35.7 percent increase over the 2010 census numbers.

Employment and Household Income

The unemployment rate on Maui had been on a decline since 1995 when unemployment was at 7.3 percent. By 2006, unemployment had reached an all-time low of 2.5 percent.

This downward trend reversed course in 2007, as the unemployment rate averaged 3 percent. A slowing economy and the financial crisis took its toll on employment on Maui, as unemployment in 2008 jumped to 4.9 percent, before skyrocketing to 9.1 percent in 2009. The unemployment rate has steadily decreased since 2009 to its current level of 4.24 percent, as of the first quarter of 2015. (Source: University of Hawaii Economic Research Organization).

Household income figures have also been increasing. The 2012 median household income for Maui County was $61,207 (2013 Maui County Data Book), a rise of approximately 23.7 percent over the 1999 median household income of $49,489 (Source: US Census 2000) and a 57.9 percent increase over the 1989 figure of $38,771 (Source: US Census 1990). This represented an average increase of approximately 1.7 percent per year during the 14 year period from 1999 to 2012.

Given this increase in income, one would think that real property would be easier to purchase, especially with the softening of the real estate market. However, this has not been the case, as global financial woes, together with poor national and local economic climates had the opposite effect during the Great Recession. Unemployment rates coupled with still-low interest rates, has caused a resurgence of interest in the real estate market since 2011, as evidenced by increasing sales volume and median prices.

According to the County of Maui Department of Housing and Human Concerns Housing Division "Affordable Sales Price Guidelines", Maui County's median income has not changed much since 2009, as shown in the following table.

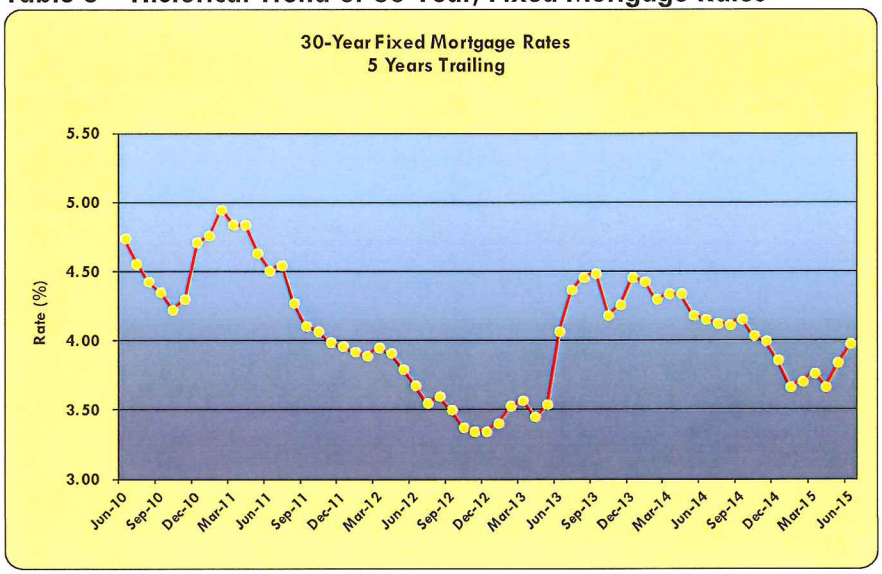
Year	Median Income[1]	Change from Prev. Yr.	
		($)	(%)
2009	$75,400	N/A	N/A
2010	$76,000	$600	0.8%
2011	$76,000	$0	0.0%
2012	$77,100	$1,100	1.4%
2013	$78,600	$1,500	1.9%
2014	$75,800	($2,800)	-3.6%
2015	$75,100	($700)	-0.9%

[1] Maui Island (Except Hana) Median Family Income, as reported in the County of Maui Affordable Sals Price Guidelines.

Mortgage Interest Rates

From late-1991 to 2002, mortgage rates varied from 6.0 to 9.0 percent. In 2003, mortgage rates for a 30-year fixed rate mortgage fell below 6.0 percent for the first time since Freddie Mac began tracking 30-year mortgage rates in 1971. Over the next six years, the monthly interest rate fluctuated between 5.23 and 6.76 percent. However, due to cuts to the Federal Funds Rate in late 2008, interest rates in 2009 dipped below the 5.0 percent level on numerous occasions, with the average interest rate for 2009 at 5.04 percent. The interest rate for 2010 averaged 4.69 percent, with the lowest rate witnessed in October, at 4.23 percent. In 2011, 2012 and 2013, the monthly interest rates averaged 4.45, 3.66 and 3.98 percent, respectively. An increase of the monthly average, to 4.17 percent, was experienced in 2014. It should be noted that the 3.86 percent monthly interest rate for December 2014 was the first time since May 2013 that the 4 percent barrier was broken (See **Table 3**). The 2015 year to date monthly average interest rate continues to hold under 4 percent, at 3.77 percent.

Table 3 – Historical Trend of 30 Year, Fixed Mortgage Rates



Source: Freddie Mac-Primary Mortgage Survey

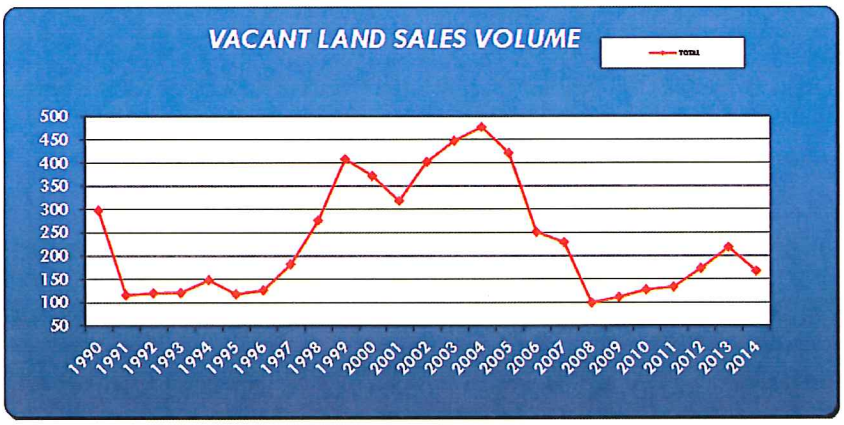
Residential Sales Activity Island of Maui

The number of units sold is the most basic indicator of market activity and is useful in helping estimate the number of new units which a specific market segment may be capable of absorbing. The downturn in the economy between 1991 and 1998 led to development of low-priced housing on Maui. Zero-lot-line housing projects were popularized during this period as developers strived to make housing affordable to Maui residents. In 1998 however, real estate began a strong recovery. As evidenced in the following section, prices and number of sales increased while marketing times decreased, up to 2006. 2007 and most of 2008 were times of stabilization, but global economic woes triggered the Great Recession in late-2008. In 2011, the local real estate market experienced the bottom of the cycle. Since then, the market has shown year-over-year increases in average monthly median price for single-family and condominium categories. A slight dip was witnessed for vacant land between 2011 and 2012. However, there has been a subsequent upward median price trend. The tables on the following pages illustrate the general market trends over the past 25 years on Maui, from 1990 through 2014.

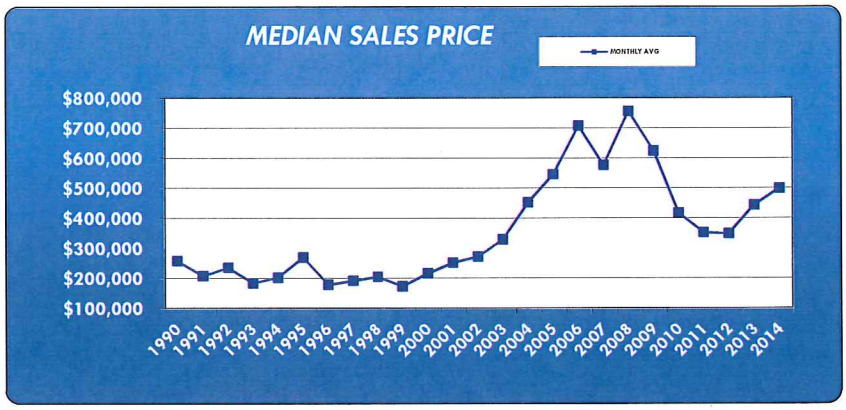
Vacant Land

Sales of vacant land fell sharply after 1990 (298) to a level wavering around 100 to 150 sales for the next 6 years. Weakest sales, in terms of units sold, occurred in 1991 when only 116 properties were sold. In 1998, the number of land sales increased to 276 and in 1999, increased again to 408, reflecting a gain of 48 percent. Sales fell slightly in 2000 with 372 sales and 318 sales in 2001; however, these figures rebounded in 2002, 2003 and 2004 to 402, 447 and 477, respectively. Vacant land sales

for 2005 showed a slight decrease to 421 transactions, but dropped 40 percent in 2006, with only 251 sales. This trend continued in 2007, albeit with a more stabilized decrease of 9 percent, at 229 sales. However, in 2008, vacant land sales again decreased significantly by approximately 56 percent with only 99 sales. From 2009 to 2013, there were slight year over year increases in the number of vacant land sales from 111 in 2009 to 218 in 2013. In 2014, however, there was a 23.4 percent decrease in the number of transactions from 2013. Many real estate professionals are of the opinion that the market has become under supplied for all unit types.



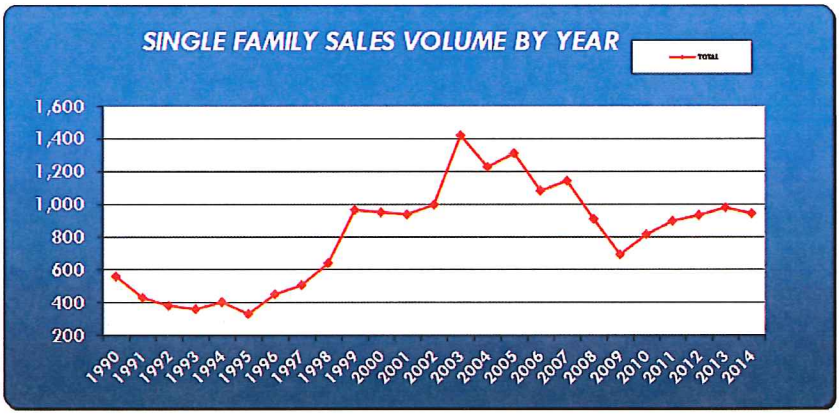
Meanwhile, vacant land median prices slowly regained ground from a low of $173,458 in 1999 to $272,483 in 2002, and then sharply increased to $330,075 in 2003, $452,604 in 2004, and $546,540 in 2005. In 2006, the median price jumped approximately 30 percent to $707,998, but retreated by 19 percent in 2007, to $576,729. In 2008, the median sales price peaked at $757,162. Subsequent declines have been witnessed, with the monthly median prices averaging $624,599 in 2009, $417,804 in 2010 and $352,833 in 2011. For 2012, the median price remained generally stable at $348,910. 2013 median prices increased by 27 percent to $444,719. This trend continued into 2014, with a median price of $500,167.



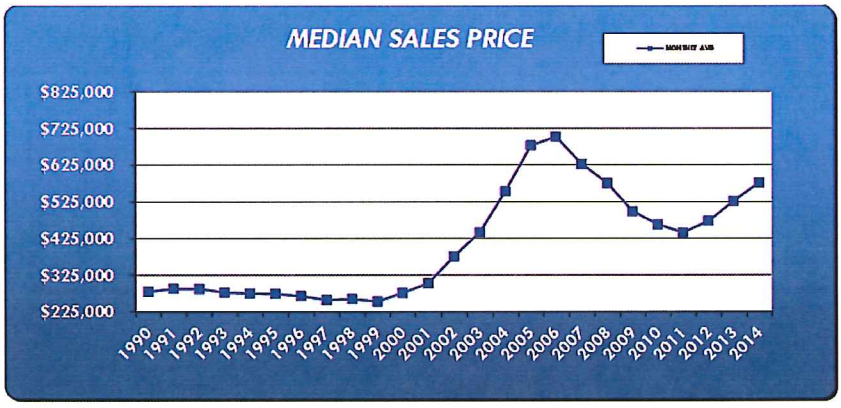
Average monthly days-on-market figures increased steadily from 67 in 1990 to 344 in 1997, but fell to 227 in 2002, 170 days in 2003, increasing slightly to 173 days in 2004. This average escalated in 2005 to 291 days but dropped 29 percent to 205 days in 2006. In 2007, the average marketing time increased 10 percent to 225 days, followed by a further increase of 6 percent in 2008 to 239 days. Marketing time increased to 274 days in 2009, but has since declined to 213 days in 2010 and 204 days in 2011. A significant jump was witnessed in 2012, to an average of 294 days, but declined dramatically to an average of 207 days in 2013 and 187 days in 2014.

Single-Family

Sales of single-family properties exhibited a decrease after 1990 (560) to a level wavering around 350 to 450 sales for the next 6 years. Weakest sales, in terms of units sold, occurred in 1995 when only 331 properties were sold. In 1997, the number of single-family sales increased to 507 and in 1998, exceeded 1990 results with a figure of 641. The number of sales in 1999 (965 units) was 51 percent more than the number of sales in 1998 (641 units). Sales were slightly higher in 2000 at 951 units sold, but leveled off in 2001 at 938 units and 997 units in 2002. Sales sharply increased in 2003 to 1,420 transactions, and then decreased slightly in 2004 to 1,228, before climbing to 1,311 transactions in 2005. In 2006, the total sales dropped 18 percent, to 1,082 for the year. A 6 percent increase was realized in 2007, as sales volume totaled 1,143 units. In 2008, sales volume decreased by 20 percent, to 910 units. This was followed by a low of 693 sales in 2009. The single-family residential market regained traction in 2010 and 2011, with 817 and 898 unit sales, respectively. The upward trend continued with 933 single-family residences sold in 2012, and 980 sold in 2013. There were a total of 943 units sold in 2014, which is down almost 4 percent from the previous year.

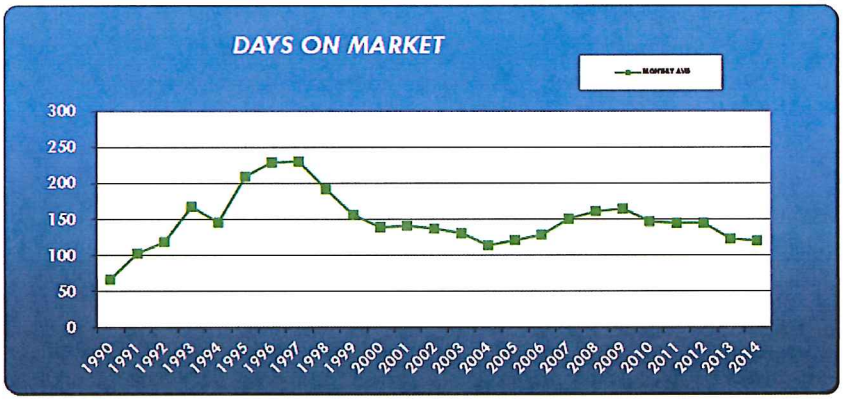


Median prices in 2001 averaged $301,886, showing a 9 percent increase from $275,958 in the year 2000. In 2002, the median price increased even more to a level of $375,810, an enormous increase of 24 percent over 2001. Median prices for 2003 indicated a gain of about 17 percent to $441,062; then another large 25 percent increase to $553,167 in 2004. This trend continued in 2005, with an average median sales price of $678,321, translating into a 22 percent increase. For 2006, prices increased 4 percent over the 2005 median. The average median price peaked in 2006 at $701,882. Between 2007 and 2011 there was a declining trend, as the average median price was $627,887 in 2007, $575,510 in 2008, $498,708 in 2009, $462,346 in 2010 and $440,160 in 2011. The monthly median sales price rebounded in 2012, averaging $471,925. The monthly median sales price continues to increase, averaging $527,167 in 2013 and $576,854 in 2014.



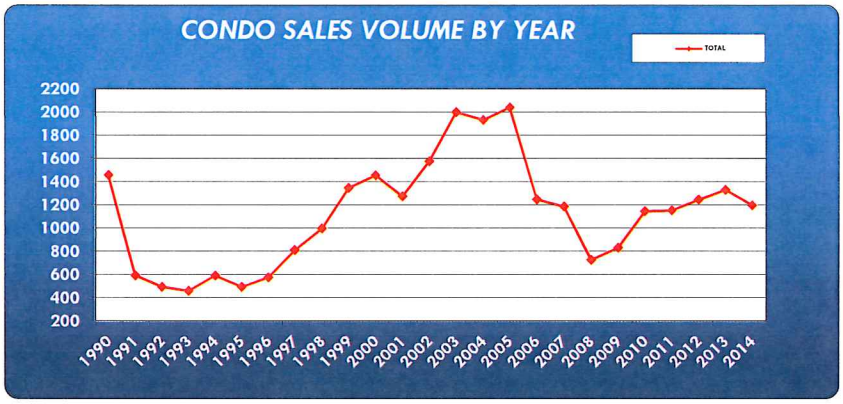
Average monthly days-on-market figures increased steadily from 67 in 1990 to 231 in 1997, but steadily fell to 137 in 2000. It has remained relatively level since that time, except in 2004 when that figure fell to 114 days, before rebounding to 121 days in 2005. The increase continued in 2006 climbing to 129 days, followed by a larger increase to 151 days in 2007, then to 161 days in 2008

and 165 days in 2009. Lower marketing times have been evidenced, with an 11 percent drop in 2010 to 147 days followed by a slight 2 percent decrease to 145 days in 2011, remaining stable at 145 days in 2012. In 2013, the trend reversed to an average of 123 days. This was followed by a drop in 2014, where the monthly average, was 120 days.



Condominiums

Sales of condominium units fell sharply after 1990 (1,459) to a level wavering between 400 to 600 sales for the next 6 years. Weakest sales, in terms of units sold, occurred in 1993 when only 461 properties were sold. In 1997, however, the number of sales increased to 812 and up to 2,001 units in 2003. 2004 showed a drop in sales, to 1,933 units. This was followed by a record setting year in 2005, with 2,041 units sold. However, sales volume dropped approximately 39 percent to 1,249 units in 2006, followed by a more stabilized decline of 5 percent in 2007, to 1,188 units. In 2008, sales volume continued its decline by another 39 percent to 730 units. This trend reversed course in 2009 with 834 units sold. A sharper increase was seen in 2010, at 1,148 sales, followed by a stable year in 2011 with 1,155 units sold. For 2012, there was a further uptick, with 1,248 condominium units sold, and an increase of 6.8 percent in 2013 to 1,333 sales. Similar to the vacant land and single-family categories, condominium sales declined in 2014, to 1,199 units sold.



Median prices remained in a range from $154,296 to $180,392 between 1990 and 2000. However, the average monthly median price increased 5 percent to $189,946 in 2001, 5 percent to $200,020 in 2002, and 19 percent in 2003 to $238,755. 2004 indicated a sharp increase of 32 percent, with an average median price of $314,448, followed by a 25 percent gain in 2005, to $392,314. The average median price increased to $524,758 in 2006, an approximate 34 percent increase over 2005. This was followed by a more stabilized gain of 6 percent in 2007, to $556,332. In 2008, median sale price decreased for the first time in 10 years, to $542,932. This trend continued through 2009, 2010 and 2011 with respective medians averaging $464,049, $388,302 and $311,479. However, 2012 saw a rebound to $352,077; the first increase in annual average monthly median price since 2007. The upward trend continued in 2013 and 2014 where the average monthly median condominium price was $365,385 and $412,188, respectively.

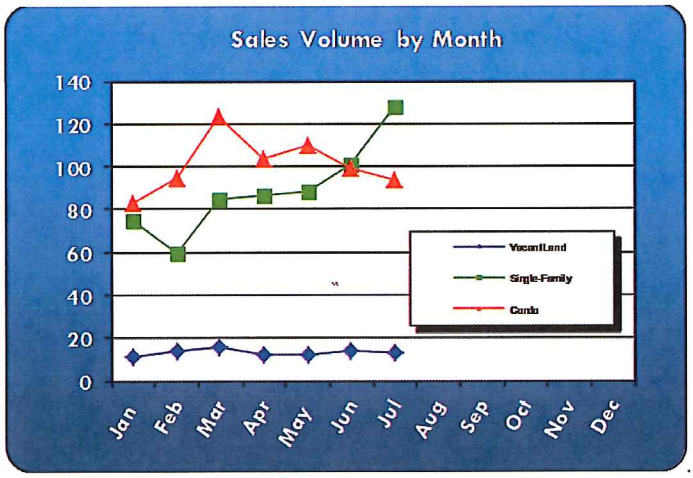
Average monthly days-on-market figures increased steadily from 77 days in 1990 to 230 days in 1996, but had decreased considerably to 133 days by the end of 2002. This figure fell to 118 days in 2003, then to 92 days in 2004, before rebounding to 113 days in 2005. It rose further in 2006, to 142 days, followed by another increase to 166 days in 2007. Days on market remained relatively the same in 2008, at 170, but spiked to 332

days in 2009. This was attributed to the closing of a substantial number of developer units within the Honua Kai project in Kaanapali. Marketing time returned to normalcy in 2010, with an average of 182 days. This was followed by a decline to 168 days in 2011 and 163 days in 2012. The downward trend continued in 2013 to an average of 142 days. A further decrease was experienced in 2014, as the monthly average marketing time dropped 16 percent, to 119 days.

January through July 2015 Maui County statistics for vacant land, single-family and condominiums are shown on the next page and indicate generally stable to slightly improved market conditions from 2011. Real estate agents on Maui have reported increased interest and activity, which has translated into greater sales volume. The lack of available inventory has led to a recent uptick in median prices. Many properties are receiving multiple offers, some of which are said to be above list price.

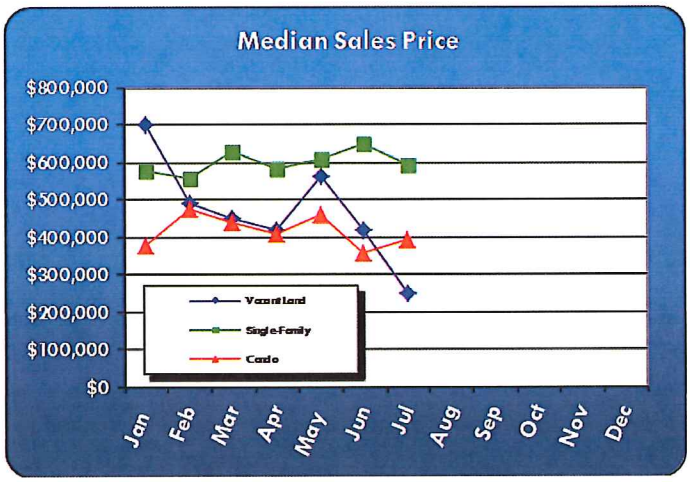
SALES VOLUME BY MONTH

2015	Vacant Land	Single-Family	Condo
Jan	11	75	83
Feb	14	60	95
Mar	16	85	123
Apr	12	87	104
May	12	88	110
Jun	14	101	99
Jul	13	128	94
Aug			
Sep			
Oct			
Nov			
Dec			



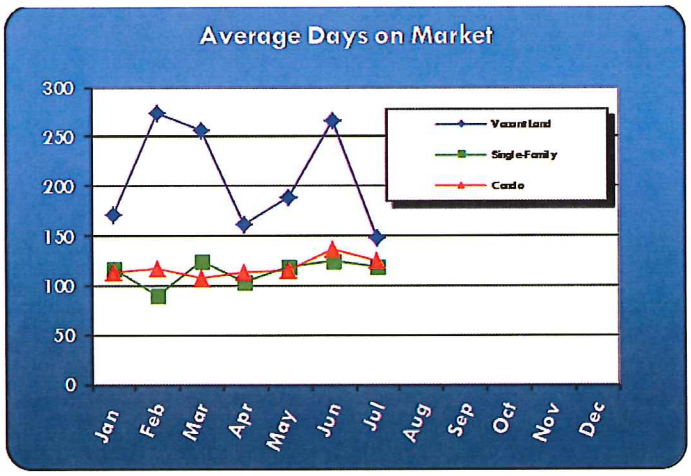
MEDIAN SALES PRICE

2015	Vacant Land	Single-Family	Condo
Jan	$700,000	$577,000	$378,000
Feb	$490,000	$558,625	$475,000
Mar	$451,000	$630,000	$440,000
Apr	$417,500	$581,000	$407,500
May	$563,750	$607,098	$459,500
Jun	$420,000	$650,000	$355,000
Jul	$250,000	$590,000	$394,000
Aug			
Sep			
Oct			
Nov			
Dec			



AVERAGE DAYS ON MARKET

2015	Vacant Land	Single-Family	Condo
Jan	171	118	113
Feb	274	90.5	118
Mar	256	124	108
Apr	161	104	113
May	188	119	116
Jun	267	125	136
Jul	149	119	124
Aug			
Sep			
Oct			
Nov			
Dec			



Historical Project Absorption

Research was also conducted to give a historical look at the total residential inventory absorbed on a year to year basis. This survey included large projects that are typically put on the open market. These projects included single family residential homes, residential house lots, condominium projects, as well as agricultural subdivisions. It is also known that individual property owners occasionally subdivide tracts of land and sell off the lots to relatives or to a private list of purchasers. These types of projects are difficult to track and have not been included in the survey. The intent of this survey was to provide an indication of the capacity that the real estate market has to absorb new inventory on an annual basis.

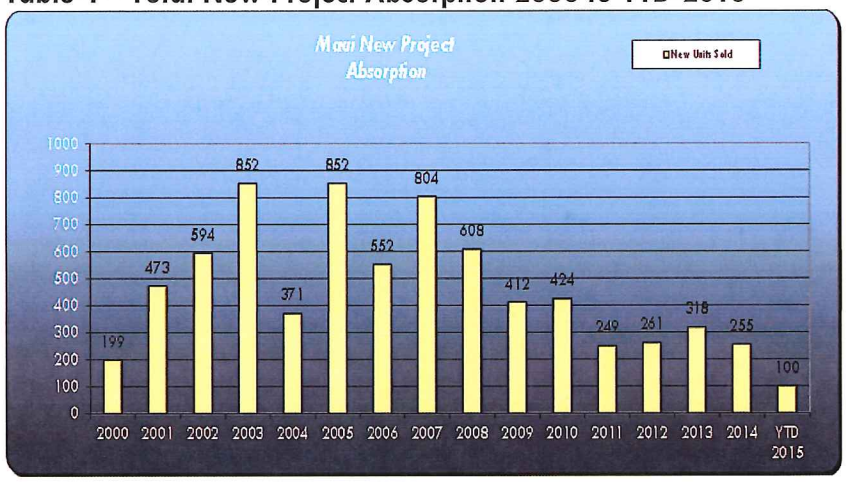
From 1995 to mid-2006, the real estate market showed an overall upward trend, in terms of sales volume as well as sales prices. In 1999, 671 new units were purchased. This number dropped to 280 in 2000 and saw a steady climb up to 2003. In 2003, the real estate market absorbed a total of 851 new housing units. In 2004, this number dropped again to 371 units. However, this drop proved to be temporary as numerous projects in Central and South Maui were completed and a total of 853 units closed. These projects included Ohia, Maunaleo, Iliahi, and Kehalani Gardens within the Kehalani Project District as well as the Sand Hills Estates and Legends in the Maui Lani Project District. In addition, Hale Kanani and Wailea Beach Villas were completed in South Maui. There were a few projects in West Maui that were completed in 2005 and included Mahanalua Nui Phase IV, Honolua Ridge and the Villas at Kahana Ridge. Lanikeha in Kaanapali closed two-thirds of their lots in 2005 and 2006. For 2006 overall, the number of units dropped significantly to 552 units. In 2007, the Central and South Maui regions saw another large injection of new inventory, which catapulted sales upwards to 804 units. Leading the way was the Waikapu Gardens subdivision, featuring affordably priced units. Over 20 percent of the total closings for 2007 were from this single-family subdivision. In 2008, project sales were primarily from the same subdivisions that started in 2007 and total units absorbed amounted to 609. Again leading the way was Waikapu Gardens with 30 percent of all project sales. The onset of the Great Recession in late 2008 led to decreased unit sales in 2009 and 2010, where only 415 and 423 new project closings occurred, respectively. The weakening of the economy also prevented new housing unit starts, which as translated into only 235 new unit closings in 2011.

During the ten year period between 2002 and 2011, there has been an average of approximately 570 units sold each year. By dividing the supply available in the market by this average, an estimate of the remaining years of current supply can be determined. As previously noted, during the peak of the real estate market, projects were often sold out prior to construction

completion. Since mid-2006, however, the weakened market has led to developers having to carry completed inventory.

In Central Maui, there are still developer units available in ongoing Kehalani projects such as Villas and Wai'olu Estates. Sandhills Estates and Traditions in Maui Lani also have developer inventory available for sale.

Table 4 – Total New Project Absorption 2000 to YTD-2015



A breakdown of the absorption of single family, condominium and residential vacant land is included on the following pages.

Table 5 – Units Absorbed Per Year (Central Maui)

	Type	Units	Year 2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	YTD 2015
KAIMANA	S	179	1	1				2										
GREENS	L	217	8															
IAO PARKSIDE IV-B	C	52	5	6	1	1												
IAO PARKSIDE IV-C	C	52	3	5	41													
NANEA	S	90																
GRAND FAIRWAYS	L	36	5															
IAO PARKSIDE IV-A	C	13	5	2														
GRAND FAIRWAYS NORTH	L	79	5	22														
WAILUKU PARKSIDE	S	119	5	87	1													
THE ISLAND SCHULER PHASE I	S	55	5	24	30													
THE ISLANDMAUI LANI PHASE I	L	44	5	23	10	1												
OLENA	S	31		7	24													
THE ISLAND MAUI LANI PH II	L	35			35													
THE ISLAND SCHULER PH II	S	53			9	44												
WAILUKU COUNTRY EST	L	184				177	7											
WAIOLANI ELUA	L	25				22	2											
BLUFFS - Maui Lani	L	15				6	9											
- Schuler	S	21					7	14										
OLENA II	S	32					32											
LEGENDS	S	143					47	90	3	2								
OHIA AT KEHALANI	S	140						135	5									
MAUNALEO AT KEHALANI	S	82						55	27									
OHIA AT KEHALANI PH II	S	44							44									
ILIAHI AT KEHALANI	C	92						61	31									
KEHALANI GARDENS	C	132						83	49									
LEGENDS PHASE II	S	134							33	99	2							
WAIOLANI PIKAKE	L/S	36									36							
WAIKAPU GARDENS	S	411							62	162	180	7						
KOA AT KEHALANI	L/S	72						16	33	15	5	2	1					
AKOLEA AT KEHALANI	L/S	97								25	45	21	6					
COTTAGES AT KEHALANI	S	114								6	51	37	20					
NA HOKU	S	162								22	53	28	40	19				
TRADITIONS AT MAUI LANI (Maui Lani)	S	9												2	7			
NA MALA O WAIHEE	L	7				1				3	1		1			1		
MILO COURT AT KEHALANI	C	94											22	20	23	21	8	
HO'OLEA TERRACE	C	174											4	19	27	84	37	3
SAND HILLS ESTATES	L	108						79	16	1						1	4	
WAIOLANI MAUKA	L	105								93			1			3		
VILLAS AT KEHALANI	C	103									1	13	10	11	4	0	20	5
NEW TRADITIONS AT MAUI LANI (Schuler)	S	144													7	49	59	24
PARKWAYS AT MAUI LANI	L/S	201															7	24
KAMANI AT KEHALANI	C	138																
WAI'OLU ESTATES	L	60																
Total			**47**	**177**	**151**	**252**	**104**	**535**	**303**	**428**	**374**	**108**	**105**	**71**	**68**	**159**	**135**	**56**

Table 6 – Units Absorbed Per Year (West Maui)

	Type	Units	Year 2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	YTD 2015
MAHANALUA NUI (I to III)	L	104	10	19		41	1											
VINTAGE	C	73	3	70														
KE ALII SUB'D III	L	12	7	1	4													
PINEAPPLE HILL II	L	30	12	8	9	1												
MAKILA I	L	19			19													
OLOWALU MAKAI	L	5		1	4													
OLOWALU MAUKA	L	14			8	6												
COCONUT GROVE AT KAPALUA	C	36		36														
PUUNOA SUBDIVISION	L	14		14														
KAHANA NUI SUB'D (HUA NUI)	L	17		16	1													
PINNACLE	C	33		5	8	8	12											
SUMMIT																		
Phase I	C	18		5	11	2												
Phase II (Pulled off Market)	C	17					17											
Phase III	C	19				19												
NAPILI VILLAS PH I	C	100			100													
NAPILI VILLAS PH II	C	44			44													
KE ALII SUB'D I	L	15			12	3												
KAPUA VILLAGE	L	45			10	35												
NAPILI VILLAS PHIII	C	40				40												
MAKILA II	L	24					24											
HONOLUA RIDGE PH I	L	25					17	8										
HONOLUA RIDGE PH II	L	25						6	10	8		1						
VILLAS AT KAHANA RIDGE	C	117						83	34									
MAHANALUA NUI IV	L	36				1		31	4									
HO'ONANEA	C	100											7	30	36	27		
THE BREAKERS (Bldgs D, E & F)	C	60											16	17	19	3	5	
LANIKEHA	L	139						61	40	2	2	8				1	5	
KAANAPALI COFFEE ESTATES	L	52							3	3			1	2	2	7	13	3
OPUKEA	C	114										37	22	1			8	14
HONUA KAI	C	700									1	166	180	65	81	53	46	14
Total			**32**	**175**	**231**	**156**	**71**	**189**	**91**	**13**	**3**	**212**	**226**	**115**	**138**	**91**	**77**	**31**

Table 7 – Units Absorbed Per Year (South Maui)

	Type	Units	Year 2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	YTD 2015
PILANI VILLAGE PHASE II	S	114		113	1													
MAKENA PLACE	C	10	2	2	2	1												
KE ALII KAI	S	96			61	35												
KENOLIO (KAONOULU) ESTATES	S	51			45	6												
PILANI VILLAGE III	S	117				117												
HONU ALAHELE	L	64				64												
KEAHOU AT MAKENA	L	7			6		1											
KILOHANA RIDGE	S	73				69	4											
KILOHANA HEMA	L	29				28	1											
ALII VILLAGE	L	27					27											
KENOLIO MAUKA		12					12											
NA HALE O MAKENA	C	40			13	24	3											
VILLAS AT KENOLIO	C	140				61	78	1										
ONE PALAUEA	L	17				1	8	8										
MALUHIA AT WAILEA	LC	14		5		1	3	2	2									
HALE KANANI	C	72						70	2									
WALAKA MAUI (112 WALAKA)	C	18							18									
KIHEI KAUHALE	L	23							23									
KANANI WAILEA	SC	38							9	25								
WAILEA BEACH VILLAS	C	98						34	63		1							
KAI MAKANI	C	112								96	16							
KAMALI'I ALAYNA	S	92								44	19	14	12	3				
MALUAKA	LC	13										5		8				
HOOLEI	C	120								25	66	13	7	5	4			
KE ALII OCEAN VILLAS	C	144								36	34	31	9	12	19	3		
KENOLIO MAKAI	S	18											16	1		1		
PAPALI	SC	24									15	1	3	4			1	
KAI MALU	C	150							22	86	27		3		2	7	2	1
MOANA ESTATES	S	90							18	39	20	2			1	3	6	1
KAI ANI VILLAGE	C	99										1	16	17	17	32	15	1
KILOHANA WAENA	L	31								6	3		3			9	4	4
HOKULANI GOLF VILLAS	SC	152									22	8	5	6	11	11	11	6
KEALA O WAILEA	C	70																
NU'U AINA ESTATES PHASE I	SC	26																
Total			**117**	**120**	**128**	**407**	**137**	**115**	**157**	**357**	**223**	**75**	**74**	**56**	**54**	**66**	**39**	**13**

Table 8 – Units Absorbed Per Year (Upcountry/East Maui)

	Type	Units	Year 2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	YTD 2015
HAIKU MAKAI	L	27	3															
MAUNAOLU PLANTATIONS	L	39			27	12												
RESIDENCES AT KULAMALU	L	57			56	1												
NORTH SHORE VILLAGE	S	23				22	1											
RIDGE AT KULAMANU	L	57					57											
KULAMALU HILLTOP (DOWLING)	L	11						11										
COTTAGES AT KULAMALU	C	40									3	15	17	5				
E PAEPAE PUKOA	L	16								6	4	2	1			1	2	
OMAOPIO RIDGE	L	8		1	1	2	1	2	1									
PIIHOLO SOUTH	L	11									1		1					
MAKANI O KULA	L	6												1			1	
OMAOPIO RIDGE II	L	10												1	1	1	1	
MAKANI O KULA II	L	4																
OMAOPIO ESTATES	L	20																
KULA `I`O	L	35																
Total			**3**	**1**	**84**	**37**	**59**	**13**	**1**	**6**	**8**	**17**	**19**	**7**	**1**	**2**	**4**	**0**
GRAND TOTAL			**199**	**473**	**594**	**852**	**371**	**852**	**552**	**804**	**608**	**412**	**424**	**249**	**261**	**318**	**255**	**100**

Historical Resale Activity
Central Maui

Vacant Land

Since January 2012 to present, there were 108 sales of residential-zoned house lots in Central Maui, with a median price of $210,000 and an average of 171,032 square feet. Twenty (20) of these were bank-owned sales and thirteen (13) were short sales.

The low end of the resale range is $85,000 for a 3,659 square foot parcel in Wailuku Town. The high end, at $3,750,000, is for a 71.6-acre agricultural lot on Honoapiilani Highway.

The 43 Central Maui land sales that occurred in 2012 reflected a median price of $163,500 with an average lot size of 101,077 square feet. The 31 Central Maui land sales that occurred in 2013 indicated a median sales price of $227,000, with an average lot size of 43,913 square feet. The 20 Central Maui land sales that occurred in 2014 indicated a median sales price of $281,835 with an average lot size of 36,505 square feet. The 13 Central Maui land sales that occurred thus far in 2015 indicated a median sales price of $350,000 with an average lot size of 59,342 square feet.

Twenty-three (23), or 53.5 percent of the transactions in 2012 were bank-owned or short sales. The average price in 2012, excluding the bank-owned and short sales, was $222,632, or $5.39 per square foot based on an average lot size of 41,276 square feet. For 2015 year to date, there were two (2) bank-owned sales, or 15.4 percent of the thirteen land transactions. The average price in 2015, excluding the bank-owned sales, was $368,441 or $5.46 per square foot based on an average lot size of 67,510 square feet.

On average, the sold prices since 2012 were approximately 8 percent less than the original list prices. Average price decreases were 11 percent in 2012, and 7 percent in 2013 and 2014. In 2015 year-to-date, the average price indicates an average price decrease of 7 percent. The average days on market for vacant parcels sold in Central Maui between 2012 and year to date 2015 is 298. By year, average days on market was 522 days in 2012, 283 days in 2013, 176 days in 2014, and 171 days thus far in 2015.

There were 43 sales in 2012 which calculate to 3.6 sales per month. In 2013, there were approximately 2.7 sales per month. In 2014, there were 20 land sales which calculate to 1.7 sales per month. As of July 2015, there have been thirteen (13) sales which calculate to 1.9 sales per month.

Single Family

Since 2014, there were a total of 469 single-family residential sales in Central Maui, of which, 349 were non-developer sales, with

the remainder being developer sales from the New Traditions and Parkways at Maui Lani subdivisions.

The low end of the resale range was $150,000 for a 1,900 square foot house built in 1960 on 11,574 square feet of land in Paukukalo. The high end, at $1,350,000, was for a three-bedroom/two and one-half bath home with 3,254 square feet of living area, built in 2004, in The Bluffs at Maui Lani.

The median sales price in 2014 was $455,000, compared to $420,000 in 2013, or 8.3 percent higher. The 2015 year-to-date median sales price is $506,000, compared to the 2014 year to date median sales price of $432,500, or 17 percent higher.

Overall for 2014, the average living area was approximately 1,531 square feet, and the average room count was about 3 bedrooms with an average of 2.1 baths. The average "Days on Market" for the 199 sales was 128 days.

Subdivisions with notable resale activity included Na Hoku at Maui Lani, Ohia at Kehalani, Wailuku Heights and Waikapu Gardens.

Project Sales in Central Maui

The success of projects can be attributed to its location with respect to governmental agencies, transportation facilities, and commercial and professional services. New developments like the proposed subject often create excitement in the market, especially when the product is perceived to offer a particular value to the buyer. Project sales on Maui, at all price levels, met good demand from the market up to mid-2006. As shown on the following page, absorption rates were rapid during that time period. In many subdivisions, especially the lower-priced homes, the residences were immediately reserved and waiting lists were as long as the reservation list. Ohia and Maunaleo, both located in the Kehalani Project District, had waiting lists of approximately 300 names each and closing rates were 9.42 and 6.69 homes per month, respectively.

Another example that stands out is Spencer Homes' affordable single-family subdivision in Waikapu. This project completed the last of its 410 single-family homes in late 2008. More than 50 percent of these homes were affordably priced; available to households earning up to 140 percent of the median household income. The developer had approximately 5,000 families on his waiting list. As expected, this subdivision sold out quickly.

The long waits in line to secure a spot on the reservation list and lottery systems are well-documented for Maui housing projects. During that period, absorption rates were reflective of the time needed to close the sold units. The drop in mortgage interest rates, which began in December 2008, has increased the purchasing

power of potential buyers. The following is a schedule of absorption rates of new subdivisions and condominium projects in Central Maui.

Table 9 – Central Maui Project Absorption

No.	Project Name Location	No. of Units	Project Type	Lot Size	Living Area of Dwellings	Sold Price Range	Marketing Time in Months	Units Sold	Units Sold Per Month
1	Parkways Kahului, Maui, Hawaii Maui Lani	201 House and Lot Packages	Single Family	5,008 to 15,412 sf	1,385 to 2,404 sf	$475,250 to $674,670	20 (12/13-07/15)	31	1.55
2	Waikapu Gardens, Ph II Waikapu, Maui, Hawaii Spencer Homes	56 House and Lot Packages	Single Family	3,213 to 10,486 sf	973 to 1,658 sf	$308,360 to $524,600	4 (4/15-8/15)	14	3.50
3	New Traditions (Schuler) Kahului, Maui, Hawaii Maui Lani	144 House and Lot Packages	Single Family	3,000 to 4,292 sf	1,250 to 1,375 sf	$387,057 to $476,205	34 (10/12-07/15)	139	4.09
4	Villas at Kehalani Wailuku, Maui, Hawaii Stanford Carr Dev	103 Condominiums	Lowrise Condos	N/A	1,446 to 1,853 sf	$399,000 to $700,000	88 (06/07-07/12) (04/13-07/15)	64	0.73
5	Ho'olea Terrace Wailuku, Maui, Hawaii Stanford Carr Dev	174 Condominiums	Lowrise Condos	N/A	751 to 953 sf	$199,000 to $410,000	58 (06/10-03/15)	174	3.00
6	Milo Court Wailuku, Maui, Hawaii Towne Dev of Hawaii	94 Condominiums	Lowrise Condos	N/A	1,425 to 1,465 sf	$329,790 to $439,000	52 (01/10-04/14)	94	1.81
7	The Traditions (Maui Lani) Kahului, Maui, Hawaii Maui Lani	9 House and Lot Packages	Single Family	3,000 to 4,292 sf	1,150 to 1,511 sf	$340,000 to $415,000	22 (10/10-08/12)	9	0.41
8	Na Hoku Kahului, Maui, Hawaii Schuler Homes	162 House and Lot Packages	Single Family	4,183 to 12,163 sf	1,500 to 2,403 SF	$432,000 to $690,000	59 (12/06-11/11)	162	2.75
9	Cottages at Kehalani Wailuku, Maui, Hawaii Stanford Carr Dev	114 House and Lot Packages	Single Family	4,432 to 18,133 sf	1,253 to 1,876 SF	$439,500 to $850,000	48 (08/06-08/10)	114	2.38
10	Sand Hills Estates Wailuku, Maui, Hawaii Maui Lani	108 House Lots	Single Family	7,561 to 16,999 sf	N/A	$294,000 to $495,000	84 (09/05-07/10)	101	1.20
11	Akolea at Kehalani Wailuku, Maui, Hawaii Towne Dev of Hawaii	97 Lots and House and Lot Packages	Single Family	7,037 to 16,606 sf	1,703 to 2,404 SF	$549,990 to $883,490	41 (12/06-05/10)	97	2.37
12	Koa at Kehalani Wailuku, Maui, Hawaii Towne Dev of Hawaii	72 Lots and House and Lot Packages	Single Family	7,900 to 21,675 sf	N/A	$395,000 to $989,000	36 (07/06-05/10)	72	2.00
13	Waikapu Gardens Waikapu, Maui, Hawaii Spencer Homes	411 House and Lot Packages	Single Family	3,213 to 10,486 sf	973 to 1,658 sf	$225,000 to $597,200	30 (11/06-6/09)	411	13.70
14	Waiolani Mauka Waikapu, Maui, Hawaii Waikapu 28 Invstmnt LLC	105 House Lots	Single Family	7,512 to 12,242 sf	N/A	$162,300 to $456,000	10 (2/07-12/07)	93	9.30
14	Waiolani Pikake Waikapu, Maui, Hawaii M&W2 LLC	36 House Lots	Single Family	6,140 to 9,574 sf	N/A	$135,100 to $349,900	11 (1/07-12/07)	36	3.27
16	Maui Lani The Legend Phase II Schuler Homes	134 House and Lot Packages	Single Family	3,433 to 8,874 SF	1,297 to 1,873 SF	$497,800 to $693,800	16 (10/06-2/08)	134	8.38

Recent & On-going Affordable Projects on Maui

Waikapu Gardens is comprised of 411 homes developed by Spencer Homes, of which 55 percent (224 homes) were sold as "affordable" units. This completed project is located directly south of the subject across Kokilolio Street. The first homes closed in November 2006 and the last homes closed in June 2009. The majority of homes were sold before being built. The average "affordable" home price was $266,367, and the average "market" home price was $436,419. During the first year of sales in 2006, there were 62 closings. In 2007, there were 162 closings, and in 2008 there were 180 closings. The final year of sales in 2009 saw the last seven homes sold. Absorption from the first sale to the last sale calculates to 13.3 units sold per month.

Waikapu Gardens Phase II is an on-going 100 percent affordable single-family development also being developed by Spencer Homes that will contain 56 dwellings located just south of the existing Waikapu Gardens. Home prices in this project range from $300,000 to $550,000. The first homes closed on August 4, 2015, and as of August 25, 2015, fourteen (14) homes have already closed escrow. Sold prices range from $308,360 to $524,600 with an average sale price of $451,530. According to the developer there were over 800 applicants for homes in this subdivision.

Kahoma Residential Subdivision is an on-going 100-percent affordable single-family subdivision being developed in Lahaina by West Maui Land Co. Lots range in size from 5,054 to 12,973 square feet and include a 42,929 square foot park. Site work commenced in mid-2015. According to Resolution 11-126, ten (10) units will be sold to families earning less than 80 percent of Maui County's median family income, eight (8) units will be sold to families earning less than 100 percent of Maui County's median family income, seventeen (17) units sold to families earning less than 140 percent of the median family income, ten (10) units sold to those earning less than 140 percent of the median family income, and twenty-three (23) units will be sold to those earning less than 160 percent of the median family income. Furthermore, 10 vacant lots will be sold to Habitat for Humanity, Maui at "affordable" prices.

Proposed "Affordable" Housing Projects on Maui

Kahoma Village is a 203 single-family and affordable multi-family residential unit neighborhood planned for construction in the heart of Lahaina just south of the Cannery Mall between Honoapiilani Highway and Front Street. It will be developed on approximately 22 acres owned by The Harry & Jeannette Weinberg Foundation in conjunction with Developer Stanford Carr.

The development will include 69 Cluster Single-Family units, 32 Alley Loaded Single-Family units and 102 Multi-family units (considered to be the Affordable Housing allocation portion of the project). The "Single-Family Cluster" homes will range in size from 1,165 square foot 3-bedroom/2-bath units to 1,670 square feet 4-bedroom/2.5-bath units. The "Single-Family Alley Loaded" models will range from 1,667 square feet 3-bedroom/2-bath units to 2,329 square feet 4-bedroom/3-bath models. This proposed project is currently going through the entitlement process.

Maalaea Plantation subdivision is a 113-lot subdivision planned for development by Spencer Development in Maalaea on the mauka side of Honoapiilani Highway. This proposed development will consist of 55 rural lots of 1- to 2-acres and 58 affordable homes with minimum 10,000 square foot lots. Plans also include a 2.8-acre neighborhood park and approximately 84 acres of land to remain in agricultural use.

Price Appreciation/ Depreciation

The Appraiser analyzed recently completed developments on Maui to illustrate the rate of price appreciation. We specifically focused on single-family subdivisions, condominium projects, and residential house lot subdivisions in the Central Maui neighborhood to give an indication of the demand for housing and its effect on prices within these projects. These developments were selected knowing that these products represent moderately priced market developments. Within Central Maui, single-family subdivisions that were analyzed included Waikapu Gardens, Sandhills Estates, Maunaleo at Kehalani, Legends at Maui Lani, Na Hoku at Maui Lani, Koa at Kehalani, and The Cottages at Kehalani; while Kehalani Gardens and Iliahi at Kehalani were two condominium developments that were checked for re-sales.

After the last of the original homes sold in **Waikapu Gardens** in 2009, four resales occurred in 2010 at an average price of $483,000, which included one short sale. In 2011, there were also four resales at an average price of $370,823, including two REO sales. In 2012 there were nine resales at an average price of $410,944, which included one short sale. This is 10 percent higher than the 2011 average price, but 15 percent less than the 2010 average price. In 2013, there were 19 resales with an average sales price of $487,200, including only one short sale, which calculates to an **appreciation of 18 percent** over 2012. In 2014, nine homes re-sold at an average price of $536,211, including one REO sale, which reflects a **10 percent appreciation** from 2013, and in 2015 year-to-date, six homes re-sold at an average price of $536,250.

Sandhills Estates, in Maui Lani, had three (3) resales of vacant parcels in each year, 2012 and 2013, two (2) resales in 2014, and 1 resale in 2015 year to date. Most of these parcels were initially

purchased between 2005 and 2007, and resold at lower prices. One parcel was purchased in 2014 and resold at a higher price. The 2012 resale prices reflected **depreciation of 61 to 64 percent,** with days on market between 105 to 507 days. . The 2013 resale prices reflected **depreciation of 49 to 54 percent,** with days on market between 22 to 48 days. 2014 resale prices reflected **depreciation of 49 percent** and **appreciation of 70 percent,** with days on market of 69 and 203 days. The 2015 resale reflected **depreciation of 48 percent** with 49 days on market. None of the transactions between 2012 and 2015 were bank-owned sales or short sales.

Since the first closing in September 2004, there have been 73 resales within the **Legends at Maui Lani** subdivision. In 2014 and year to date 2015, there were 13 fee simple resales, of which, 1 was bank-owned and none were short sales. The average resale price in 2006 was $653,750. From 2007 to 2011, the average resale price declined year over year. In 2007, the average resale price **declined 8.5 percent** to $601,944; in 2008 a **16.1 percent decline** to $505,600, in 2009 an **18 percent** decline to $414,400; in 2010, a **5.6 percent decline** to $391,340 and in 2011, a **7.1 percent decline** to $363,536. In 2012, the average resale price **increased by 5.9 percent** to $385,000. One market sale occurred in 2013, with a price of $520,000, representing an **increase of 43 percent** from 2012. A slight **decline of 1.9 percent** to $510,200 occurred in 2014, and 2015 year-to-date average resale price **increased by 2.8 percent,** to $524,613. The average resale price for the eight market sales that occurred so far in 2015 represents a decline of 20.2 percent from the peak in 2006.

Na Hoku at Maui Lani began closing in August 2007. Since then, there were seven resales within this subdivision. In 2010, there was one resale with a selling price of $465,000. In 2012, two sales represented an average selling price of $525,000, an **increase of 12.9 percent.** In 2013, there was another **increase of 12.4 percent** from one resale at a selling price of $590,000. Two sales occurred in 2014, with an average selling price of $557,500, a **decrease of 5.6 percent.** One resale occurred so far in 2015 for $595,000, **a 28 percent increase** from the first and lowest resale in 2010.

The Cottages at Kehalani subdivision consists of a total of 114 single-family homes that commenced closing in October 2007. Most of these homes were purchased in 2008 and 2009. In 2007, there were six (6) closings with an average sales price of $602,767. In 2008, 51 more homes closed with an average sales price of $616,113. However, in 2009, sales slowed to 37 closings at an average price of $484,967, and in 2010 to 20 closings at an average price of $471,289. In comparison to 2008 and 2009, the 2010 average price indicates **depreciation of 24 percent and 3 percent,** respectively. From the first closing in October 2007 to the latest closing on November 5, 2010, there were 114 sales which

calculate to an absorption rate of 3.08 closings per month. However, it should be noted that sales in 2008 averaged 4.17 per month, and decreased to 3.08 sales per month in 2009. In 2010, the rate of sales was 1.8 per month.

There were a total of 27 resales within this subdivision. In 2010, the average price of the resales was $511,800. In 2011, there were only three sales, of which, two (2) were bank-owned sales and one was a short sale. The average sale price reflected a **decrease of 7.1 percent** to $475,000. In 2012 and 2013, there were **increases of 12.6 and 9.7 percent**, or average resale prices of $535,000 and $586,756, respectively. Three of the nine sales in 2013 were short sales. In 2014, the average resale price dropped to $490,000, a **16.5 percent decrease.** One resale was a bank-owned sale and one was a short sale. As of August 2015, there were three market resales with an average price of $623,000, or a **27.1 percent increase** from 2014.

Within the **Koa at Kehalani** subdivision, there have been seventeen (17) land resales, including two short sales and five bank-owned sales. This subdivision featured 72 finished house lots, of which 23 were sold with single-family homes. The lot resales in 2006 and 2007 indicated an average price **appreciation of 7 percent** from the initial sales prices in 2005, while the 2008 lot resales showed an average **depreciation of 12 percent** from the initial sales prices in 2006. There were three (3) land resales in 2010, but only a single market land transaction at $305,000. There were two (2) market land resales in 2011 at an average price of $277,500. In 2012, there were five (5) land resales, of which three (3) were bank-owned sales. The average price for the two (2) market resales was $240,000 and the bank-owned properties ranged in price between $163,500 and $200,000. There were four (4) land market resale transactions in 2013, with an average price of $282,500 and in 2014, one market resale occurred with a selling price of $350,000.

There were 23 single-family home resales from 2007 to 2015. From 2007-2009, there were six market resales with an average price of $848,333, reflecting a 10.3 percent increase from the average initial sale price of $768,975. From 2010 to 2013, there were 15 resales, of which five (5) were bank-owned sales and five (5) were short sales. The bank-owned transactions and short sales for this period ranged in price from $250,000 to $780,000. The average price for the market transactions was $775,680. One resale occurred in each of 2014 and 2015, with resale prices of $1,175,000 and $695,000, respectively.

Since the first closing in June of 2005, there have been 41 resales within the **Maunaleo at Kehalani** subdivision. Nineteen (19) appear to be sales by speculators, as there were subsequent transactions occurring within six months of the developer sale. The

average resale price in 2005 and 2006 was $725,933. There were only five (5) resales in 2009, two (2) in 2010, one (1) in 2011, four (4) in 2012, one (1) in 2013, three (3) in 2014 and two (2) two thus far in 2015. In 2009 and 2010, the average resale price decreased to $480,600 and $450,750, respectively. This calculates to a **32 percent decrease** in 2009 from 2007 and **a 6.2 decrease** in 2010 from 2009. The one sale in 2011 sold at $582,500, an **increase of 29.3 percent.** In 2012, the average resale price was $542,750, a **6.8 percent decrease.** The one sale in 2013 sold for $739,000, a **36.2 percent increase** from 2012. In 2014, the average resale price was $645,000, a **12.7 percent decrease,** and thus far in 2015, there was an **increase by 10 percent,** to $709,500.

The **Iliahi at Kehalani** condominium project sold all 92 of its units within 2005 and 2006. To date, there have been 41 resales. The average resale price of $303,300 in 2009 reflects a **36 percent decline** from the average price of $476,601 in 2005/2006. The largest year-to-year decline occurred from 2008 to 2009 when resale prices **depreciated by 23 percent,** which followed a **14 percent decline** from 2007 to 2008. There were four (4) resales in 2010, of which, three were short sales. The prices ranged from $280,000 to $305,000 with an average of $290,000. This reflects a slight decline from the average 2009 sale price of $303,300. In 2011, there was five (5) resales, of which two (2) were bank-owned sales and two (2) were short sales closing at an average price of $251,000. This represents a **13.5 percent decrease** from 2010. From 2012 to 2015, year over year increases in the average resale price occurred. Two (2) of the three (3) resales in 2012 were bank owned properties and the average resale price was $266,933, a **6.4 percent increase.** The one market sale in 2013, reflected a **25.5 percent increase** to $335,000. A slight **increase of 1.6 percent** occurred in 2014, with an average resale price of $340,433. One resale was a bank owned property. Thus far in 2015, the one resale had a selling price of $373,400, which is a **6.7 percent increase** from 2014.

The 132-unit **Kehalani Gardens** sold all of its units within 2005 and 2006 with 64 resales to date. Up until 2009, resales prices all indicated an appreciation from the original developer prices. However, resale prices declined steadily in 2010 through year-to-date 2012. The average resale price in 2010 was $274,625. In 2011 there were five (5) sales with an average price of $213,200. In 2012, there were (6) sales with an average sales price of $186,167 which is **a decline of 32 percent** from 2010, **and 13 percent decline** from 2011. In 2013 and 2014, the average resale price increased to $271,375 and $311,667, reflecting **increases of 45.7 and 14.9 percent,** respectively. Two (2) sales in 2013 were bank-owned sales and in 2014, two (2) were bank-owned sales and three (3) were short sales. Thus far in 2015, there have been 10 resales with an average selling price of $306,875, a

slight **decrease of 1.5 percent.** Three (3) of the sales were bank-owned sales.

Milo Court at Kehalani is a condominium project in Wailuku, with 94 units within 47 duplex structures. Closing commenced in 2010 and the last units sold in 2014. There were 17 resales within this project, with average prices higher than the initial average sale price offered. In 2012 there was one (1) resale with a selling price of $360,000, a slight **increase of 1.3 percent** from the initial average sale price. In 2013, one (1) resale with a price of $410,000, or an **increase of 13.9 percent,** occurred. In 2014, there were nine (9) resales with an average price of $444,313, an **8.4 percent increase.** For 2015 year-to-date, there has been six (6) resales with an average price of $470,571, a **5.9 percent increase.** None of the transactions were bank-owned sales or short sales.

"Affordable" Prices vs. Median Prices in Central Maui

The following table compares the median single-family home prices in Central Maui with the "affordable" prices gleaned from the County of Maui "Affordable Sales Price Guidelines" for a family earning 100 percent of the County's median income desiring a 3-bedroom dwelling at 4.50 percent interest. In the past four years, the median sales price in Central Maui fell below the "affordable" price level in 2011 and 2012. Since 2012, the spread between the "affordable" price and median price in Central Maui has steadily widened to where the year-to-date median price in 2015 is now 31 percent higher than the 2015 "affordable" price.

Year	Affordable Price[1]	Median Price[2]	% Diff.
2009	N/A	$471,250	
2010	$394,700	$430,000	9%
2011	$394,700	$375,000	-5%
2012	$400,400	$380,000	-5%
2013	$408,200	$415,630	2%
2014	$393,700	$445,000	13%
2015	$390,000	$510,000	31%

[1] Maui Island Single Family Affordable Price, 100% of Median Income, 3-Bedrooms, 4.5% Interest. County of Maui Affordable Sales Price Guidelines. [2] Central Maui Single Family Median Price, based on Realtors Assocation of Maui statistics.

EFFECTIVE DEMAND

Effective demand considers the ability of market participants to purchase a home. Statistical information from the Hawaii Housing Planning Study 2011 by SMS Research & Marketing Services, Inc. provided information relative to the effective demand for housing in Maui County. Effective demand was determined by those who wanted to move to a new home, but excluding those who will move out-of-state. For Maui County, this figure was shown to be 31 percent in 2011, which was down from 40 percent in 2006. Effective demand was 36 percent in 2003, 41 percent in 1997 and 39 percent in 1992. It was reported that effective demand has fluctuated around 35 to 40 percent for many years and that Maui County continues to have the highest effective demand (tied with the City and County of Honolulu) in the State.

The 2011 report also indicated increased crowding indicators from 2006 and 2003. For Maui County, "crowded" households (those having more than 1.01 persons per room) declined from 11 percent in 2003 to 8 percent in 2006, but returned to 11 percent in 2011. "Doubled up" households (those having more than one family group in a single housing unit) have seen incremental gains of 9 percent in 2003, 10 percent in 2006 and 13 percent in 2011. The data reported in the survey provides evidence of pent-up demand.

The survey indicated that although 41 percent of the current homeowners can afford a $1,782 monthly mortgage payment for a $415,000 single-family home, only 16 percent have an adequate 20 percent down payment. At the same time, 56 percent of the current homeowners can afford a $1,331 monthly mortgage payment for a $310,000 condominium, but only 25 percent have an adequate 20 percent down payment.

Renters who plan to buy were also surveyed. About 40 percent have at least $5,000 in savings and only 8 percent could gather enough resources to put $60,000 down on their next home. Meanwhile, 16 percent of renter households had no money for a down payment. Unlike current homeowners, renters will have to increase their monthly housing payment when they shift to home ownership. The report indicated only 21 percent of renters are paying more than $1,700 a month for shelter and 85 percent of renter households earn less than 140 percent of the annual median income for Maui County.

Eighty-three percent (83%) of those who indicated they were potential buyers wanted fee simple single-family homes. Of this total, 78 percent would like to have four or more bedrooms; however, many would settle for a smaller unit, if necessary. 42 percent of potential buyers could live with a two-bedroom unit and an additional one-third of buyers require just three bedrooms.

Not surprisingly, the 2011 survey confirmed that the effects of the Great Recession are impacting the ability of potential buyers to purchase housing. It is safe to assume that the desire for housing in Maui County remains; however, at present time it is being suffocated by still-unfavorable economic conditions. The injection of new inventory at affordable price points will help reduce the number of "crowded" and "doubled up" households in Maui County and allow entry-level and workforce market segments the opportunity of home ownership.

CONCLUSION

Between 2006 and 2011 there was a significant softening of Maui's real estate market. The onset of the Great Recession in late 2008 only helped to fuel this downward trend. During this period, Maui's remaining economic pillars, tourism and construction, also experienced notable slowdowns. This led to a large number of foreclosures and short sales. However, the amount of listed inventory has decreased steadily since 2009, with the number of "troubled" properties not as abundant.

The impact from a lack of available inventory, coupled with very few new housing starts over the past few years, is once again starting to affect the real estate climate on Maui. The following points summarize the supply of real estate in Maui at this time.

- As of July 2015, there were approximately 1,988 active listings in the Realtors Association of Maui Multiple Listing Service for all types of residential properties (single-family, multi-family, and residential house lots) on Maui. By comparison, active listings of residential properties peaked at 3,467 in April 2009.

- There are approximately 871 new housing units currently available in the market. This was determined to be the short term supply of new housing units or vacant lots available for purchase in the market. Of this total, approximately 483 units are located in Central Maui while South Maui has a total of 170 units. West Maui has 164 of the total short term supply, while Upcountry Maui has 68 units.

- Current absorption rates based on August 2015 "Active" listings divided by July 2015 sales calculates to 4 months for residential, 8.5 months for condominiums, and 26 months for land.

- As of July 2015 year-to-date MLS statistics, the median single-family price in Central Maui was $510,000, which is 19 percent higher than the same period in 2014, and there were 219 sales so far in 2015 compared to 167 sales in the same period during 2014.

- The median single-family price in Central Maui of $510,000, as of July 2015 year-to-date, would fall within the 120 to 130 percent of median income price range of the Maui Affordable Sales Price Guidelines for a 3-bedroom home at 4.0 percent interest. This statistic indicates that many Central Maui homes are now priced out of reach for most middle-income families that are within the 60 to 120 percent of median income brackets.

- Over the next decade, Wai'ale, Ohana Kai, and Pu'unani make up the larger projects planned for Central Maui. Given the gradual recovery of the local economy, but unstable international economy, it is still uncertain as to whether these projects will be carried out. Maui's land use controls, such as the Workforce Housing Ordinance, Water Availability Ordinance and the Urban Growth Boundary may continue to be barriers to entry for some developers.

The following points summarize the demand for real estate in Maui at this time.

- Population on Maui between 2000 and 2010 grew by 20.1 percent. Population is expected to increase by 35.7 percent from 2010 to 2035. From 2000 to 2010, Central Maui had a growth rate of 30.8 percent increase in population.

- Mortgage rates remain at historical lows. As of August 2015, the average interest rate on 30-year, fixed-rate mortgages was at about 3.9 percent. These lower rates typically mean that real estate becomes more affordable to a larger segment of the population. Lower mortgage rates and depressed prices resulted in increased sales volume from 2008 through 2013.

- Real estate sales activity in vacant land, single-family, and condominium properties has been on an upward trend in terms of sales volume since 2009. Although median prices declined from 2006 to 2011, statistics indicate median sales prices for all real estate types have steadily increased since 2011.

- Central Maui remains the most active region on the island. This is a testament to the area's desirability and proximity to the primary financial, business, civic, transportation and shipping areas of Maui, as well as having the most new residential developments on the island. From 2010 to 2014, there has been an average of 108 new housing units absorbed in Central Maui per year.

- The Hawaii Housing Planning Study 2011 shows that there will be a demand for 3,454 new housing units in Maui County, from 2012 to 2016.

On a long-term basis, from 5 to 20 years, it is difficult to reliably estimate the number of projects that will be actually brought to the market. As mentioned before, many projects have been delayed or have met with resistance from the community for various reasons. Some face the lengthy and uncertain tasks of rezoning and Community Plan Amendments by the County, as well as District Boundary Amendments by the State of Hawaii. This would seem to indicate that of all the potential projects that have been identified, a significant number may never be realized.

Many developers feel that the most difficult barriers to entry on Maui, with regard to residential projects, are the Workforce Housing Ordinance, the Water Availability Ordinance, and more recently, the proposed Urban Growth Boundary. In their opinion, these County land use controls have increased an already time consuming and costly entitlement process, to the point where feasibility becomes questionable. Faced with this higher risk in the entitlement process, it is highly likely that they will put their money elsewhere, instead of constructing homes for Maui's residents. As such, in the next upswing of the market, the number of housing units that will become available is expected to be suppressed.

Prices had increased significantly during the early 2000's and made home ownership extremely difficult for residents of Maui, especially for those near the median income levels. The decline of the market between 2006 and 2011 has done little to resolve this affordability issue. Most of the development focus, both current and past, has been on market level, upper income brackets or the luxury resort market. There is a strong need for development to serve the general population and ultimately rebalance the supply and demand factors for residential properties.

The demand for housing still exists, despite the still-fragile local and national economies. The return of the visitor industry in 2011 has provided a significant boost to Maui's recovery. The increase of large projects on the island in 2012 has put many in the construction industry back to work; however, there is still a limited number of residential project developments, keeping some tradesmen on the bench.

As these backbones of the island's economy continue to strengthen, so will consumer confidence. Prior to this, even though property values had fallen to a level that is within the affordable price guidelines, many potential homebuyers were reluctant to purchase property, due to unemployment or a lack of job security.

Many who are willing to buy in today's market are finding it easier to obtain financing, as compared to the late 2000's. Interest rates are still at near-record lows which increases the purchasing power for buyers in all market segments.

While being cognizant of the cyclical nature of the real estate market, many feel that there will be cautious growth the horizon, followed by a more notable rebound. At that point in time, it is assumed that economic conditions will have improved and potential buyers will find themselves in more opportune financial circumstances.

However, if history holds true, property appreciation may once again outpace household income and prevent many from being able to afford a home. By offering housing at affordable price points, the subject will provide much relief from this situation.

The Waiale 201-H Project is conveniently located within easy driving distance of all parts of Maui. Release of more supply into the market, such as those offered by the subject, should be well received based on historical information. The 410-lot Wakapu Gardens Subdivision and the on-going Waikapu Gardens Phase II is located directly south of the subject, and provides a good indication of the demand for "affordable" homes in Central Maui.

Currently, the ability of "qualified" buyers to purchase affordable housing may be more difficult than a few years ago; however, it is fairly safe to assume that as economic conditions improve, and interest rates remain low, housing units within this market segment will continue to be the most sought after.

The subject will still need to go through entitlement, design and construction processes before sales can occur. Nonetheless, release of the subject's 71 single-family homes may be very well timed with the continuing economic and market recovery. If so, significant demand can be expected for this project, especially with no other "affordable" projects planned for Central Maui in the immediate future, except for Maalaea Plantation.

As economic and market conditions continue to improve, the project can expect to see heightened demand, due to its Central Maui location and affordable price points. Statistical evidence has clearly shown that under all market conditions, this segment has the most demand. Although the exact pricing of the project units has not been determined, all 71 single-family residences will be priced towards families within the 80 to 140 percent of median income in accordance with the County of Maui Department of Housing and Human Concerns Affordable Sales Price Guidelines. This development will give entry-level market participants an opportunity for home ownership. After consideration of current economic and real estate market conditions, in addition to forecasts by Hawaii economists, it is our opinion that the Waiale 201-H Affordable Housing Project will receive substantial interest and be well-timed to capitalize on the on-going market recovery.

PART IV – EXHIBITS AND ADDENDA

EXHIBITS

EXHIBIT A

Claritas Demographic Data

Maui County

Pop-Facts: Demographic Snapshot 2013 Report

County, (see appendix for geographies), aggregate

Description	Total *County*	*%*
Population		
2018 Projection	165,486	
2013 Estimate	158,805	
2010 Census	154,834	
2000 Census	128,094	
Growth 2013-2018	4.21%	
Growth 2010-2013	2.56%	
Growth 2000-2010	20.88%	
2013 Est. Pop by Single Race Class	158,805	
White Alone	55,173	34.74
Black or African American Alone	957	0.60
Amer. Indian and Alaska Native Alone	622	0.39
Asian Alone	44,593	28.08
Native Hawaiian and Other Pac. Isl. Alone	16,308	10.27
Some Other Race Alone	3,288	2.07
Two or More Races	37,864	23.84
2013 Est. Pop Hisp or Latino by Origin	158,805	
Not Hispanic or Latino	141,788	89.28
Hispanic or Latino:	17,017	10.72
Mexican	6,745	39.64
Puerto Rican	6,294	36.99
Cuban	28	0.16
All Other Hispanic or Latino	3,950	23.21
2013 Est. Hisp or Latino by Single Race Class	17,017	
White Alone	4,485	26.36
Black or African American Alone	57	0.33
American Indian and Alaska Native Alone	242	1.42
Asian Alone	1,310	7.70
Native Hawaiian and Other Pacific Islander Alone	862	5.07
Some Other Race Alone	3,038	17.85
Two or More Races	7,023	41.27

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Pop-Facts: Demographic Snapshot 2013 Report

County, (see appendix for geographies), aggregate

Description	Total *County*	*%*
2013 Est. Pop. Asian Alone Race by Cat	44,593	
Chinese, except Taiwanese	1,649	3.70
Filipino	25,866	58.00
Japanese	12,352	27.70
Asian Indian	153	0.34
Korean	1,103	2.47
Vietnamese	494	1.11
Cambodian	64	0.14
Hmong	0	0.00
Laotian	15	0.03
Thai	66	0.15
All Other Asian Races Including 2+ Category	2,831	6.35
2013 Est. Population by Ancestry	158,805	
Pop, Arab	85	0.05
Pop, Czech	186	0.12
Pop, Danish	435	0.27
Pop, Dutch	776	0.49
Pop, English	5,906	3.72
Pop, French (except Basque)	1,975	1.24
Pop, French Canadian	252	0.16
Pop, German	7,803	4.91
Pop, Greek	228	0.14
Pop, Hungarian	434	0.27
Pop, Irish	4,051	2.55
Pop, Italian	5,579	3.51
Pop, Lithuanian	21	0.01
Pop, United States or American	1,101	0.69
Pop, Norwegian	1,035	0.65
Pop, Polish	1,156	0.73
Pop, Portuguese	6,285	3.96
Pop, Russian	191	0.12
Pop, Scottish	1,340	0.84
Pop, Scotch-Irish	678	0.43
Pop, Slovak	79	0.05
Pop, Subsaharan African	111	0.07
Pop, Swedish	1,221	0.77
Pop, Swiss	624	0.39
Pop, Ukrainian	28	0.02
Pop, Welsh	453	0.29
Pop, West Indian (exc Hisp groups)	191	0.12
Pop, Other ancestries	107,167	67.48

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Pop-Facts: Demographic Snapshot 2013 Report

County, (see appendix for geographies), aggregate

Description	Total *County*	*%*
2013 Est. Population by Ancestry		
Pop, Ancestry Unclassified	9,414	5.93
2013 Est. Pop Age 5+ by Language Spoken At Home	148,498	
Speak Only English at Home	119,636	80.56
Speak Asian/Pac. Isl. Lang. at Home	22,842	15.38
Speak IndoEuropean Language at Home	3,110	2.09
Speak Spanish at Home	2,741	1.85
Speak Other Language at Home	169	0.11
2013 Est. Population by Sex	158,805	
Male	79,464	50.04
Female	79,341	49.96
2013 Est. Population by Age	158,805	
Age 0 - 4	10,307	6.49
Age 5 - 9	10,085	6.35
Age 10 - 14	10,008	6.30
Age 15 - 17	6,219	3.92
Age 18 - 20	5,003	3.15
Age 21 - 24	7,496	4.72
Age 25 - 34	19,608	12.35
Age 35 - 44	21,198	13.35
Age 45 - 54	23,690	14.92
Age 55 - 64	22,668	14.27
Age 65 - 74	13,597	8.56
Age 75 - 84	6,112	3.85
Age 85 and over	2,814	1.77
Age 16 and over	126,438	79.62
Age 18 and over	122,186	76.94
Age 21 and over	117,183	73.79
Age 65 and over	22,523	14.18
2013 Est. Median Age	40.0	
2013 Est. Average Age	39.40	

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Pop-Facts: Demographic Snapshot 2013 Report

County, (see appendix for geographies), aggregate

Description	Total County	%
2013 Est. Male Population by Age	79,464	
Age 0 - 4	5,287	6.65
Age 5 - 9	5,186	6.53
Age 10 - 14	5,079	6.39
Age 15 - 17	3,164	3.98
Age 18 - 20	2,605	3.28
Age 21 - 24	3,884	4.89
Age 25 - 34	9,895	12.45
Age 35 - 44	10,840	13.64
Age 45 - 54	11,865	14.93
Age 55 - 64	11,376	14.32
Age 65 - 74	6,626	8.34
Age 75 - 84	2,650	3.33
Age 85 and over	1,007	1.27
2013 Est. Median Age, Male	39.3	
2013 Est. Average Age, Male	38.70	
2013 Est. Female Population by Age	79,341	
Age 0 - 4	5,020	6.33
Age 5 - 9	4,899	6.17
Age 10 - 14	4,929	6.21
Age 15 - 17	3,055	3.85
Age 18 - 20	2,398	3.02
Age 21 - 24	3,612	4.55
Age 25 - 34	9,713	12.24
Age 35 - 44	10,358	13.06
Age 45 - 54	11,825	14.90
Age 55 - 64	11,292	14.23
Age 65 - 74	6,971	8.79
Age 75 - 84	3,462	4.36
Age 85 and over	1,807	2.28
2013 Est. Median Age, Female	40.8	
2013 Est. Average Age, Female	40.20	

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Pop-Facts: Demographic Snapshot 2013 Report

County, (see appendix for geographies), aggregate

Description	Total County	%
2013 Est. Pop Age 15+ by Marital Status	128,405	
Total, Never Married	41,713	32.49
Males, Never Married	24,123	18.79
Females, Never Married	17,590	13.70
Married, Spouse present	58,545	45.59
Married, Spouse absent	6,482	5.05
Widowed	6,769	5.27
Males Widowed	1,298	1.01
Females Widowed	5,471	4.26
Divorced	14,896	11.60
Males Divorced	6,938	5.40
Females Divorced	7,958	6.20
2013 Est. Pop. Age 25+ by Edu. Attainment	109,687	
Less than 9th grade	4,778	4.36
Some High School, no diploma	6,999	6.38
High School Graduate (or GED)	35,133	32.03
Some College, no degree	27,206	24.80
Associate Degree	8,496	7.75
Bachelor's Degree	19,027	17.35
Master's Degree	5,178	4.72
Professional School Degree	2,020	1.84
Doctorate Degree	850	0.77
2013 Est Pop Age 25+ by Edu. Attain, Hisp. or Lat	8,931	
CY Pop 25+, Hisp/Lat, < High School Diploma	1,534	17.18
CY Pop 25+, Hisp/Lat, High School Graduate	4,085	45.74
CY Pop 25+, Hisp/Lat, Some College or Associate's Deg	2,187	24.49
CY Pop 25+, Hisp/Lat, Bachelor's Degree or Higher	1,125	12.60
Households		
2018 Projection	58,390	
2013 Estimate	55,624	
2010 Census	53,886	
2000 Census	43,510	
Growth 2013-2018	4.97%	
Growth 2010-2013	3.23%	
Growth 2000-2010	23.85%	

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Pop-Facts: Demographic Snapshot 2013 Report

County, (see appendix for geographies), aggregate

Description	Total County	%
2013 Est. Households by Household Type	55,624	
Family Households	36,621	65.84
Nonfamily Households	19,003	34.16
2013 Est. Group Quarters Population	2,771	
2013 HHs by Ethnicity, Hispanic/Latino	4,475	8.05
2013 Est. HHs by HH Income	55,624	
CY HHs, Inc < $15,000	4,937	8.88
CY HHs, Inc $15,000 - $24,999	4,836	8.69
CY HHs, Inc $25,000 - $34,999	5,318	9.56
CY HHs, Inc $35,000 - $49,999	7,827	14.07
CY HHs, Inc $50,000 - $74,999	10,968	19.72
CY HHs, Inc $75,000 - $99,999	7,899	14.20
CY HHs, Inc $100,000 - $124,999	5,370	9.65
CY HHs, Inc $125,000 - $149,999	2,951	5.31
CY HHs, Inc $150,000 - $199,999	2,800	5.03
CY HHs, Inc $200,000 - $249,999	971	1.75
CY HHs, Inc $250,000 - $499,999	1,298	2.33
CY HHs, Inc $500,000+	449	0.81
2013 Est. Average Household Income	$80,649	
2013 Est. Median Household Income	$61,155	
2013 Median HH Inc by Single Race Class. or Ethn		
White Alone	63,076	
Black or African American Alone	48,269	
American Indian and Alaska Native Alone	33,525	
Asian Alone	67,647	
Native Hawaiian and Other Pacific Islander Alone	48,272	
Some Other Race Alone	45,375	
Two or More Races	54,664	
Hispanic or Latino	51,125	
Not Hispanic or Latino	61,980	
2013 Est. Family HH Type, Presence Own Children	36,621	
Married-Couple Family, own children	10,166	27.76

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Pop-Facts: Demographic Snapshot 2013 Report

County, (see appendix for geographies), aggregate

Description	Total *County*	*%*
Married-Couple Family, no own children	17,644	48.18
Male Householder, own children	1,552	4.24
Male Householder, no own children	1,219	3.33
Female Householder, own children	3,158	8.62
Female Householder, no own children	2,882	7.87
2013 Est. Households by Household Size	55,624	
1-person household	13,756	24.73
2-person household	17,590	31.62
3-person household	9,035	16.24
4-person household	6,953	12.50
5-person household	3,847	6.92
6-person household	2,054	3.69
7 or more person household	2,389	4.29
2013 Est. Average Household Size	2.81	
2013 Est. Households by Presence of People	55,624	
Households with 1 or more People under Age 18:	18,376	33.04
Married-Couple Family	12,169	66.22
Other Family, Male Householder	1,798	9.78
Other Family, Female Householder	4,212	22.92
Nonfamily, Male Householder	31	0.17
Nonfamily, Female Householder	166	0.90
Households no People under Age 18:	37,248	66.96
Married-Couple Family	16,342	43.87
Other Family, Male Householder	1,055	2.83
Other Family, Female Householder	1,994	5.35
Nonfamily, Male Householder	8,863	23.79
Nonfamily, Female Householder	8,994	24.15
2013 Est. Households by Number of Vehicles	55,624	
No Vehicles	3,555	6.39
1 Vehicle	16,623	29.88
2 Vehicles	22,187	39.89
3 Vehicles	8,299	14.92
4 Vehicles	3,316	5.96
5 or more Vehicles	1,644	2.96
2013 Est. Average Number of Vehicles	1.96	

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Pop-Facts: Demographic Snapshot 2013 Report

County, (see appendix for geographies), aggregate

Description	Total *County*	*%*
Family Households		
2018 Projection	38,409	
2013 Estimate	36,621	
2010 Census	35,498	
2000 Census	29,902	
Growth 2013-2018	4.88%	
Growth 2010-2013	3.16%	
Growth 2000-2010	18.71%	
2013 Est. Families by Poverty Status	36,621	
2013 Families at or Above Poverty	34,108	93.14
2013 Families at or Above Poverty with Children	15,427	42.13
2013 Families Below Poverty	2,513	6.86
2013 Families Below Poverty with Children	2,057	5.62
2013 Est. Pop Age 16+ by Employment Status	126,438	
In Armed Forces	340	0.27
Civilian - Employed	78,664	62.22
Civilian - Unemployed	9,693	7.67
Not in Labor Force	37,741	29.85
2013 Est. Civ Employed Pop 16+ Class of Worker	82,714	
For-Profit Private Workers	51,059	61.73
Non-Profit Private Workers	4,754	5.75
Local Government Workers	3,296	3.98
State Government Workers	7,518	9.09
Federal Government Workers	1,412	1.71
Self-Emp Workers	14,325	17.32
Unpaid Family Workers	350	0.42
2013 Est. Civ Employed Pop 16+ by Occupation	82,714	
Architect/Engineer	966	1.17
Arts/Entertain/Sports	2,348	2.84
Building Grounds Maint	5,693	6.88
Business/Financial Ops	2,150	2.60
Community/Soc Svcs	1,662	2.01
Computer/Mathematical	343	0.41
Construction/Extraction	4,817	5.82
Edu/Training/Library	4,566	5.52

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Pop-Facts: Demographic Snapshot 2013 Report

County, (see appendix for geographies), aggregate

Description	Total County	%
Farm/Fish/Forestry	1,251	1.51
Food Prep/Serving	8,688	10.50
Health Practitioner/Tec	2,261	2.73
Healthcare Support	1,883	2.28
Maintenance Repair	2,467	2.98
Legal	567	0.69
Life/Phys/Soc Science	685	0.83
Management	7,397	8.94
Office/Admin Support	11,423	13.81
Production	2,292	2.77
Protective Svcs	2,465	2.98
Sales/Related	10,171	12.30
Personal Care/Svc	4,695	5.68
Transportation/Moving	3,924	4.74
2013 Est. Pop 16+ by Occupation Classification	82,714	
Blue Collar	13,500	16.32
White Collar	44,539	53.85
Service and Farm	24,675	29.83
2013 Est. Workers Age 16+, Transp. To Work	80,097	
Drove Alone	57,172	71.38
Car Pooled	10,455	13.05
Public Transportation	1,723	2.15
Walked	2,609	3.26
Bicycle	627	0.78
Other Means	1,165	1.45
Worked at Home	6,346	7.92
2013 Est. Workers Age 16+ by Travel Time to Work *		
Less than 15 Minutes	29,982	
15 - 29 Minutes	24,531	
30 - 44 Minutes	11,968	
45 - 59 Minutes	4,389	
60 or more Minutes	3,114	
2013 Est. Avg Travel Time to Work in Minutes	22.82	
2013 Est. Tenure of Occupied Housing Units	55,624	
Owner Occupied	31,049	55.82
Renter Occupied	24,575	44.18

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Pop-Facts: Demographic Snapshot 2013 Report

County, (see appendix for geographies), aggregate

Description	Total *County*	*%*
2013 Owner Occ. HUs: Avg. Length of Residence	18.7	
2013 Renter Occ. HUs: Avg. Length of Residence	7.9	
2013 Est. All Owner-Occupied Housing Values	31,049	
Value Less than $20,000	50	0.16
Value $20,000 - $39,999	108	0.35
Value $40,000 - $59,999	192	0.62
Value $60,000 - $79,999	194	0.62
Value $80,000 - $99,999	183	0.59
Value $100,000 - $149,999	1,186	3.82
Value $150,000 - $199,999	1,013	3.26
Value $200,000 - $299,999	2,990	9.63
Value $300,000 - $399,999	4,374	14.09
Value $400,000 - $499,999	5,059	16.29
Value $500,000 - $749,999	9,514	30.64
Value $750,000 - $999,999	2,056	6.62
Value $1,000,000 or more	4,130	13.30
2013 Est. Median All Owner-Occupied Housing Value	$504,612	
2013 Est. Housing Units by Units in Structure	72,932	
1 Unit Attached	3,307	4.53
1 Unit Detached	40,651	55.74
2 Units	4,659	6.39
3 or 4 Units	3,353	4.60
5 to 19 Units	9,803	13.44
20 to 49 Units	5,157	7.07
50 or More Units	5,961	8.17
Mobile Home or Trailer	16	0.02
Boat, RV, Van, etc.	25	0.03
2013 Est. Housing Units by Year Structure Built	72,932	
Housing Unit Built 2005 or later	4,579	6.28
Housing Unit Built 2000 to 2004	7,028	9.64
Housing Unit Built 1990 to 1999	13,476	18.48
Housing Unit Built 1980 to 1989	15,207	20.85
Housing Unit Built 1970 to 1979	17,941	24.60
Housing Unit Built 1960 to 1969	6,625	9.08
Housing Unit Built 1950 to 1959	4,014	5.50

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Pop-Facts: Demographic Snapshot 2013 Report

County, (see appendix for geographies), aggregate

Description	Total *County*	*%*
Housing Unit Built 1940 to 1949	1,523	2.09
Housing Unit Built 1939 or Earlier	2,539	3.48
2013 Est. Median Year Structure Built **	1983	

*This row intentionally left blank. No total category data is available.

**1939 will appear when at least half of the Housing Units in this reports area were built in 1939 or earlier.

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Appendix: Area Listing

Area Name:

Type: List - County Reporting Detail: Aggregate Reporting Level: County

Geography Code	Geography Name	Geography Code	Geography Name
15009	Maui County, HI		

Project Information:

Site: 1

Order Number: 972098436

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Central Maui

Pop-Facts: Demographic Snapshot 2013 Report

Place, (see appendix for geographies), aggregate

Description	Total *Place*	*%*
Population		
2018 Projection	56,340	
2013 Estimate	54,462	
2010 Census	53,365	
2000 Census	40,718	
Growth 2013-2018	3.45%	
Growth 2010-2013	2.06%	
Growth 2000-2010	31.06%	
2013 Est. Pop by Single Race Class	54,462	
White Alone	7,953	14.60
Black or African American Alone	258	0.47
Amer. Indian and Alaska Native Alone	154	0.28
Asian Alone	24,067	44.19
Native Hawaiian and Other Pac. Isl. Alone	6,991	12.84
Some Other Race Alone	766	1.41
Two or More Races	14,273	26.21
2013 Est. Pop Hisp or Latino by Origin	54,462	
Not Hispanic or Latino	48,881	89.75
Hispanic or Latino:	5,581	10.25
Mexican	1,436	25.73
Puerto Rican	3,213	57.57
Cuban	4	0.07
All Other Hispanic or Latino	928	16.63
2013 Est. Hisp or Latino by Single Race Class	5,581	
White Alone	946	16.95
Black or African American Alone	23	0.41
American Indian and Alaska Native Alone	66	1.18
Asian Alone	658	11.79
Native Hawaiian and Other Pacific Islander Alone	370	6.63
Some Other Race Alone	710	12.72
Two or More Races	2,808	50.31

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Pop-Facts: Demographic Snapshot 2013 Report

Place, (see appendix for geographies), aggregate

Description	Total *Place*	*%*
2013 Est. Pop. Asian Alone Race by Cat	24,067	
Chinese, except Taiwanese	696	2.89
Filipino	14,054	58.40
Japanese	7,234	30.06
Asian Indian	57	0.24
Korean	608	2.53
Vietnamese	132	0.55
Cambodian	28	0.12
Hmong	0	0.00
Laotian	0	0.00
Thai	0	0.00
All Other Asian Races Including 2+ Category	1,258	5.23
2013 Est. Population by Ancestry	54,462	
Pop, Arab	1	0.00
Pop, Czech	15	0.03
Pop, Danish	23	0.04
Pop, Dutch	33	0.06
Pop, English	539	0.99
Pop, French (except Basque)	210	0.39
Pop, French Canadian	51	0.09
Pop, German	1,022	1.88
Pop, Greek	0	0.00
Pop, Hungarian	34	0.06
Pop, Irish	542	1.00
Pop, Italian	1,044	1.92
Pop, Lithuanian	0	0.00
Pop, United States or American	128	0.24
Pop, Norwegian	79	0.15
Pop, Polish	168	0.31
Pop, Portuguese	2,119	3.89
Pop, Russian	35	0.06
Pop, Scottish	119	0.22
Pop, Scotch-Irish	80	0.15
Pop, Slovak	7	0.01
Pop, Subsaharan African	0	0.00
Pop, Swedish	63	0.12
Pop, Swiss	243	0.45
Pop, Ukrainian	12	0.02
Pop, Welsh	21	0.04
Pop, West Indian (exc Hisp groups)	12	0.02
Pop, Other ancestries	45,046	82.71

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Pop-Facts: Demographic Snapshot 2013 Report

Place, (see appendix for geographies), aggregate

Description	Total Place	%
2013 Est. Population by Ancestry		
Pop, Ancestry Unclassified	2,816	5.17
2013 Est. Pop Age 5+ by Language Spoken At Home	50,613	
Speak Only English at Home	37,630	74.35
Speak Asian/Pac. Isl. Lang. at Home	11,932	23.57
Speak IndoEuropean Language at Home	377	0.74
Speak Spanish at Home	635	1.25
Speak Other Language at Home	39	0.08
2013 Est. Population by Sex	54,462	
Male	26,812	49.23
Female	27,650	50.77
2013 Est. Population by Age	54,462	
Age 0 - 4	3,849	7.07
Age 5 - 9	3,759	6.90
Age 10 - 14	3,752	6.89
Age 15 - 17	2,277	4.18
Age 18 - 20	1,917	3.52
Age 21 - 24	2,768	5.08
Age 25 - 34	6,605	12.13
Age 35 - 44	7,291	13.39
Age 45 - 54	7,801	14.32
Age 55 - 64	6,419	11.79
Age 65 - 74	4,202	7.72
Age 75 - 84	2,492	4.58
Age 85 and over	1,330	2.44
Age 16 and over	42,355	77.77
Age 18 and over	40,825	74.96
Age 21 and over	38,908	71.44
Age 65 and over	8,024	14.73
2013 Est. Median Age	38.2	
2013 Est. Average Age	38.50	

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Pop-Facts: Demographic Snapshot 2013 Report

Place, (see appendix for geographies), aggregate

Description	Total Place	%
2013 Est. Male Population by Age	26,812	
Age 0 - 4	1,975	7.37
Age 5 - 9	1,926	7.18
Age 10 - 14	1,873	6.99
Age 15 - 17	1,150	4.29
Age 18 - 20	993	3.70
Age 21 - 24	1,425	5.31
Age 25 - 34	3,316	12.37
Age 35 - 44	3,700	13.80
Age 45 - 54	3,913	14.59
Age 55 - 64	3,197	11.92
Age 65 - 74	1,920	7.16
Age 75 - 84	983	3.67
Age 85 and over	441	1.64
2013 Est. Median Age, Male	37.0	
2013 Est. Average Age, Male	37.30	
2013 Est. Female Population by Age	27,650	
Age 0 - 4	1,874	6.78
Age 5 - 9	1,833	6.63
Age 10 - 14	1,879	6.80
Age 15 - 17	1,127	4.08
Age 18 - 20	924	3.34
Age 21 - 24	1,343	4.86
Age 25 - 34	3,289	11.90
Age 35 - 44	3,591	12.99
Age 45 - 54	3,888	14.06
Age 55 - 64	3,222	11.65
Age 65 - 74	2,282	8.25
Age 75 - 84	1,509	5.46
Age 85 and over	889	3.22
2013 Est. Median Age, Female	39.3	
2013 Est. Average Age, Female	39.70	

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Pop-Facts: Demographic Snapshot 2013 Report

Place, (see appendix for geographies), aggregate

Description	Total *Place*	*%*
2013 Est. Pop Age 15+ by Marital Status	43,102	
Total, Never Married	13,638	31.64
Males, Never Married	7,810	18.12
Females, Never Married	5,828	13.52
Married, Spouse present	19,967	46.32
Married, Spouse absent	2,238	5.19
Widowed	2,783	6.46
Males Widowed	498	1.16
Females Widowed	2,285	5.30
Divorced	4,476	10.38
Males Divorced	2,019	4.68
Females Divorced	2,457	5.70
2013 Est. Pop. Age 25+ by Edu. Attainment	36,140	
Less than 9th grade	2,354	6.51
Some High School, no diploma	2,277	6.30
High School Graduate (or GED)	13,609	37.66
Some College, no degree	7,897	21.85
Associate Degree	3,019	8.35
Bachelor's Degree	4,768	13.19
Master's Degree	1,630	4.51
Professional School Degree	418	1.16
Doctorate Degree	168	0.46
2013 Est Pop Age 25+ by Edu. Attain, Hisp. or Lat	2,755	
CY Pop 25+, Hisp/Lat, < High School Diploma	522	18.95
CY Pop 25+, Hisp/Lat, High School Graduate	1,412	51.25
CY Pop 25+, Hisp/Lat, Some College or Associate's Deg	587	21.31
CY Pop 25+, Hisp/Lat, Bachelor's Degree or Higher	234	8.49
Households		
2018 Projection	16,824	
2013 Estimate	16,258	
2010 Census	15,936	
2000 Census	12,583	
Growth 2013-2018	3.48%	
Growth 2010-2013	2.02%	
Growth 2000-2010	26.65%	

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Pop-Facts: Demographic Snapshot 2013 Report

Place, (see appendix for geographies), aggregate

Description	Total Place	%
2013 Est. Households by Household Type	16,258	
Family Households	11,885	73.10
Nonfamily Households	4,373	26.90
2013 Est. Group Quarters Population	1,947	
2013 HHs by Ethnicity, Hispanic/Latino	1,291	7.94
2013 Est. HHs by HH Income	16,258	
CY HHs, Inc < $15,000	1,515	9.32
CY HHs, Inc $15,000 - $24,999	1,371	8.43
CY HHs, Inc $25,000 - $34,999	1,694	10.42
CY HHs, Inc $35,000 - $49,999	2,021	12.43
CY HHs, Inc $50,000 - $74,999	3,105	19.10
CY HHs, Inc $75,000 - $99,999	2,420	14.88
CY HHs, Inc $100,000 - $124,999	1,652	10.16
CY HHs, Inc $125,000 - $149,999	1,052	6.47
CY HHs, Inc $150,000 - $199,999	905	5.57
CY HHs, Inc $200,000 - $249,999	250	1.54
CY HHs, Inc $250,000 - $499,999	247	1.52
CY HHs, Inc $500,000+	26	0.16
2013 Est. Average Household Income	$76,049	
2013 Est. Median Household Income	$62,303	
2013 Median HH Inc by Single Race Class. or Ethn		
White Alone	61,181	
Black or African American Alone	23,879	
American Indian and Alaska Native Alone	44,107	
Asian Alone	69,222	
Native Hawaiian and Other Pacific Islander Alone	52,972	
Some Other Race Alone	37,386	
Two or More Races	56,471	
Hispanic or Latino	45,514	
Not Hispanic or Latino	63,527	
2013 Est. Family HH Type, Presence Own Children	11,885	
Married-Couple Family, own children	3,720	31.30

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Pop-Facts: Demographic Snapshot 2013 Report

Place, (see appendix for geographies), aggregate

Description	Total Place	%
Married-Couple Family, no own children	5,279	44.42
Male Householder, own children	424	3.57
Male Householder, no own children	326	2.74
Female Householder, own children	1,002	8.43
Female Householder, no own children	1,134	9.54
2013 Est. Households by Household Size	16,258	
1-person household	3,329	20.48
2-person household	4,216	25.93
3-person household	2,791	17.17
4-person household	2,450	15.07
5-person household	1,468	9.03
6-person household	851	5.23
7 or more person household	1,153	7.09
2013 Est. Average Household Size	3.23	
2013 Est. Households by Presence of People	16,258	
Households with 1 or more People under Age 18:	6,388	39.29
Married-Couple Family	4,433	69.40
Other Family, Male Householder	511	8.00
Other Family, Female Householder	1,410	22.07
Nonfamily, Male Householder	24	0.38
Nonfamily, Female Householder	10	0.16
Households no People under Age 18:	9,870	60.71
Married-Couple Family	4,727	47.89
Other Family, Male Householder	252	2.55
Other Family, Female Householder	760	7.70
Nonfamily, Male Householder	1,826	18.50
Nonfamily, Female Householder	2,305	23.35
2013 Est. Households by Number of Vehicles	16,258	
No Vehicles	1,315	8.09
1 Vehicle	4,529	27.86
2 Vehicles	6,343	39.01
3 Vehicles	2,470	15.19
4 Vehicles	1,048	6.45
5 or more Vehicles	553	3.40
2013 Est. Average Number of Vehicles	1.98	

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Pop-Facts: Demographic Snapshot 2013 Report

Place, (see appendix for geographies), aggregate

Description	Total *Place*	*%*
Family Households		
2018 Projection	12,322	
2013 Estimate	11,885	
2010 Census	11,631	
2000 Census	9,274	
Growth 2013-2018	3.68%	
Growth 2010-2013	2.18%	
Growth 2000-2010	25.42%	
2013 Est. Families by Poverty Status	11,885	
2013 Families at or Above Poverty	11,052	92.99
2013 Families at or Above Poverty with Children	5,508	46.34
2013 Families Below Poverty	833	7.01
2013 Families Below Poverty with Children	661	5.56
2013 Est. Pop Age 16+ by Employment Status	42,355	
In Armed Forces	44	0.10
Civilian - Employed	25,035	59.11
Civilian - Unemployed	3,336	7.88
Not in Labor Force	13,940	32.91
2013 Est. Civ Employed Pop 16+ Class of Worker	26,435	
For-Profit Private Workers	16,315	61.72
Non-Profit Private Workers	1,397	5.28
Local Government Workers	1,426	5.39
State Government Workers	3,191	12.07
Federal Government Workers	412	1.56
Self-Emp Workers	3,675	13.90
Unpaid Family Workers	19	0.07
2013 Est. Civ Employed Pop 16+ by Occupation	26,435	
Architect/Engineer	401	1.52
Arts/Entertain/Sports	296	1.12
Building Grounds Maint	2,500	9.46
Business/Financial Ops	518	1.96
Community/Soc Svcs	589	2.23
Computer/Mathematical	93	0.35
Construction/Extraction	1,418	5.36
Edu/Training/Library	1,570	5.94

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Pop-Facts: Demographic Snapshot 2013 Report

Place, (see appendix for geographies), aggregate

Description	Total Place	%
Farm/Fish/Forestry	499	1.89
Food Prep/Serving	1,886	7.13
Health Practitioner/Tec	778	2.94
Healthcare Support	718	2.72
Maintenance Repair	765	2.89
Legal	153	0.58
Life/Phys/Soc Science	185	0.70
Management	1,854	7.01
Office/Admin Support	3,937	14.89
Production	609	2.30
Protective Svcs	780	2.95
Sales/Related	3,447	13.04
Personal Care/Svc	1,679	6.35
Transportation/Moving	1,760	6.66
2013 Est. Pop 16+ by Occupation Classification	26,435	
Blue Collar	4,552	17.22
White Collar	13,821	52.28
Service and Farm	8,062	30.50
2013 Est. Workers Age 16+, Transp. To Work	25,718	
Drove Alone	18,717	72.78
Car Pooled	4,278	16.63
Public Transportation	682	2.65
Walked	541	2.10
Bicycle	62	0.24
Other Means	352	1.37
Worked at Home	1,086	4.22
2013 Est. Workers Age 16+ by Travel Time to Work *		
Less than 15 Minutes	11,551	
15 - 29 Minutes	7,375	
30 - 44 Minutes	3,196	
45 - 59 Minutes	1,518	
60 or more Minutes	985	
2013 Est. Avg Travel Time to Work in Minutes	21.63	
2013 Est. Tenure of Occupied Housing Units	16,258	
Owner Occupied	9,933	61.10
Renter Occupied	6,325	38.90

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Pop-Facts: Demographic Snapshot 2013 Report

Place, (see appendix for geographies), aggregate

Description	Total Place	%
2013 Owner Occ. HUs: Avg. Length of Residence	20.2	
2013 Renter Occ. HUs: Avg. Length of Residence	9.0	
2013 Est. All Owner-Occupied Housing Values	9,933	
Value Less than $20,000	40	0.40
Value $20,000 - $39,999	41	0.41
Value $40,000 - $59,999	117	1.18
Value $60,000 - $79,999	40	0.40
Value $80,000 - $99,999	49	0.49
Value $100,000 - $149,999	324	3.26
Value $150,000 - $199,999	351	3.53
Value $200,000 - $299,999	961	9.67
Value $300,000 - $399,999	1,730	17.42
Value $400,000 - $499,999	1,981	19.94
Value $500,000 - $749,999	3,276	32.98
Value $750,000 - $999,999	536	5.40
Value $1,000,000 or more	487	4.90
2013 Est. Median All Owner-Occupied Housing Value	$466,305	
2013 Est. Housing Units by Units in Structure	17,753	
1 Unit Attached	1,145	6.45
1 Unit Detached	11,968	67.41
2 Units	1,178	6.64
3 or 4 Units	775	4.37
5 to 19 Units	1,800	10.14
20 to 49 Units	382	2.15
50 or More Units	496	2.79
Mobile Home or Trailer	9	0.05
Boat, RV, Van, etc.	0	0.00
2013 Est. Housing Units by Year Structure Built	17,753	
Housing Unit Built 2005 or later	2,104	11.85
Housing Unit Built 2000 to 2004	1,719	9.68
Housing Unit Built 1990 to 1999	3,624	20.41
Housing Unit Built 1980 to 1989	2,702	15.22
Housing Unit Built 1970 to 1979	2,312	13.02
Housing Unit Built 1960 to 1969	2,057	11.59
Housing Unit Built 1950 to 1959	2,122	11.95

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Pop-Facts: Demographic Snapshot 2013 Report

Place, (see appendix for geographies), aggregate

Description	Total Place	%
Housing Unit Built 1940 to 1949	593	3.34
Housing Unit Built 1939 or Earlier	520	2.93
2013 Est. Median Year Structure Built **	1985	

*This row intentionally left blank. No total category data is available.

**1939 will appear when at least half of the Housing Units in this reports area were built in 1939 or earlier.

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Pop-Facts: Demographic Snapshot 2013 Report

Appendix: Area Listing

Area Name:

Type: List - Place Reporting Detail: Aggregate Reporting Level: Place

Geography Code	Geography Name	Geography Code	Geography Name
1522700	Kahului CDP	1575510	Waihee-Waiehu CDP
1575950	Waikapu CDP	1577450	Wailuku CDP

Project Information:

Site: 3

Order Number: 972098436

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EXHIBIT B

Central Maui Active Listings

Single-Family Residential Active Listings, Central Maui

MLS #	Address	City	District	Status	List Date	L Price	Original Price	$ Change	% Change	DOM	Liv-SF	Bds	Bths	Yr Blt	Land SF	REO	Short
365103	2295 Kahekili Hwy	Wailuku	Wailuku	ACT	5/22/2015	$259,900	$259,900	$0	0.0%	69	864	3	1	1940	13,721	Yes	No
365462	42 MALUHIA Dr	Wailuku	Wailuku	ACT	6/30/2015	$316,200	$316,200	$0	0.0%	30	1,140	3	1	1929	4,029	Yes	No
365324	1988 Kahekili Hwy	Wailuku	Wailuku	ACT	6/15/2015	$332,900	$355,900	($23,000)	-6.5%	45	2,320	6	2	1967	5,589	Yes	No
365180	230 Awapuhi PL	Wailuku	Wailuku	ACT	6/1/2015	$399,000	$425,000	($26,000)	-6.1%	59	1,050	3	2	1949	5,140	No	No
365793	764 Wailupe Dr	Wailuku	Wailuku	ACT	7/28/2015	$409,900	$409,900	$0	0.0%	2	2,108	3	2	1978	7,810	Yes	No
365463	822 AUKAI Pl	Wailuku	Wailuku	ACT	6/30/2015	$437,000	$437,000	$0	0.0%	30	1,884	4	3	1991	11,453	Yes	No
362870	193 N Church St	Wailuku	Wailuku	ACT	11/21/2014	$440,000	$498,000	($58,000)	-11.6%	251	1,165	4	3	1948	3,755	No	No
364395	307 Naholo Cir	Kahului	Kahului	ACT	3/18/2015	$445,000	$450,000	($5,000)	-1.1%	134	792	3	1.5	1963	8,041	No	No
364156	26 Mission St	Wailuku	Wailuku	ACT	3/1/2015	$469,000	$485,000	($16,000)	-3.3%	151	1,232	3	2	2001	6,669	No	No
362697	136 MEHEU CIR	Kahului	Kahului	ACT	11/8/2014	$475,000	$450,000	$25,000	5.6%	264	1,064	3	2	2014	3,402	No	No
365251	141 OPUKEA St	Kahului	Kahului	ACT	6/8/2015	$475,000	$465,000	$10,000	2.2%	52	1,080	3	2	1986	5,131	No	No
365697	664 Hilinai St	Wailuku	Wailuku	ACT	7/20/2015	$475,000	$475,000	$0	0.0%	10	1,488	3	2	1988	6,098	No	No
364394	117 Lower Waiehu Beach Rd	Wailuku	Wailuku	ACT	3/18/2015	$489,000	$525,000	($36,000)	-6.9%	134	1,000	3	1.5	1980	6,168	No	No
365651	428 Kea St		Kahului	ACT	7/15/2015	$490,000	$500,000	($10,000)	-2.0%	15	1,446	4	2	1961	10,746	No	No
365724	112 W Papa Ave		Kahului	ACT	7/22/2015	$492,000	$492,000	$0	0.0%	8	1,017	3	1.5	1955	9,503	No	No
365633	585 Linekona Pl	Wailuku	Wailuku	ACT	7/14/2015	$500,000	$500,000	$0	0.0%	16	3,556	7	4	1978	10,001	No	Yes
365761	1081 Ulu Kanu St	Wailuku	Wailuku	ACT	7/24/2015	$505,000	$505,000	$0	0.0%	6	1,256	3	2	2006	6,307	No	No
363350	27 NOKEKULA Loop	Wailuku	Wailuku	ACT	12/26/2014	$515,000	$549,000	($34,000)	-6.2%	216	1,364	3	2	2008	4,948	No	No
363723	331 Waiehu Beach Rd	Wailuku	Wailuku	ACT	1/22/2015	$519,000	$550,000	($31,000)	-5.6%	189	1,419	3	1.5	1952	11,252	No	No
365447	1042 Kuhio Pl	Wailuku	Wailuku	ACT	6/27/2015	$524,900	$524,900	$0	0.0%	33	1,068	3	2	1993	3,960	No	No
365797	119 Hoku Puhipaka St	Kahului	Kahului	ACT	7/24/2015	$524,900	$524,900	$0	0.0%	6	1,787	3	2.5	2007	5,800	Yes	No
364975	326 Maka Hou Loop	Wailuku	Wailuku	ACT	5/8/2015	$525,500	$545,900	($20,400)	-3.7%	83	1,403	3	2.5	2008	5,907	Yes	No
364821	154 S Mokapu St		Kahului	ACT	4/27/2015	$529,000	$529,000	$0	0.0%	94	1,586	3	2.5	1973	9,261	No	No
363087	15 Henohea Pl	Kahului	Kahului	ACT	12/5/2014	$530,000	$559,995	($29,995)	-5.4%	237	1,473	3	3	2004	3,646	No	No
364123	844 W Kaena Pl	Wailuku	Wailuku	ACT	2/25/2015	$530,000	$550,000	($20,000)	-3.6%	155	1,500	3	2	1977	8,093	No	No
361599	397 S Lanai St	Kahului	Kahului	ACT	8/1/2014	$539,000	$595,000	($56,000)	-9.4%	363	1,436	3	2	1960	10,237	No	No
364788	815 Paloma St	Wailuku	Wailuku	ACT	4/23/2015	$545,000	$550,000	($5,000)	-0.9%	98	1,896	5	3.5	1987	6,508	No	No
359364	14 Hoowehi Pl	Kahului	Kahului	ACT	2/1/2014	$549,000	$565,000	($16,000)	-2.8%	544	1,584	4	2.5	2004	3,607	No	No
365729	684 Hilinai St	Wailuku	Wailuku	ACT	7/22/2015	$558,000	$558,000	$0	0.0%	8	1,720	4	3	1988	6,958	No	No
365497	153 MOLEHULEHU Loop	Kahului	Kahului	ACT	7/1/2015	$569,000	$575,000	($6,000)	-1.0%	29	1,505	4	2.5	2006	5,014	No	No
364150	180 Kama St	Wailuku	Wailuku	ACT	2/28/2015	$570,000	$580,000	($10,000)	-1.7%	152	1,515	4	3	2009	12,977	No	No
365074	34 Poniu Cir	Wailuku	Wailuku	CNTRL	5/21/2015	$575,000	$575,000	$0	0.0%	70	1,628	4	3	1997	3,960	No	No
360684	296 Puumakani Pl	Kahului	Kahului	ACT	5/18/2014	$580,000	$750,000	($170,000)	-22.7%	438	2,254	3	3	2003	8,107	No	Yes
365718	54 Henohea Pl	Kahului	Kahului	ACT	7/21/2015	$589,000	$589,000	$0	0.0%	9	1,839	4	3	2004	4,604	No	No
364557	557 Kaikoo Pl	Wailuku	Wailuku	ACT	4/1/2015	$595,000	$595,000	$0	0.0%	120	1,976	4	2.5	1993	6,877	No	No
364816	6 Lanipo Pl	Kahului	Kahului	ACT	4/28/2015	$595,000	$595,000	$0	0.0%	93	2,355	3	2.5	2001	9,500	No	Yes
363144	167 Kuualoha St	Kahului	Kahului	ACT	12/10/2014	$599,000	$615,000	($16,000)	-2.6%	232	1,715	4	2	2003	8,451	No	No
363239	251 Molehulehu Pl	Kahului	Kahului	ACT	12/16/2014	$599,000	$629,900	($30,900)	-4.9%	226	1,832	3	2	2010	5,593	No	No
363982	961 Lekeona Loop	Wailuku	Wailuku	ACT	2/11/2015	$599,000	$390,000	$209,000	53.6%	169	3,208	3	3	1980	6,948	No	Yes
365393	1400 Kakae Pl	Wailuku	Wailuku	ACT	6/22/2015	$599,900	$625,000	($25,100)	-4.0%	38	1,158	3	2	1989	5,998	No	No
365376	221 S Alu Rd	Wailuku	Wailuku	CNTXL	6/19/2015	$600,000	$600,000	$0	0.0%	41	2,058	4	2	1977	10,019	No	No
365764	36 Kapalaia Pl	Wailuku	Wailuku	ACT	7/24/2015	$625,000	$625,000	$0	0.0%	6	1,766	4	2.5	2004	8,361	No	No
363884	126 KU Dr	Wailuku	Wailuku	ACT	2/5/2015	$635,000	$795,000	($160,000)	-20.1%	175	2,298	4	2.5	1949	8,660	No	No
362095	28 Lanipo Pl	Kahului	Kahului	ACT	9/18/2014	$680,000	$725,000	($45,000)	-6.2%	315	1,538	3	2	2001	9,418	No	No

Single-Family House Lot Active Listings, Central Maui

MLS #	Address	City	District	Status	List Date	L Price	Original Price	$ Change	% Change	DOM	Liv-SF	Bds	Bths	Yr Blt	Land SF	REO	Short
365792	138 Kapela Pl	Kahului	Kahului	ACT	7/28/2015	$739,000	$739,000	$0	0.0%	2	1,832	4	2	2008	7,187	No	No
363408	1367 Kilou St	Wailuku	Wailuku	ACT	1/2/2015	$750,000	$750,000	$0	0.0%	209	1,896	3	2	2001	7,161	No	No
364893	132 Keoneloa St	Wailuku	Wailuku	ACT	5/4/2015	$750,000	$750,000	$0	0.0%	87	2,134	3	3.5	2016	8,799	No	No
364319	33 Kamalei Cir	Kahului	Kahului	ACT	3/12/2015	$769,000	$800,000	($31,000)	-3.9%	140	1,718	3	3	2001	10,158	No	No
365703	96 Kapela Pl	Kahului	Kahului	ACT	7/20/2015	$775,000	$775,000	$0	0.0%	10	2,498	5	2.5	2008	7,488	No	No
363660	239 Kamalei Cir	Kahului	Kahului	ACT	1/20/2015	$790,000	$985,000	($195,000)	-19.8%	191	2,892	4	4	2003	9,056	No	No
365149	33 Iliki Pl	Wailuku	Wailuku	ACT	5/28/2015	$799,000	$895,000	($96,000)	-10.7%	63	1,931	3	2.5	2007	12,127	No	No
359923	787 Maalahi St	Wailuku	Wailuku	ACT	3/14/2014	$825,000	$925,000	($100,000)	-10.8%	503	2,572	5	3.5	1989	8,472	No	No
364459	146 Kinohi Loa Loop	Wailuku	Wailuku	ACT	3/25/2015	$875,000	$925,000	($50,000)	-5.4%	127	2,496	3	2.5	2008	8,076	No	No
365627	648 Kaae Rd	Wailuku	Wailuku	ACT	7/13/2015	$875,000	$875,000	$0	0.0%	17	1,216	2	1	1936	55,670	No	No
363373	522 Melemele St	Wailuku	Wailuku	ACT	12/30/2014	$885,000	$925,000	($40,000)	-4.3%	212	2,799	3	4	2001	12,014	No	No
365726	31 One Kea Pl	Wailuku	Wailuku	ACT	7/22/2015	$895,000	$895,000	$0	0.0%	8	4,000	4	3	2015	9,453	No	No
364749	679 Maalahi St	Wailuku	Wailuku	ACT	4/21/2015	$925,000	$999,000	($74,000)	-7.4%	100	2,340	3	2.5	1990	8,655	No	No
365305	63 Keoneloa St	Wailuku	Wailuku	ACT	6/10/2015	$929,000	$929,000	$0	0.0%	50	2,421	4	2.5	2008	9,061	No	No
360174	18 Hulumanu Pl	Wailuku	Kahakuloa	ACT	4/4/2014	$1,099,000	$1,449,900	($350,900)	-24.2%	482	3,869	5	4	2001	119,659	Yes	No
365109	135 KEONELOA St	Wailuku	Wailuku	ACT	5/25/2015	$1,150,000	$1,200,000	($50,000)	-4.2%	66	3,259	5	3.5	2006	10,136	No	No
365253	617 S Alu Rd	Wailuku	Wailuku	ACT	6/8/2015	$1,150,000	$1,150,000	$0	0.0%	52	2,912	3	3.5	1989	8,141	No	No
365126	729 S Alu Rd	Wailuku	Wailuku	ACT	5/26/2015	$1,186,000	$1,186,000	$0	0.0%	65	2,768	3	3.5	1991	9,845	No	No
362637	122 MAIKA St	Wailuku	Wailuku	ACT	11/4/2014	$1,299,000	$1,777,000	($478,000)	-26.9%	268	3,819	5	4.5	2005	130,244	No	No
362260	85 Kamaiki Cir	Kahului	Kahului	ACT	10/3/2014	$1,399,000	$1,490,000	($91,000)	-6.1%	300	3,246	4	3.5	2005	10,380	No	No
364476	1736 Kamamalu Pl	Wailuku	Wailuku	ACT	3/24/2015	$1,400,000	$1,400,000	$0	0.0%	128	2,316	3	2.5	1971	32,583	No	No
365773	2879 Kamaile Pl	Wailuku	Wailuku	ACT	7/26/2015	$1,595,000	$1,595,000	$0	0.0%	4	3,184	4	4	2007	98,010	No	No
364916	2284 Kamaile St	Wailuku	Wailuku	ACT	5/5/2015	$1,695,000	$1,695,000	$0	0.0%	86	2,781	4	3	2007	101,930	No	No
362156	180 Lower Waiehu Beach Rd	Wailuku	Wailuku	ACT	9/24/2014	$1,950,000	$1,950,000	$0	0.0%	309	2,800	6	4	1989	11,513	No	No

EXHIBIT C

Chapter 2.92 – Maui County Workforce Housing Policy

ADDENDA

DEFINITIONS

The purpose of this Glossary is to assist the reader in understanding specific terminology used in this report.

Appraisal (noun) the act or process of developing an opinion of value; an opinion of value (adjective) of or pertaining to appraising and related functions such as appraisal practice or appraisal services.

Cash Equivalent A price expressed in terms of cash, as distinguished from a price expressed totally or partly in terms of the face amounts of notes or other securities that cannot be sold at their face amounts.

Counseling Providing competent, disinterested, and unbiased advice and guidance on diverse problems in the broad field of real estate; may involve any or all aspects of the business such as merchandising, leasing, management, acquisition/disposition planning, financing, development, cost-benefit studies, feasibility analysis, and similar services. Counseling services are often associated with evaluation, but they are beyond the scope of appraisal.

Discounting A procedure used to convert periodic incomes, cash flows, and reversions into present value; based on the assumption that benefits received in the future are worth less than the same benefits received now.

Extraordinary Assumption An assumption, directly related to a specific assignment, as of the effective date, which, if found to be false, could alter the appraiser's opinions or conclusions. Extraordinary assumptions presume as fact otherwise uncertain information about physical, legal, or economic characteristics of the subject property; or about conditions external to the property such as market conditions or trends; or about the integrity of data used in an analysis. An extraordinary assumption may be used in an assignment only if:

- It is required to properly develop credible opinions and conclusions;
- The appraiser has a reasonable basis for the extraordinary assumption;
- Use of the extraordinary assumption results in a credible analysis; and
- The appraiser complies with the disclosure requirements set forth in USPAP for extraordinary assumptions.

Fair Value The cash price that might reasonably be anticipated in a current sale under all conditions requisite to a fair sale. A fair sale means that buyer and seller are each acting prudently, knowledgeably, and under no necessity to buy or sell-, i.e., other than in a forced or liquidation sale. The appraiser should estimate the cash price that might be received upon exposure to the open market for a reasonable time, considering the property type and local market conditions. ***When a current sale is unlikely-i.e., when it is unlikely that the sale can be completed within 12 months-the appraiser must discount all cash flows generated by the property to obtain the estimate of fair value.*** These cash flows include, but are not limited to, those arising from ownership, development, operating, and sale of the property. The discount applied shall reflect the appraiser's judgment of what a prudent, knowledgeable purchase under o necessity to buy would be willing to pay to purchase the property in a current sale.

Fee Simple Estate

Absolute ownership encumbered by any other interest or estate, subject only to the limitations imposed by the governmental powers of taxation, eminent domain, police power, and escheat.

Hawaiian Terms

The Hawaiian words "mauka" and "makai" are commonly used in the islands as indicators of direction. The word "mauka" means toward the mountain, and "makai" means toward the ocean.

Highest and Best Use

The reasonably probable and legal use of vacant land or an improved property, which is physically possible, appropriately supported, financially feasible, and that results in the highest value. The four criteria the highest and best use must meet are legal permissibility, physical possibility, financial feasibility, and maximum profitability.

Highest and Best Use of Land or a Site as Though Vacant

Among all reasonable, alternative uses, the use that yields the highest present land value, after payments are made for labor, capital, and coordination. The use of a property based on the assumption that the parcel of land is vacant or can be made vacant by demolishing any improvements.

Highest and Best Use of Property as Improved

The use that should be made of a property as it exists. An existing improvement should be renovated or retained as is so long as it continues to contribute to the total market value of the property, or until the return from a new improvement would more than offset the cost of demolishing the existing building and constructing a new one.

Hypothetical Condition

A condition, directly related to a specific assignment, which is contrary to what is known by the appraiser to exist on the effective date of the assignment results, but is used for the purpose of analysis. Hypothetical conditions are contrary to known facts about physical, legal, or economic characteristics of the subject property; or about conditions external to the property, such as market conditions or trends; or about the integrity of data used in an analysis. A hypothetical condition may be used in an assignment only if:

- Use of the hypothetical condition is clearly required for legal purposes, for purposes of reasonable analysis, or for purposes of comparison;
- Use of the hypothetical condition results in a credible analysis; and
- The appraiser complies with the disclosure requirements set forth in USPAP for hypothetical conditions

Leased Fee Interest

An ownership interest held by a landlord with the rights of use and occupancy conveyed by lease to others. The rights of the lessor (the leased fee owner) and the lessee are specified by contract terms contained within the lease.

Leasehold Interest

The interest held by the lessee (the tenant or renter) through a lease transferring the rights of use and occupancy for a stated term under certain conditions.

Market Rent

The most probable rent that a property should bring in a competitive and open market reflecting all conditions and restrictions of the specified lease agreement including term, rental adjustment and revaluation,

permitted uses, use restrictions, and expense obligations; the lessee and lessor each acting prudently and knowledgeably, and assuming consummation of a lease contract as of a specified date and the passing of the leasehold from lessor to lessee under conditions whereby:

- Lessee and lessor are typically motivated.
- Both parties are well informed or well advised, and acting in what they consider their best interests.
- A reasonable time is allowed for exposure in the open market.
- The rent payment is made in terms of cash in United States dollars, and is expressed as an amount per time period consistent with the payment schedule of the lease contract.
- The rental amount represents the normal consideration for the property leased unaffected by special fees or concessions granted by anyone associated with the transaction.

Market Value

The major focus of most real property appraisal assignments. Both economic and legal definitions of market value have been developed and refined. Continual refinement is essential to the growth of the appraisal profession.

The most widely accepted components of market value are incorporated in the following definition:

"The most probable price, as of a specified date, in cash, or in terms equivalent to cash, or in other precisely revealed terms, for which the specified property rights should sell after reasonable exposure in a competitive market under all conditions requisite to a fair sale, with the buyer and seller each acting prudently, knowledgeably, and for self-interest, and assuming that neither is under undue duress."

Market value is defined in the Uniform Standards of Professional Appraisal Practice (USPAP) as follows:

"A type of value, stated as an opinion, that presumes the transfer of a property (i.e., a right of ownership or a bundle of such rights), as of a certain date, under specific conditions set forth in the definition of the term identified by the appraiser as applicable in an appraisal."

The following definition of market value is used by agencies that regulate federally insured financial institutions in the United States:

"The most probable price which a property should bring in a competitive and open market under all conditions requisite to a fair sale, the buyer and seller each acting prudently and knowledgeably, and assuming the price is not affected by undue stimulus. Implicit in this definition is the consummation of a sale as of a specified date and the passing of title from seller to buyer under conditions whereby:"

- Buyer and seller are typically motivated;
- Both parties are well informed or well advised, and acting in what they consider their best interests;
- A reasonable time is allowed for exposure in the open market;

- Payment is made in terms of cash in U.S. dollars or in terms of financial arrangements comparable thereto; and
- The price represents the normal consideration for the property sold unaffected by special or creative financing or sales concessions granted by anyone associated with the sale.

Prospective Market Value Upon Completion of Construction The prospective future value of a property on the date that construction is completed, based upon market conditions forecast to exist as of the completion date.

Prospective Value Opinion A forecast of the value expected at a specified future date. A prospective value opinion is most frequently sought in connection with real estate projects that are proposed, under construction, or under conversion to a new use, or those that have not achieved sellout or a stabilized level of long-term occupancy at the time the appraisal report is written.

Report Any communication, written or oral, of an appraisal, appraisal review, or appraisal consulting service that is transmitted to the client upon completion of an assignment. The types of written reports listed below apply to real property appraisals:

Appraisal Report: A written appraisal report prepared under Standards Rule 2-2(a) of the Uniform Standards of Professional Appraisal Practice. An appraisal report sets forth the data considered, the appraisal procedures followed, and the reasoning employed in the appraisal, addressing each item in the depth and detail required by its significance to the appraisal and providing sufficient information so that the client and the intended users of the report will understand the appraisal and not be misled or confused.

Restricted Appraisal Report: A written report prepared under Standards Rule 2-2(b), 8-2(c), or 10-2(b). A restricted use appraisal report is for client use only. The restricted use appraisal report should contain a brief statement of information significant to the solution of the appraisal problem. It should be understood that the rationale for how the appraiser arrived at the opinions and conclusions in the report may not be understood properly without additional information in the appraiser's workfile.

Uniform Standards of Professional Appraisal Practice Current standards of the appraisal profession, developed for appraisers and the users of appraisal services by the Appraisal Standards Board of The Appraisal Foundation. The Uniform Standards set forth the procedures to be followed in developing an appraisal, analysis, or opinion and the manner in which an appraisal, analysis, or opinion is communicated. They are endorsed by the Appraisal Institute and by other professional appraisal organizations.

LIMITING AND CONTINGENT CONDITIONS
ACM Consultants, Inc.

1. The property is appraised as though free and clear of any or all liens and encumbrances unless otherwise stated in this report. The appraiser will not be responsible for matters of a legal nature that affect either the property being appraised or the title to it. The appraiser assumes that the title is good and marketable, and therefore, will not render any opinions about the title.

2. Legal descriptions referenced in the report were obtained from public documents from the State of Hawaii, Bureau of Conveyances, or were furnished by the client, and were assumed to be correct.

3. It is assumed that all applicable zoning and use regulations and restrictions have been complied with, unless a nonconformity has been stated, defined, and considered in this appraisal report.

4. It is assumed that all required licenses, certificates of occupancy or other legislative or administrative authority from any local, state, or national governmental or private entity or organization have been or can be obtained or renewed for any use on which the value estimates contained in this report are based.

5. It is assumed that the utilization of the land and improvements is within the boundaries or property lines of the property described and that there is no encroachment or trespass unless otherwise stated in this report. Responsible ownership and competent property management are assumed unless otherwise stated in this report.

6. The Appraiser has inspected as far as possible, by observation, the land and the improvements; however, it was not possible to personally observe conditions beneath the soil or hidden structurally or by other components. The appraisal assumes that there are no hidden, unapparent, or apparent conditions of the property site, subsoil, or structures or toxic material which would render it more or less valuable. The Appraiser and firm have no responsibility for any such conditions or for any expertise or engineering to discover them. All mechanical components are assumed to be in operable condition and status standard for properties of the subject type. Conditions of heating, cooling, ventilation, electrical and plumbing equipment is considered to be commensurate with the conditions of the balance of the improvements unless otherwise stated. No judgment may be made by us as to adequacy of insulation, type of insulation, or energy efficiency of the improvements or equipment, and no representations are made herein as to these matters unless specifically stated and considered in the report.

7. Information provided by third parties including government agencies, financial institutions, realtors, buyers, sellers, property owners and others and contained in this report were obtained from sources considered reliable and believed to be true and correct. However, no warranty is assumed for possible misinformation.

8. All engineering is assumed to be correct. Any plot plans and illustrative material in this report are included only to assist the reader in visualizing the property. Any sketch in this report may show approximate dimensions and is included to assist the reader in visualizing the property. Maps and exhibits found in this report are provided for reader reference purposes only. No guarantee as to accuracy is expressed or implied unless otherwise stated in this report. No survey has been made for the purpose of this report.

9. The appraiser is not qualified to detect hazardous waste and/or toxic materials. Any comment by the appraiser that might suggest the possibility of the presence of such substances should not be taken as confirmation of the presence of hazardous waste and/or toxic materials. Such determination would require investigation by a qualified expert in the field of environmental assessment. The presence of substances such as asbestos, urea-formaldehyde foam insulation, or other potentially hazardous materials may affect the value of the property. The appraiser's value estimate is predicated on the assumption that there is no such material on or in the property that would cause a loss in value unless otherwise stated in this report. No responsibility is assumed for any environmental conditions, or for any expertise or engineering knowledge required to discover them. The appraiser's descriptions and resulting comments are the result of the routine observations made during the appraisal process.

10. If analysis contained in this appraisal involves partial interests in real estate, the value of the fractional interest plus the value of all other fractional interests may or may not equal the value of the entire fee simple estate considered as a whole.

11. Unless otherwise stated in this report, the subject property is appraised without a specific compliance survey having been conducted to determine if the property is or is not in conformance with the requirements of the Americans with Disabilities Act. The presence of architectural and communications barriers that are structural in nature that would restrict access by disabled individuals may adversely affect the property's value, marketability, or utility.

12. Possession of this report, or a copy thereof, does not carry with it the right of publication. It may not be used for any purposed by any person other than the party to whom it is addressed without the written consent of the appraiser, and in any event, only with proper written qualification and only in its entirety.

13. The Appraiser(s) or those assisting in preparation of the report will not be asked or required to give testimony in court or hearing because of having made the appraisal, in full or in part, nor engage in post appraisal consultation with client or third parties except under separate and special arrangement and at additional fee. If testimony or deposition is required because of subpoena, the client shall be responsible for any additional time, fees, and charges regardless of issuing party.

14. Neither all nor any part of the contents of this report (especially any conclusions as to value, the identity of the appraiser, or the firm with which the appraiser is connected) shall be disseminated to the public through advertising, public relations, news sales, or other media without prior written consent and approval of the appraiser.

ACCEPTANCE OF, AND/OR USE OF THIS APPRAISAL REPORT BY CLIENT OR ANY THIRD PARTY CONSTITUTES ACCEPTANCE OF THE ACM CONSULTANTS, INC., CERTIFICATION, LIMITING AND CONTINGENT CONDITIONS. APPRAISER LIABILITY EXTENDS ONLY TO STATED CLIENT, NOT SUBSEQUENT PARTIES OR USERS OF ANY TYPE, and the total liability of Appraiser(s) and firm is limited to the amount of fee received by Appraiser.

PROFESSIONAL QUALIFICATIONS
of
Dominic J. Suguitan

STATE LICENSING

State Certified General Appraiser,
State of Hawaii, License No. CGA-576, April 17, 1995
Expiration: December 31, 2015

ASSOCIATION MEMBERSHIPS

Candidate for Designation - Appraisal Institute

Associate Member, Realtors Association of Maui

EXPERIENCE AND EDUCATION

Employment

Vice President, Commercial Division
ACM Consultants, Inc. (formerly ACM, Real Estate Appraisers, Inc.)
April, 1991 to present

Previously associated with the following:

Yamaguchi & Yamaguchi, Inc.
Real Estate Appraisers and Consultants

General Education

University of Hawaii at Manoa
Bachelor of Arts Degree, Communications, 1990

Maui Community College, 1985-86

Baldwin High School, 1985

Appraisal Education

Appraisal Institute Courses

"Appraising the Single Family Residence"
Honolulu, Hawaii - January, 1991

"Foundations of Real Estate Appraisal"
Honolulu, Hawaii - February, 1991

Course 1BA – "Capitalization Theory & Techniques, Part A"
San Jose, California - July, 1992.

Course 1BB – "Capitalization Theory & Techniques, Part B"
San Jose, California - July, 1992.

Course I410 – "Standards of Professional Practice, Part A (USPAP)"
Honolulu, Hawaii - April, 1993

Course II420 – "Standards of Professional Practice, Part B (USPAP)"
Honolulu, Hawaii - April, 1993.

Course II430 – "Standards of Professional Practice, Part C (USPAP)"
Honolulu, Hawaii - September, 1999.

Course I400 – "7-Hour National USPAP Update Course"
Honolulu, Hawaii - May, 2003.

Course II420 – "Business Practices and Ethics"
Honolulu, Hawaii - May, 2003

"Online 7-Hour National USPAP Equivalent Course" – Online Course
Chicago, Illinois – November, 2005

Course 520 – "Highest & Best Use and Market Analysis"
Seattle, Washington – September 2006

"Online 7-Hour National USPAP Equivalent Course" – Online Course
Chicago, Illinois – November, 2007

"Online 7-Hour National USPAP Equivalent Course" – Online Course
Chicago, Illinois – September, 2009

"Online Business Practices and Ethics" – Online Course
Chicago, Illinois – November, 2009

"Online 7-Hour National USPAP Equivalent Course" – Online Course
Chicago, Illinois – December, 2011

Course 844 – "Residential & Commercial Valuation of Solar"
Albuquerque, New Mexico – February, 2013

"Online General Appraiser Report Writing and Case Studies" – Online Course
Appraisal Institute, October, 2013

"7-Hour National USPAP Update Course" – Online Course
McKissock, December, 2013

"Advanced Concepts & Case Studies"
San Diego, California – May, 2014

<u>Appraisal Institute Seminars</u>

"Data Confirmation and Verification Methods" - Seminar
Honolulu, Hawaii - October, 1995

"Residential Property Construction and Inspection" - Seminar
Honolulu, Hawaii - October, 1995

"Appraisal of Retail Properties" - Seminar
Honolulu, Hawaii - May, 1996

"Detrimental Conditions in Hawaii" - Seminar
Honolulu, Hawaii - July, 1997

"Special Purpose Properties" - Seminar
Honolulu, Hawaii - September, 1997

"Highest and Best Use Applications" - Seminar
Honolulu, Hawaii - September, 1997

"Appraising From Blueprints and Specs" - Seminar
Honolulu, Hawaii - May, 1998

"New Industrial Valuation" - Seminar
Honolulu, Hawaii - October, 1998

"Eminent Domain & Condemnation Appraising" - Seminar
Honolulu, Hawaii - October, 1998

"Online Analyzing Operating Expenses" – Online Seminar
Chicago, Illinois - September, 2001

"Real Estate Disclosure" - Seminar
Honolulu, Hawaii - October, 2001

"Online Internet Search Strategies for R.E. Appraisers" – Online Seminar
Chicago, Illinois - October, 2001

"Online Valuation of Detrimental Conditions in Real Estate" – Online Seminar
Chicago, Illinois - December, 2001

"The Appraisal Institute Commercial Database & AppraiserLoop, Part I" - Seminar
Honolulu, Hawaii - July, 2002

"Statistical Analysis Using the Database, Part I" - Seminar
Honolulu, Hawaii - July, 2002

"The Aftermath: Our World Post-Sept 11" - Seminar
Honolulu, Hawaii - July, 2002

"Statistical Modeling & GIS: Applications for Income Properties" - Seminar
Honolulu, Hawaii - July, 2002

"Real Estate Finance, Value and Investment Performance" – Seminar
Honolulu, Hawaii – February, 2005

"Introduction to GIS Applications for Real Estate Appraisal" – Online Seminar
Chicago, Illinois – August, 2005

"Online Small Hotel/Motel Valuation" – Online Seminar
Chicago, Illinois – October, 2005

"Hawaii Lands, Historical Review"
Kahului, Hawaii – September, 2009

"Online Real Estate Finance Statistics and Valuation Modeling" – Online Seminar
Chicago, Illinois – October, 2009

"Online An Introduction to Valuing Commercial Green Buildings" – Online Seminar
Chicago, Illinois – August 2011

"Online Rates and Ratios: Making sense of GIMs, OARs, and DCF" – Online Seminar
Chicago, Illinois – August 2011

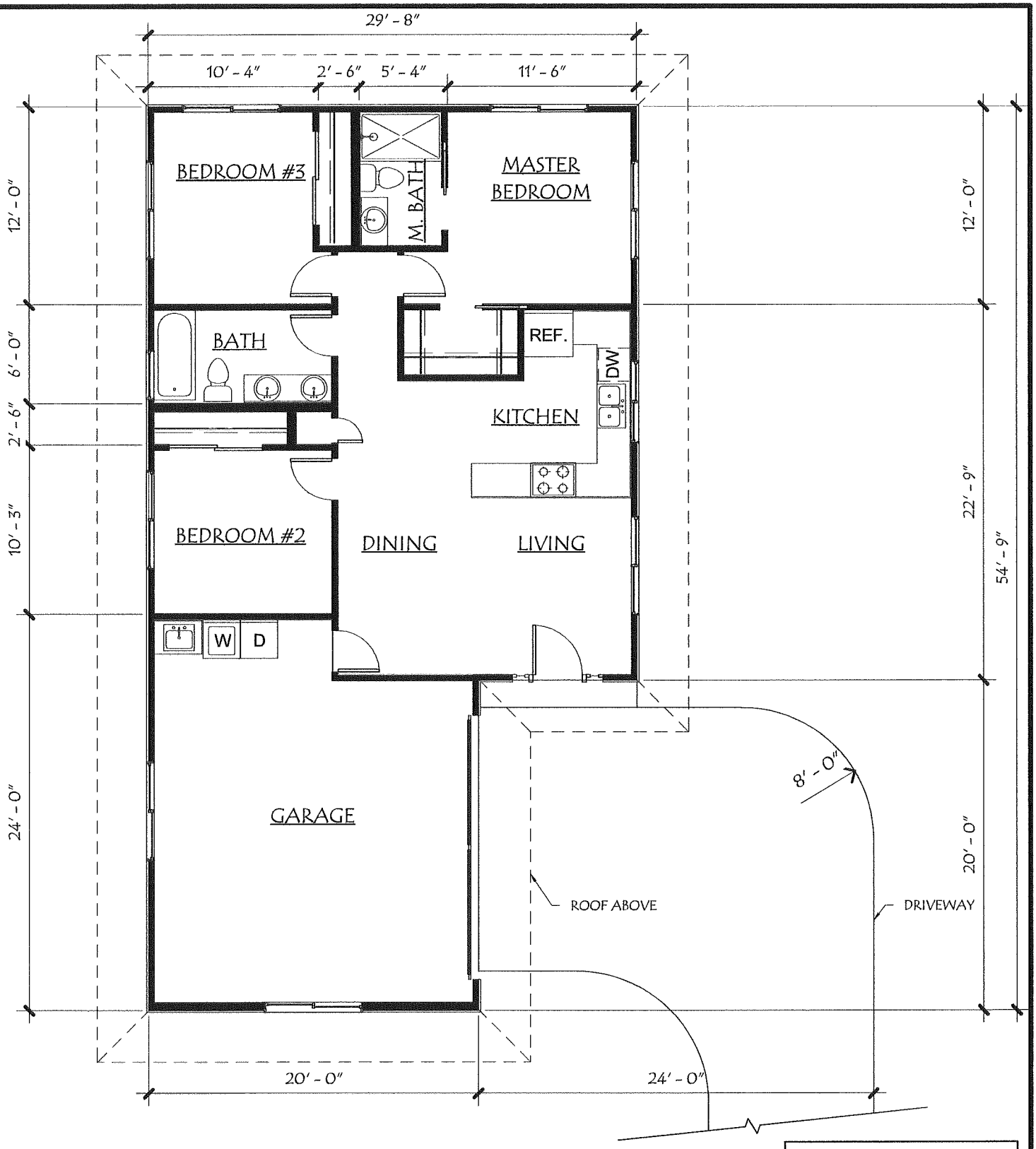
"Online Forecasting Revenue" – Online Seminar
Chicago, Illinois – August 2011

Society of Real Estate Appraisers

Course 101 – "Introduction to Appraising Real Property"
Tempe, Arizona - June, 1991

Appendix K

House Floor Plans Models



0 4' 8' 16'

SCALE: 1/8" = 1'-0"

MAUI ARCHITECTURAL GROUP INC.
www.mauiarch.com
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2331 W. MAIN STREET
TELEPHONE (808) 244-9011
FAX (808) 242-1776
e-mail: mag@mauiarch.com

WAIALE RESIDENTIAL MODEL A

FLOOR PLAN

1 STORY 3BR 2 BA

BUILDING DATA

1 STORY , 3 BEDROOM, 2 BATH
2 CAR GARAGE

FIRST FLOOR:	998 SF
GARAGE:	453 SF
TOTAL AREA:	1,451 SF

PRELIMINARY PLANS SUBJECT TO CHANGE

01/06/2016

MAUI ARCHITECTURAL GROUP INC.

www.mauiarch.com

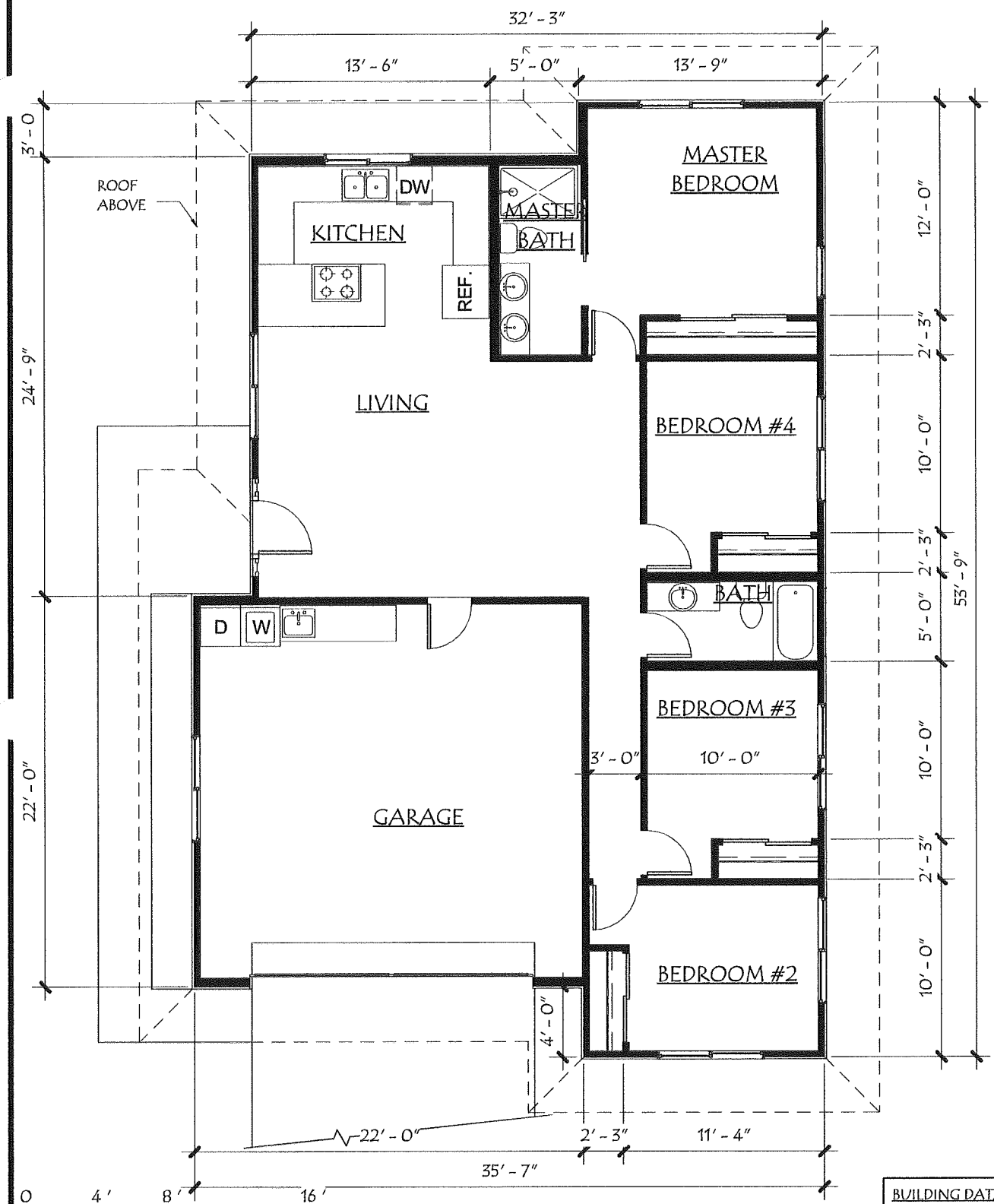
WAILUKU, MAUI, HAWAII 96793
2331 W. MAIN STREET
TELEPHONE (808) 244-9011
FAX (808) 242-1776
e-mail: mag@mauiarch.com

WAIALE RESIDENTIAL
MODEL A

3D VIEW

1 STORY 3BR 2 BA

PRELIMINARY PLANS SUBJECT TO CHANGE 12/30/2015



SCALE: 1/8" = 1'-0"

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e-mail: mag@mauiarch.com

WAIALE RESIDENTIAL MODEL B

FLOOR PLAN

1 STORY 4BR 2BA

BUILDING DATA

1 STORY , 4 BEDROOM, 2 BATH
2 CAR GARAGE

FIRST FLOOR:	1,210 SF
GARAGE:	485 SF
COVERED ENTRY:	43 SF
TOTAL AREA:	1,738 SF

PRELIMINARY PLANS SUBJECT TO CHANGE

11/03/2015

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GROUP
INC.
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2331 W. MAIN STREET
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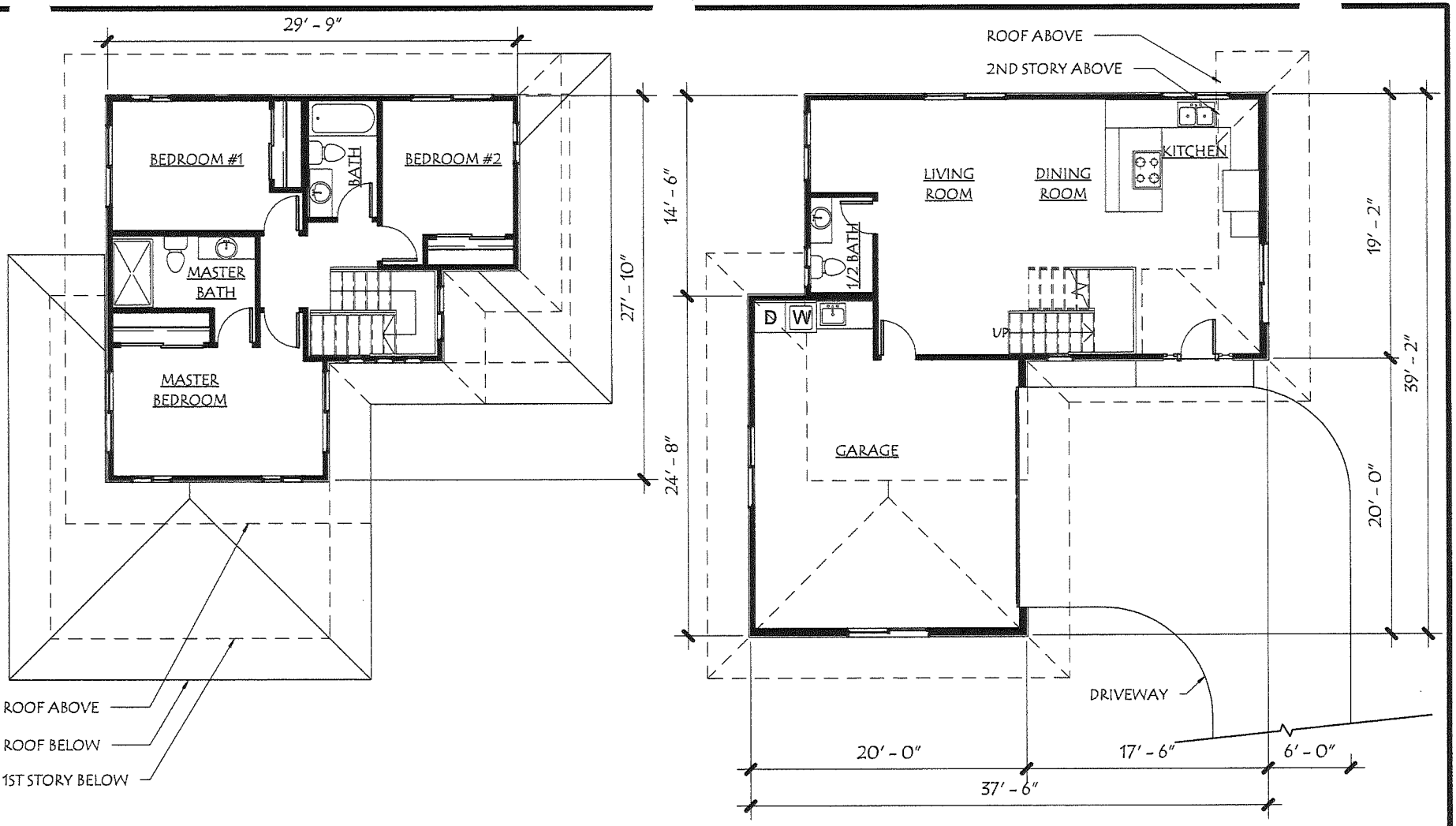
FAX (808) 242-1776
e-mail: mag@mauiarch.com

WAIALE RESIDENTIAL
MODEL B
3D VIEW
1 STORY 4BR 2BA

PRELIMINARY PLANS SUBJECT TO CHANGE 11/03/2015



SECOND FLOOR

FIRST FLOOR

0 4' 8' 16'

SCALE: 3/32" = 1'-0"

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e-mail: mag@mauiarch.com

WAIALE RESIDENTIAL

MODEL C

FLOOR PLANS

2 STORY 3 BR 2.5 BA

BUILDING DATA	
2 STORY , 3 BEDROOM, 2.5 BATH 2 CAR GARAGE	
FIRST FLOOR:	615 SF
SECOND FLOOR:	612 SF
TOTAL LIVING AREA:	1,227 SF
GARAGE:	444 SF
TOTAL AREA:	1,671 SF

PRELIMINARY PLANS SUBJECT TO CHANGE 12/30/2015

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GROUP
INC.
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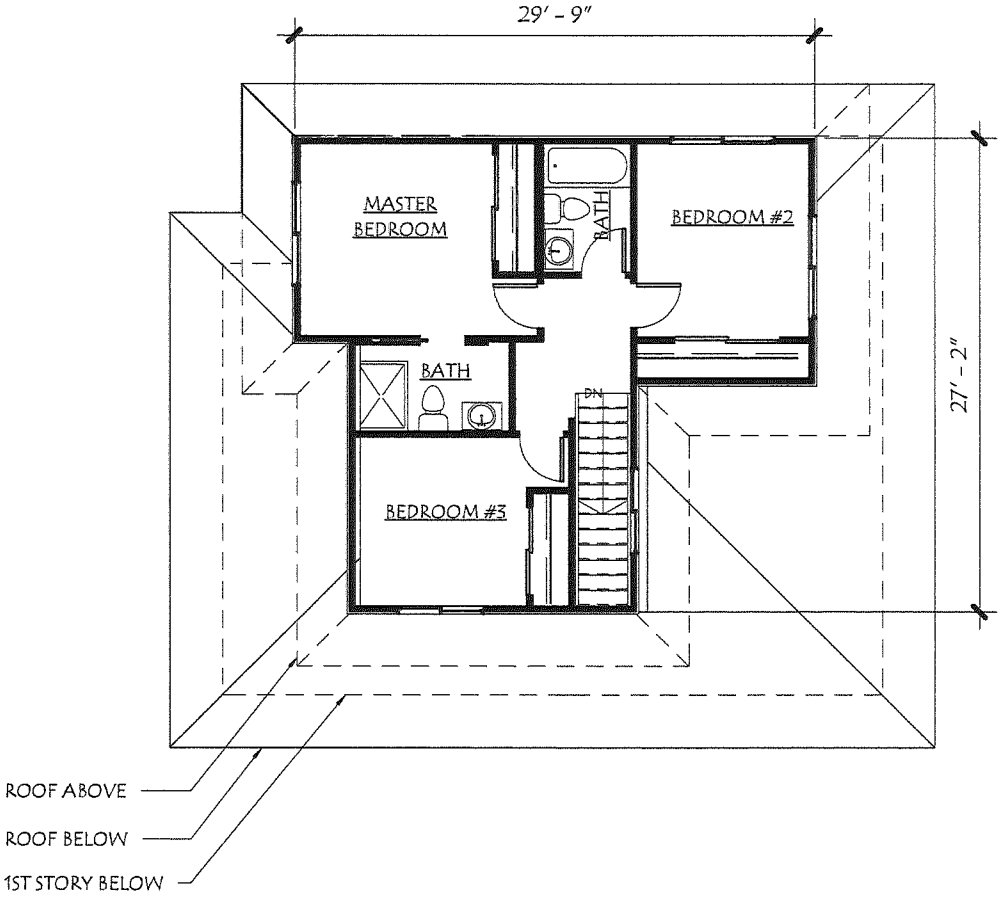
TELEPHONE (808) 244-9011
FAX (808) 242-1776
e-mail: mag@mauiarch.com

WAIALE RESIDENTIAL
MODEL C

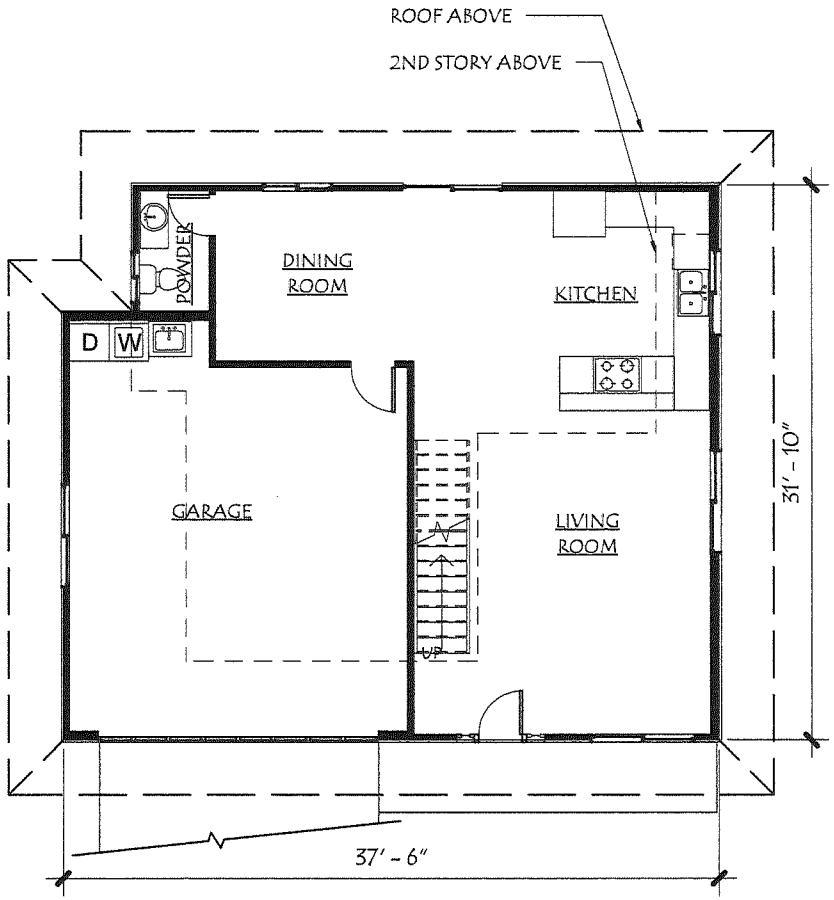
3D VIEW

2 STORY 3 BR 2.5 BA

PRELIMINARY PLANS SUBJECT TO CHANGE 12/30/2015



SECOND FLOOR



FIRST FLOOR

0 4' 8' 16'

SCALE: 3/32" = 1'-0"

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FAX (808) 242-1776
e-mail: mag@mauiarch.com

WAIALE RESIDENTIAL

MODEL D

FLOOR PLANS

2 STORY 3 BR 2.5 BA

BUILDING DATA	
2 STORY , 3 BEDROOM, 2.5 BATH 2 CAR GARAGE	
FIRST FLOOR:	703 SF
SECOND FLOOR:	582 SF
TOTAL LIVING AREA:	1,285 SF
GARAGE:	453 SF
TOTAL AREA:	1,738 SF

PRELIMINARY PLANS SUBJECT TO CHANGE 11/2/2015

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GROUP
INC.
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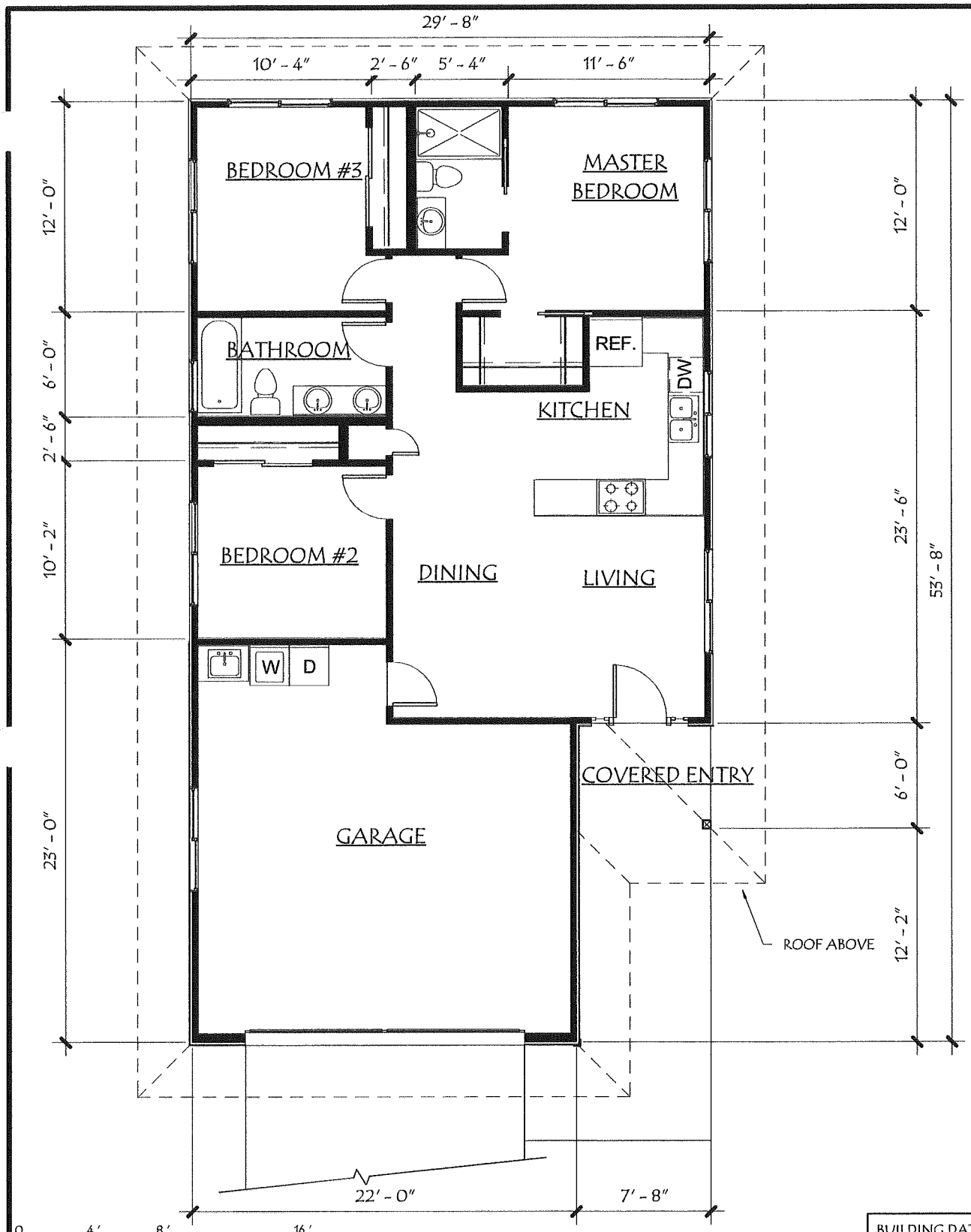
FAX (808) 242-1776
e-mail: mag@mauiarch.com

WAIALE RESIDENTIAL
MODEL D

3D VIEW

2 STORY 3 BR 2.5 BA

PRELIMINARY PLANS SUBJECT TO CHANGE 11/2/2015



0 4' 8' 16'

SCALE: 1/8" = 1'-0"

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www.mauiarch.com
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2331 W. MAIN STREET
TELEPHONE (808) 244-9011
FAX (808) 242-1776
e-mail: mag@mauiarch.com

WAIALE RESIDENTIAL MODEL E

FLOOR PLAN

1 STORY 3BR 2 BA

BUILDING DATA	
1 STORY, 3 BEDROOM, 2 BATH 2 CAR GARAGE	
FIRST FLOOR:	1,012 SF
GARAGE:	458 SF
COVERED ENTRY:	47 SF
TOTAL AREA:	1,517 SF

PRELIMINARY PLANS SUBJECT TO CHANGE

01/05/2016

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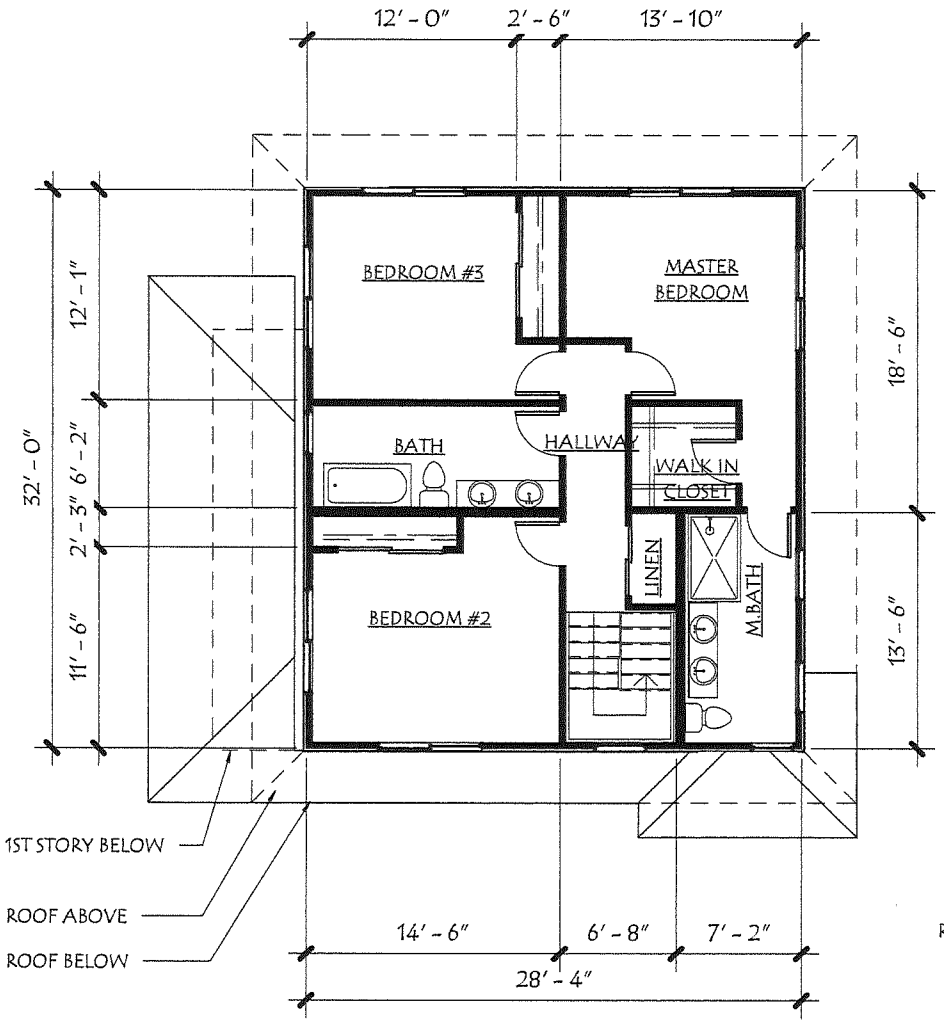
FAX (808) 242-1776
e-mail: mag@mauiarch.com

WAIALE RESIDENTIAL
MODEL E

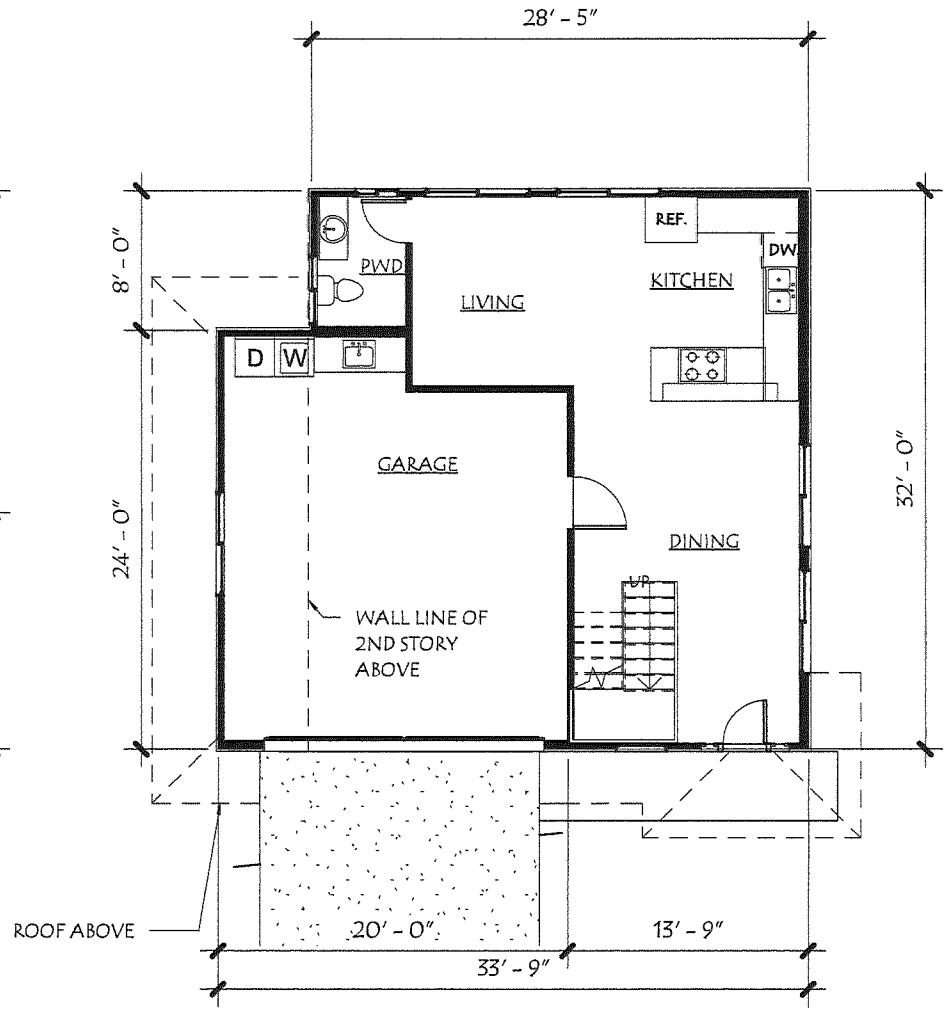
3D VIEW

1 STORY 2BR 2 BA

PRELIMINARY PLANS SUBJECT TO CHANGE 01/05/2016



SECOND FLOOR



FIRST FLOOR

0 4′ 8′ 16′

SCALE: 3/32″ = 1′-0″

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e-mail: mag@mauiarch.com

WAIALE RESIDENTIAL

MODEL F

FLOOR PLANS

2 STORY 3 BR 2.5 BA

BUILDING DATA

2 STORY , 3 BEDROOM, 2.5 BATH
2 CAR GARAGE

FIRST FLOOR:	586 SF
SECOND FLOOR:	854 SF
TOTAL LIVING AREA:	1,440 SF
GARAGE:	452 SF
COVERED ENTRY:	27 SF
TOTAL AREA:	1,919 SF

PRELIMINARY PLANS SUBJECT TO CHANGE 01/06/2016

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GROUP
INC.
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2331 W. MAIN STREET
TELEPHONE (808) 244-9011
FAX (808) 242-1776
e-mail: mag@mauiarch.com

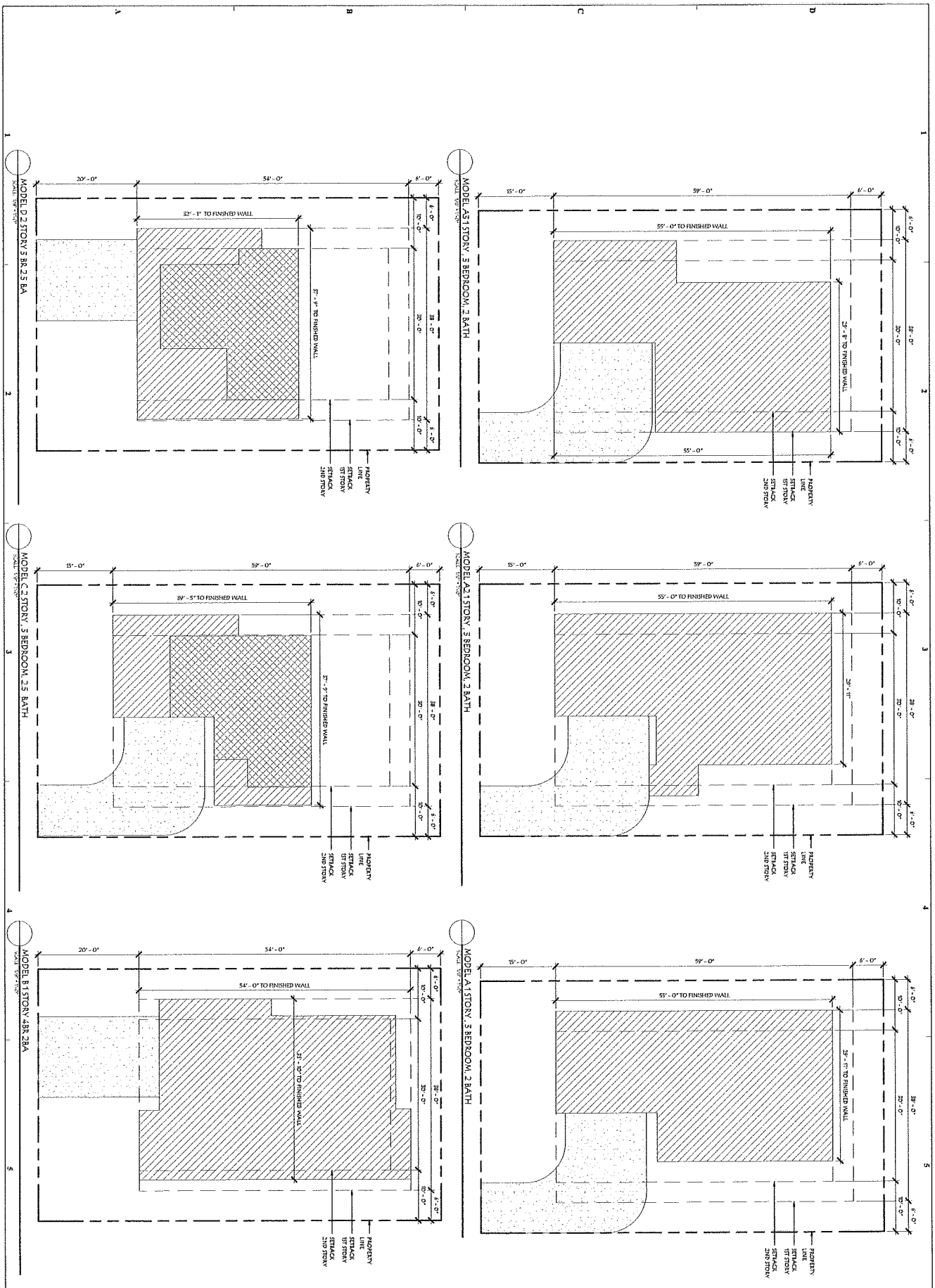
WAIALE RESIDENTIAL
MODEL F

3D VIEW

2 STORY 3 BR 2.5 BA

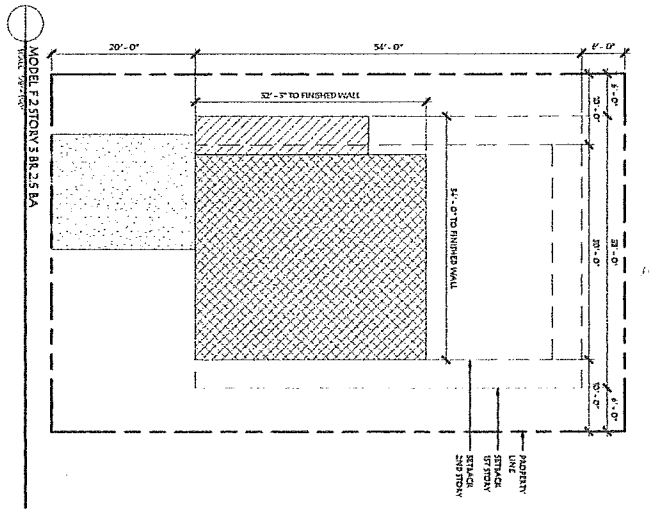
PRELIMINARY PLANS SUBJECT TO CHANGE 01/06/2016

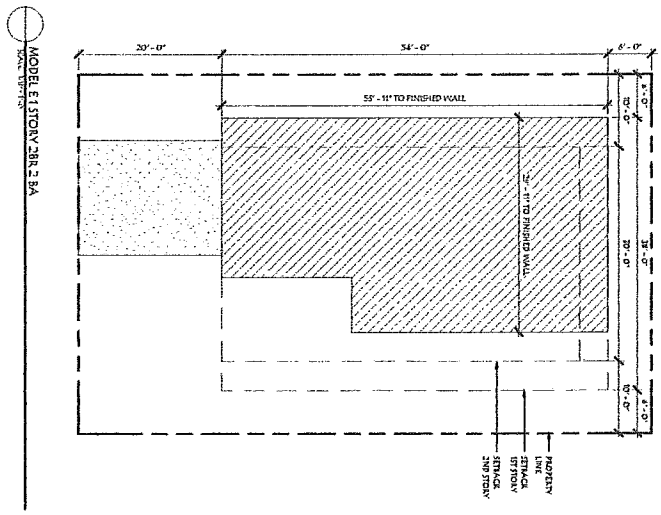
1/6/2016 11:18:11 AM



Sheet Number: A-0	PLOT PLANS		No.	Revision	WAIALE RESIDENTIAL MODELS - PLOT PLAN	THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION. Signature	MAG ARCHITECTURAL GROUP INC. www.magarch.com
Date: 1/8" = 1'-0"	Issue Date						
Job: Project Number							
File:							
Drawn: CC							

1/6/2016 11:18:12 AM

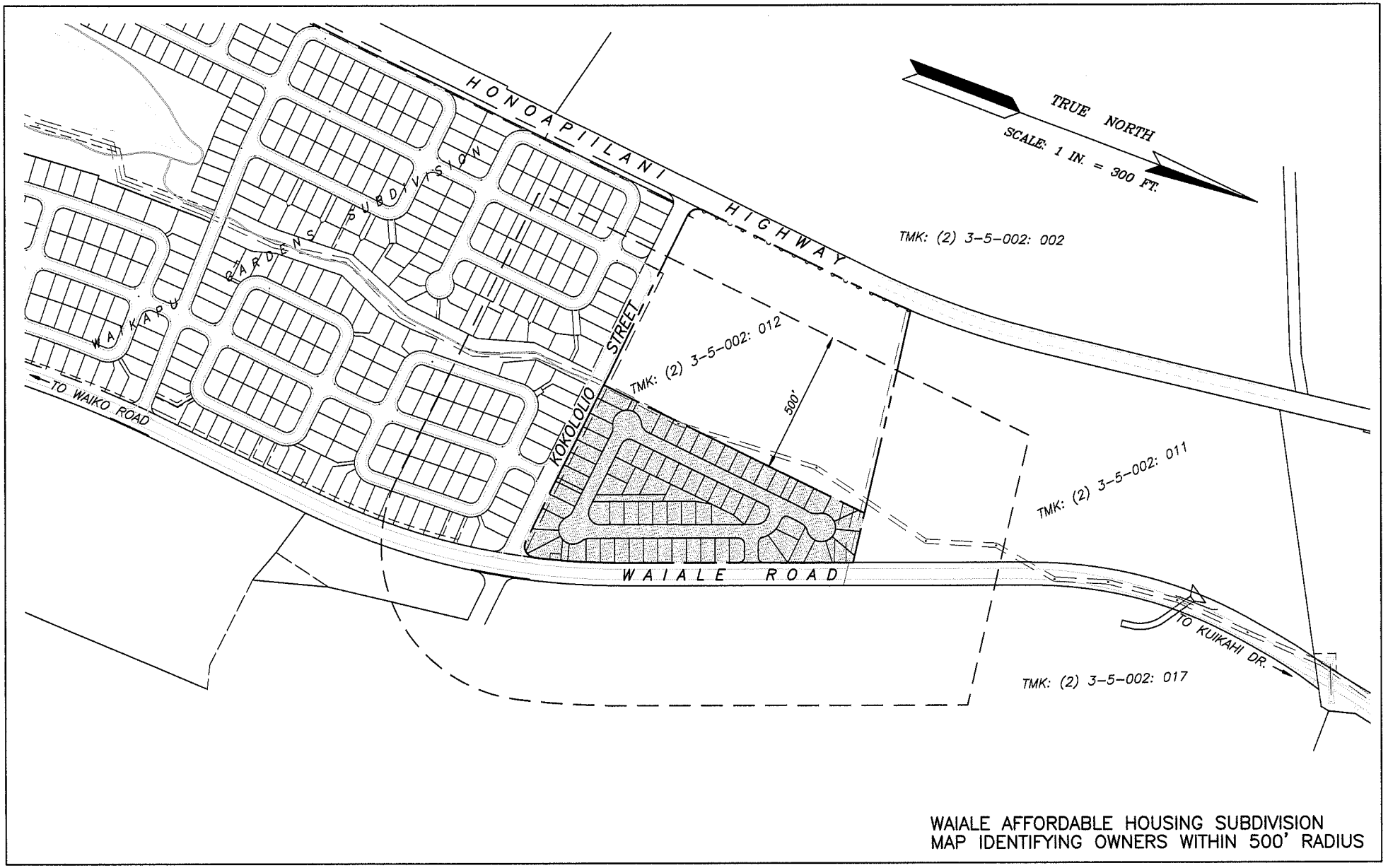




A-0.1	PLOT PLANS			WAIALE RESIDENTIAL MODELS - PLOT PLAN	MAUI ARCHITECTURAL GROUP INC. www.mauiarch.com

Appendix L

Map Identifying Owners Within 500-Foot Radius



WAIALE AFFORDABLE HOUSING SUBDIVISION
MAP IDENTIFYING OWNERS WITHIN 500' RADIUS

C:\2015 PROJECTS\2015-50\dwg\Exhibits\Waiale Affordable_500ft.dwg

Appendix M

Zoning and Flood Confirmation Form

COUNTY OF MAUI
DEPARTMENT OF PLANNING
One Main Plaza Building
2200 Main Street, Suite 335
Wailuku, Hawaii 96793

Zoning Administration and
Enforcement Division (ZAED)
Telephone: (808) 270-7253
Facsimile: (808) 270-7634
E-mail: planning@mauicounty.gov

ZONING AND FLOOD CONFIRMATION FORM

(This section to be completed by the Applicant)

APPLICANT NAME Vince G. Bagoyo **TELEPHONE** (808) 357-3842

PROJECT NAME Waiale Affordable Housing Project **E-MAIL** vbagoyo-devgroup@hawaii.rr.com

PROPERTY ADDRESS Waiale Road, Wailuku **TAX MAP KEY** (2) 3-5-002:012 por

☐ Yes ■ No **Will this Zoning & Flood Confirmation Form be used with a Subdivision Application?**
IF YES, answer questions A and B below and comply with instructions 2 & 3 below:

A) ☐ Yes ■ No **Will it be processed under a consistency exemption from Section 18.04.030(B), MCC?**
IF YES, which exemption? (No. 1, 2, 3, 4 or 5) _____

B) State the purpose of subdivision and the proposed land uses (*ie 1-lot into 2-lots for all land uses allowed by law*):

INSTRUCTIONS:

1) **Please use a separate Zoning & Flood Confirmation Form for each Tax Map Key (TMK) number.**
2) **If this will be used with a subdivision application AND the subject property contains multiple districts/designations of (1) State Land Use Districts, (2) Maui Island Plan Growth Boundaries, (3) Community Plan Designations, or (4) County Zoning Districts; submit a signed and dated Land Use Designations Map, prepared by a licensed surveyor, showing the metes & bounds of the subject parcel and of each district/designation including any subdistricts.**
3) **If this will be used with a subdivision application AND the subject property contains multiple State Land Use Districts; submit an approved District Boundary Interpretation from the State Land Use Commission.**

(This section to be completed by ZAED)

LAND USE DISTRICTS/DESIGNATIONS (LUD) AND OTHER INFORMATION: [1]

☐ (SMA) Special Management Area

STATE DISTRICT: ☑ Urban ☐ Rural ☑ Agriculture ☐ Conservation

MAUI ISLAND PLAN
Growth Boundary: [2] ☑ Urban ☐ Small Town ☐ Rural ☐ Planned Growth Area ☐ Outside Growth Boundaries
Protected Area: [2] ☐ Preservation ☐ Park ☐ Greenbelt ☐ Greenway ☐ Sensitive Land ☑ Outside Protected Areas

COMMUNITY PLAN: [2] Agriculture

COUNTY ZONING: Agriculture, P-1 Public/Quasi-Public District

OTHER/COMMENTS: P-1 zoning is "Conditional" by Ordinance 3599

☐ (PD) Planned Development
☐ (PH) Project District
☐ See Additional Comments (Pg.2)
☐ See Attached LUD Map

FEMA FLOOD INFORMATION:

FLOOD HAZARD AREA ZONES & BASE FLOOD ELEVATIONS: [3] X

☐ FEMA DESIGNATED FLOODWAY | For Flood Zone AO, FLOOD DEPTH:

☐ FLOOD DEVELOPMENT PERMIT REQUIRED (Zones V, VE, A, AO, AE, AH, D, & Floodways)

SUBDIVISION LAND USE CONSISTENCY: ☐ Not Consistent, (LUDs appear to have NO permitted uses in common).

_____ (Signature)
☐ Not Applicable, (Due to processing under consistency exemption No. ☐1, ☐2, ☐3, ☐4, ☐5).
☐ Interim Zoning, (The parcel or portion of the parcel that is zoned interim shall not be subdivided).

☐ [4] Consistent, (LUDs appear to have ALL permitted uses in common).
☐ [4] Consistent, upon obtaining an SMA, PD, or PH subdivision approval from Planning.
☐ [4] Consistent, upon recording a permissible uses unilateral agreement processed by Public Works (See Pg.2).

NOTES:

1 The conditions and/or representations made in the approval of a State District Boundary Amendment, Community Plan Amendment, County Change In Zoning, SMA Permit, Planned Development, Project District and/or a previous subdivision, may affect building permits, subdivisions, and uses on the land.
2 Please review the Maui Island Plan and the Community Plan document for any goals, objectives, policies or actions that may affect this parcel.
3 Flood development permits might be required in zones X and XS for any work done in streams, gulches, low-lying areas, or any type of drainageway; Flood development permits are required for work in all other zones. Subdivisions that include/adjoin streams, gulches, low-lying areas, or any type of drainageway might require the following designations to be shown on the subdivision map: 100-year flood inundation limits; base flood elevations; drainage reserves.
4 Subdivisions will be further reviewed during the subdivision application process to verify consistency, unilateral agreement requirements, and the conditions associated with a unilateral agreement [Section 18.04.030.D, Maui County Code].

REVIEWED & CONFIRMED BY:

_____ (Signature) 12/22/15 (Date)

For: John S. Rapacz, Planning Program Administrator, Zoning Administration and Enforcement Division

Appendix N

Environmental Site Assessment

Vuich Environmental Consultants, Inc.

Environmental Site Assessment:
Phase I Investigation

Subject Site:

UNDEVELOPED, AGRICULTURAL LAND
Honoapiilani Highway
(Southeast of Kuikahi Drive)
Wailuku, Hawaii
T.M.K. (2) 3-5-02:1

Prepared for:

EMMANUEL LUTHERAN CHURCH
AND VALLEY ISLE FELLOWSHIP
c/o Carlsmith Ball, LLP
One Main Plaza, Suite 400
2200 Main Street
Wailuku, Hawaii 96793
Attn: Mr. Tom Leuteneker

Conducted and Compiled by:
Vuich Environmental Consultants, Inc.
VEC Project Number #0403-760
May 14, 2004

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Vuich Environmental

Consultants, Inc.

Environmental Site Assessment:

Phase I Investigation

Property: UNDEVELOPED, AGRICULTURAL LAND
Honoapiilani Highway
(Southeast of Kuikahi Drive)
Wailuku, Hawaii
T.M.K. (2) 3-5-02:1

Prepared for: EMMANUEL LUTHERAN CHURCH AND VALLEY ISLE FELLOWSHIP
c/o Carlsmith Ball, LLP
One Main Plaza, Suite 400
2200 Main Street
Wailuku, Hawaii 96793
Attn: Mr. Tom Leuteneker

I hereby certify that I am responsible for the services described in this document and for the preparation of this document. The services described in this document have been prepared by the investigator under direct supervision and provided in a manner consistent with the current standards of the profession and to the best of my knowledge comply with all applicable federal, state and local statutes, regulations and ordinances.

Joseph Beaulieu, Site Investigator — **Date** 5/13/04

- B.A. (Environmental Science and Geography)

Jeffrey E. Kermode, Project Manager — **Date** 5/13/04

- B.A. (Geography), B.Tech. (Environmental Engineering)
- Lead-Based Paint Inspector (EPA Accredited Course)
  EPA Certification No. HI-03-0920045008
- Asbestos Building Inspector (AHERA Accredited Course)
  State of Hawaii Certification No. HIASB-0351

John S. Vuich, M.S., Project Supervisor — **Date** 5/13/04

- Registered Environmental Assessor
  Registration No. 1433 (State of California)

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Vuich Environmental **End of Section**

Disclosure

This document contains the results of services performed on this Project by **Vuich Environmental Consultants, Inc. (VEC)** pursuant to Agreement. The results represent the application of a variety of scientific and analytical disciplines that have been rendered using the standard of care, skill, and diligence normally provided by professionals in the performance of similar services under similar circumstances.

VEC assessments are intended to reduce, but not eliminate, uncertainty regarding recognized environmental conditions in connection with the Subject Site, as conducted within reasonable limits of time and cost. A general consensus of EPA's guidance on landowner liability is that *no environmental site assessment can wholly eliminate uncertainty regarding the potential for recognized environmental conditions in connection with a property.*

The use of this document and the results reported are limited to the services performed and areas examined as described in this document and no inferences are intended with respect to anything not described herein.

VEC is not responsible for conditions or consequences arising from relevant data, facts, and information that were concealed, missing, withheld, not fully disclosed, or not reasonably available at the time these services were performed. **VEC** is not responsible for any indirect, incidental, or consequential damages of any nature arising from any cause.

VEC has no beneficial economic interest in the Project other than as an independent professional organization performing the agreed services. **VEC**'s warranties are as described above and there are no other warranties of any kind, expressed or implied, regarding the services.

2.0 SITE AND REGIONAL DESCRIPTION

Refer to Figure 1, Regional Setting Map, in Appendix A, for a depiction of the general site setting of the subject roperty in relation to topographic features. Also depicted are the projected groundwater flows, regional surface ater flows, and locations of other significant physical features or structures.

2.1 Location and Legal Description

The subject site is located one (1) mile south of the community of Wailuku, Maui, Hawaii. It lies on the east side of Honoapiilani Highway, southeast of the intersection of Kuikahi Drive. The site is further described on the Tax Maps of the State of Hawaii as a portion of Division 2, Zone 3, Section 5, Plat 02, Parcel 01 (See Figure 3, Appendix B). Property access is from Honoapiilani Highway and Waiale Road.

2.2 Site and Vicinity General Characteristics

The property consists of two (2) parcels of land, irregular in shape, measuring approximately twenty-five (25) acres each. The property is essentially agricultural land. Small tenant farmers use approximately eighty (80) percent of the property with the remainder being fallow fields. The predominant vegetation consists of tall grasses, fruit trees and mixed agricultural fields (See Figure 2, Appendix A). No commercial or industrial activities are currently taking place on the subject site.

The northern adjoining property is being used temporarily as a construction field office area for Goodfellow Brothers. Beyond this to the north is Kuikahi Drive. The eastern adoining property is the future Waikapu Bypass beyond which are a commercial nursery and a former county landfill. Some trenching and earth moving has begun for this future roadway. The southern adjoining property consists of fallow fields. The Honoapiilani Highway is located along the western property boundary beyond which is fallow agricultural land. (See Figure 2, Appendix A).

Wailuku is Maui's traditional population center located on the eastern slopes of the West Maui Mountains. (See Figure 1, Appendix A). Kahului Bay on the Pacific Ocean is located approximately two (2) miles northeast of the subject property.

2.3 Description of Structures, Roads, Other Improvements

A network of unpaved agricultural roads has been established on the property. Several building structures were located on-site at the time of VEC's site reconnaissance. The majority of these are wood frame and plywood banana shacks. Two (2) more substantial buildings appeared to be residential. Several chicken coops were also located on site (See Figure 2 and Photo # 1, 15, and 16, Appendix A).

2.4 Current Use of the Property

The subject site consists primarily of mixed use tenant farming operations and heavily vegetated fallow agricultural land. No commercial or industrial activities are currently being conducted on-site. Some banana shacks located on-site appear to be residential in nature. The Maui County Planning Department currently describes the land's zoning as "Agricultural".

2.5 Current Uses of the Adjoining Properties

The current uses of the adjoining properties as observed by the investigator during the site reconnaissance are as follows (see also Figure 2, Site Plan, in Appendix A):

▪ *Northern Adjoining Property:*	Goodfellow Brothers construction office area beyond which is Kuikahi Drive.
▪ *Eastern Adjacent Property:*	Planned Waikapu Bypass, beyond which is a plant nursery and a former county landfill (Waikapu Landfill).
▪ *Southern Adjoining Property:*	Fallow agricultural land.
▪ *Western Adjacent Property:*	Honoapiilani Highway, beyond which is fallow agricultural land.

Vuich Environmental **End of Section**

3.0 USER PROVIDED INFORMATION

a standard of practice, the following information was requested from the Client during the preliminary phases of this investigation:

- Title records and knowledge of environmental liens;
- Personal, specialized knowledge or experience in regard to ***recognized environmental conditions*** concerning the property; and
- If applicable, actual knowledge of a significant, low purchase price for the property, and explanation for the lower price.

The purpose of this information is to help identify the possibility of ***recognized environmental conditions*** in connection with the property. These tasks do not require the technical expertise of an environmental professional and are generally not performed by environmental professionals performing the Phase I ESA. VEC submits a Preliminary Environmental Investigation questionnaire to the Client for this information. The completed questionnaire is attached in Appendix B.

According to information provided by the Client in the Preliminary Environmental Investigation, the Client is not aware of any environmental liens, proceedings, or investigations against the subject property as of the date of this ESA.

Vuich Environmental **End of Section**

4.0 RECORDS REVIEW

The purpose of a record review is to obtain and review records that will help identify ***recognized environmental conditions*** in connection with the subject property. The service of Environmental Data Resources, Inc. (EDR) was utilized to compile the database listings.

4.1 Standard Environmental Record Sources

The subject property and properties within the minimum search distances were reviewed from the following record sources (see below). Risk sites, if any, that may be located on or adjacent to the subject property, or are within close proximity to the subject site are described. Refer to Appendix B, EDR Radius Map Report, for a complete listing and description of all sites located within the designated search distances, details, and government agency database release dates.

The EDR Report bases the location of the listed risk sites on longitude/latitude information provided by the respective government agency. VEC confirms the locations of risk sites within close proximity to the subject site during the site visit. When the VEC site visit contradicts the EDR Report, it has been so stated.

THE SUBJECT SITE IS NOT LISTED ON ANY OF THE FOLLOWING FEDERAL OR STATE DATABASE LISTINGS OF THE EDR REPORT.

Federal Database Listings

▼ **National Priorities List (NPL or Superfund) and Proposed NPL, EPA.** The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program.

- *The EDR database report indicates no listings within the one-mile search radius of the subject site.*

▼ **Comprehensive Environmental Response, Compensation and Liability Information System List (CERCLIS), EPA.** The CERCLIS list contains data on potentially hazardous waste sites that have been reported to EPA by states, municipalities, private companies and private persons, pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). CERCLIS contains sites that are either proposed to or on the NPL and sites, which are in the screening and assessment phase for possible inclusion on the NPL.

- *The EDR Report indicates no listing within the 1/2-mile search radius of the subject site.*

► **CERCLIS – No Further Remedial Action Planned (NFRAP), EPA.** NFRAP sites may be sites where, following an initial investigation, no contamination was found, contamination was removed quickly without the need for the site to be placed on the NPL, or the contamination was not serious enough to require Federal Superfund action or NPL consideration.

- *The EDR Report indicates one (1) listing within the ¼-mile search radius of the subject site.*

The EDR Report (amended) indicates one (1) listing within the ¼-mile search radius of the subject site. The former Maui County Waikapu Dump is located immediately southeast of the subject site. See the amended EDR Report, Appendix B. CERCLIS listings indicate facilities that have a known or suspect abandoned, inactive or uncontrolled hazardous waste site.

▼ **Corrective Action Report (CORRACTS), EPA.** The CORRACTS report lists hazardous waste handlers with RCRA corrective action activity.

- *The EDR Report indicates no listings within the one-mile search radius of the subject site.*

▼ **Resource Conservation and Recovery Information System (RCRIS), EPA/NTIS.** RCRIS includes selective information on sites that generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA).

- *The EDR Report indicates no listings of RCRIS treatment, storage and disposal (TSD) site within the ½-mile search radius of the subject site.*
- *The EDR Report indicates no listing for the subject property and no listing for a RCRIS large quantity generators within the ¼-mile search radius of the subject site. Large quantity generators are entities that generate at least 1,000 kg/month of non-acutely hazardous waste or 1.0 kg/month of acutely hazardous waste (Lg. Quan. Gen. - LQG).*
- *The EDR Report indicates no listing for the subject property and no listings for a RCRIS small quantity generator (Sm. Quan. Gen. - SQG) within 1/4-mile of the subject site. RCRIS small quantity generators are entities that generate less than 1,000 kg/month of non-acutely hazardous waste.*

▼ **Emergency Response Notification System (ERNS), EPA/NTIS.** Records and stores information on reported releases of oil and hazardous substances.

- *The subject site is not listed.*

State of Hawaii Database Listings

► **Sites List (SHWS), DOH.** A list of facilities, sites, or areas in which the Office of Hazard Evaluation and Emergency Response (HEER) has an interest, has investigated or may investigate under HRS 128D (includes CERCLIS sites).

- *The subject site is not listed.*
- *The EDR Report indicates one (1) listing within the 1-mile search radius of the subject site.*

The Waiale Ash Pile is located northeast of the subject property (See EDR report, Appendix B). Also, see CERCLIS (NFRAP) listing above.

► **Permitted Landfills in the State of Hawaii (SWF/LF), DOH.** An inventory of solid waste disposal facilities or landfills in the State of Hawaii. These may be active or inactive facilities or open dumps that failed to meet RCRA Subtitle D Section 4004 criteria for solid waste landfills or disposal sites.

- *The subject site is not listed.*
- *The EDR Report indicates no listing within the ½-mile search radius of the subject site.*

See amended EDR Report, Waikapu Dump (Appendix B) and CERCLIS (NFRAP) listing above.

▼ **Leaking Underground Storage Tank (LUST) database, DOH.** An inventory of reported leaking underground storage tank incidents.

- *The subject site is not listed.*
- *The EDR Report indicates no listings within a 1/2-mile radius of the subject site.*

▼ **Underground Storage Tank (UST) database, DOH.** USTs are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA) and must be registered with DOH.

- *The subject site is not listed.*
- *The EDR Report indicates no listings within ¼-mile of the subject property.*

4.2 Additional Environmental Record Sources

The subject property and properties within the minimum search distances were reviewed from the following record sources. Refer to Appendix B, EDR Radius Map Report, for a complete listing and description of all sites located within the designated search distances, details, and database release dates.

Federal Database Listings

▼ **Superfund (CERCLA) Consent Decrees (CONSENT), EPA Regional Offices.** Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites.

- *The subject site is not listed.*
- *The EDR Report indicates no listings within the one-mile search radius of the subject site.*

▼ **Records of Decisions (ROD), EPA.** ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

- *The subject site is not listed.*
- *The EDR Report indicates no listings within the one-mile search radius of the subject site.*

▼ **National Priority List Deletions (De-listed NPL), EPA.** A list of sites that have been deleted from the NPL where no further response is appropriate.

- *The subject site is not listed.*
- *The EDR Report indicates no listings within the one-mile search radius of the subject site.*

▼ **Facility Index System/Facility Identification Initiative Program Summary Report (FINDS), EPA.** Contains both facility information and 'pointers' to other sources that contain more detail.

- *The subject site is not listed.*

▼ **Hazardous Materials Information Reporting System (HMIRS) DOT.** A list of hazardous material spill incidents reported to DOT.

- *The subject site is not listed.*

▼ **Material Licensing Tracking System (MLTS), Nuclear Regulatory Commission (NRC).** A list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements.

- *The subject site is not listed.*

▼ **Mines Master Index File (MINES), Department of Labor, Mine Safety and Health Administration.** Contains both facility information and 'pointers' to other sources that contain more detail.

- *The subject site is not listed.*
- *The EDR Report indicates no listings within the ¼-mile search radius of the subject site.*

▼ **Federal Superfund Liens (NPL Liens), EPA.** A list of properties whereby the EPA has filed liens against real property in order to recover remedial action expenditures or when the property owner receives notification of potential liability.

- *The subject site is not listed.*

▼ **PCB Activity Database System (PADS).** Identifies generators, transporters, commercial storers and/or brokers and disposers of PCBs who are required to notify EPA of such activities.

- *The subject site is not listed.*

▼ **RCRA Administrative Action Tracking System (RAATS), EPA.** A historical archived database containing records on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by EPA. The database was discontinued on September 30, 1995.

- *The subject site is not listed.*

▼ **Toxic Chemical Release Inventory System (TRIS), EPA.** A list of facilities which release toxic chemicals to the air, water, and land in reportable quantities under SARA Title III, Section 313.

- *The subject site is not listed.*

- **Toxic Substances Control Act (TSCA), EPA.** Identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list.
  - *The subject site is not listed.*
- **Federal Insecticide, Fungicide, & Rodenticide Act (FIFRA)/TSCA Tracking System (FTTS INSP and FTTS), EPA – Office of Prevention, Pesticides and Toxic Substances.** FTTS tracks administrative cases, pesticide enforcement actions, and compliance activities related to FIFRA, TSCA, and Emergency Planning and Community Right-to-Know Act (EPCRA).
  - *The subject site is not listed.*

State of Hawaii Database Listings

- **Release Notifications (SPILLS), DOH.** Releases of hazardous substances to the environment reported to the HEER Office. The following databases are included in the HEER Spill List:

  Release Notification Report: a compilation of releases reported to HEER.

  Hawaii Emergency Planning and Community Right-to-Know Act (HEPCRA): a list of facilities that have submitted Tier II and Form Rs as a reporting requirement.
  - *The subject site is not listed.*
- **Registered Wells and Dry Wells, DLNR.** (See Section 5.5.6). There are no registered wells listed for the subject property. *(2002 DLNR data).*
- **Air Quality Permit, DOH.** Current activities conducted on-site do not require an air quality permit.
- **Storm Water Discharge (NPDES) Permit, DOH.** Current activities conducted on-site do not require a NPDES permit.

County and Other Database Listings

Other local records of environmental interest that were reviewed or considered for review by VEC included:

- **Fire Department, County of Maui.** The Maui County Fire Department (MCFD) maintains file material that is not on a database. MCFD was contacted for an inquiry on the subject property.
- **Former Manufactured Gas (Coal Gas) Sites.** EDR provides exclusive information regarding the existence and location of Coal Gas sites.
  - The EDR Report indicates no listings within the one-mile search radius.
- **Grading/Grubbing Permit, County of Maui.** The current activities being conducted on-site do not require a grading/grubbing permit.
- **Hazardous Waste Disposal Documents.** VEC did not review any hazardous waste disposal documents.
- **Maui Electric Company.** Maintains records on county power transformers regarding PCB-containing equipment and equipment maintenance. One (1) pole-mounted electrical transformer was observed at the northeast corner of Lot 1 of the subject property (See Photo #20 and Figure 2, Appendix A).
- **Other Environmental Reports.** Environmental site assessment reports that were previously completed by VEC in close proximity to the subject site were reviewed.
- **Planning & Zoning, County of Maui.** According to the Maui County Department of Planning, the subject site's zoning is "Agricultural" and **is not** within the boundaries of the Special Management Area (SMA).

- **Property Tax Office, County of Maui.** The Maui County Property Tax Office maintains records of past ownership, maps, sketches and other information as it pertains to the subject property. (See also Section 7.1). The property owner is listed as Wailuku Agribusiness Company, Inc.
- **Wastewater Discharge Permit, County of Maui.** VEC did not identify any wastewater discharge permits registered to the subject property.

4.3 Physical Setting Source(s)

The following sources were reviewed for physical setting information (refer to Section 7.0 for a complete listing):

- Atlas of Hawaii;
- Civil Defense Tsunami Evacuation Map;
- Geologic and Topographic Map (Hawaii Atlas & Gazetteer);
- Groundwater Map and Water Quality Plan for State of Hawaii;
- U.S. Department of Agriculture, Soil Conservation Service, Soil Survey of the Islands of Kauai, Oahu, Maui, Molokai, and Lanai, HI;
- U.S. Geological Survey, 7.5 Minute Topographic Map, Wailuku Quadrangle, 1983.

These data sources were used to provide information regarding physical characteristics of the subject site and surrounding area. This information is typically used in analysis of potential geological trends, which might impact environmental conditions of the subject site. Note that this investigation is not intended to identify geologic hazards associated with the subject property.

4.4 Historical Use Information Regarding the Property and Adjoining Properties

The following historical data sources were reviewed for this report (refer to Section 7.0 for a complete listing):

- Aerial Photographs;
- Department of Planning and Zoning, County of Maui;
- Maui County Fire Department (Fire Prevention Bureau / Hazardous Materials Division);
- Maui County Real Property Tax Records;
- Personal Interviews;
- Sanborn Maps (no coverage);
- State of Hawaii, Department of Health, Environmental Management Division;
- Environmental Date Resources (EDR).

Historic Aerial Photographs

A series of aerial photographs with coverage of the subject property and surrounding areas were examined. See Figure 2, Appendix A, for clarification of specific locations.

Table 1.0. Historical Aerial Photograph Analysis.

Date	Aerial Photo Analysis	
12/20/50	SS: N, S, W: E: RG:	Agricultural land use (sugarcane). Agricultural land use (sugarcane). Undeveloped vegetated land. Agricultural land use with undeveloped land to the east.
6/2/64	SS: N, E, S, W: RG:	No changes noted. No changes noted. No changes noted.
1/30/77	SS: N, S, W: E: RG:	No changes noted. No changes noted. Agricultural land use (sugarcane). County landfill noted to the southeast. Water tank noted to the northeast.
9/11/85	SS: N: E, S, W: RG:	No changes noted. Kuikahi Drive added. No changes noted. Agricultural land with increasing residential growth.
10/8/90	SS: N, S, W: E: RG:	Crop changed from sugarcane to pineapple. Crop changed from sugarcane to pineapple. Agricultural landuse changed to commercial nursery. County landfill appears to be closed. Agricultural land with increasing residential.
5/3/97	SS: N, S, W: E: RG:	Agricultural use has changed to small fields with banana shacks evident. No changes noted. Agricultural use has changed to small fields with banana shacks evident. Agricultural use with increased residential development.

Notes:
SS Subject Site
N Northern Adjoining Property
E Eastern Adjoining Property
S Southern Adjoining Property
W Western Adjacent Property
RG Regional Area

VEC did not observe any features on aerial photographs examined that would suggest the presence of significant vegetative stress, soil staining, or bulk storage of chemicals such as drums or tanks.

Vuich Environmental

End of Section

the groundwater management area as the *Iao Aquifer System* within the *Wailuku Aquifer Sector*. The groundwater underlying the subject site is defined as follows:

Table 4.0. Aquifer Classification of the subject site.

Aquifer	Aquifer Type: Hydrology & Geology	Status of Groundwater				
		Development Status	Utility	Salinity (mg/l Cl)	Uniqueness	Vulnerability to Contamination
Upper	Unconfined basal aquifer occurring in horizontally extensive lavas (Flank)	Currently Used	Drinking	Fresh	Irreplaceable	High

The following are descriptions of the aquifer classification codes, according to Water Quality Plan of 1992:

Aquifer Type Hydrogeology (basal, high level, unconfined, confined, or confined/unconfined: basal – freshwater in contact with seawater; *high level* – freshwater not in contact with seawater; *unconfined* – water table is the upper surface of the saturated aquifer; *confined* – aquifer is bounded by impermeable or poorly permeable formations; and *confined or unconfined* – the actual condition is uncertain.

Aquifer Type Geology: flank, dike, flank/dike, perched, dike/perched, and sedimentary.

Development Stage – currently used, potential use, no potential use: Aquifers are differentiated according to those already being used (currently used), those with potential utility (potential use), and those having no potential for development.

Utility – drinking, ecologically important, neither: Identifies aquifers by use.

Salinity – fresh, low, moderate, high and seawater: The gradation of groundwater from fresh to seawater is a feature of all basal aquifers in Hawaii. The upper limit of the standard for drinking water is 250 mg/l Chlorine (Cl^-) (fresh) and true seawater has a chloride content of 18,980 mg/l.

Uniqueness – irreplaceable and replaceable: The classes irreplaceable and replaceable are direct EPA derivatives. Virtually all-potable water in the state of Hawaii should be considered irreplaceable over the long term.

Vulnerability to Contamination – high, moderate, low, none: Because of the geographical limits of resources, interconnection among groundwater sources and the relatively rapid time of groundwater travel, aquifers can be described as being either vulnerable or not vulnerable to contamination.

The estimated depth to the basal groundwater ranges from approximately 300 to 350 feet below the ground surface, depending on the location on the subject property. The flow direction is expected to be in an easterly direction.

The subject site is located makai (below) of the Underground Injection Control (UIC) line. The UIC line is the designated boundary that divides protected inland areas situated over drinking water sources from seaward areas located over non-potable water sources. Sites makai of the UIC line are not considered drinking water sources and permit limitations are imposed by Maui County, Clean Water Branch (CWB).

5.2.7 Potable Water Supply and Sewage Disposal System

The property is undeveloped at this time. The shacks on-site could not be accessed to determine what water supply and sewage disposal systems they used, if any.

5.3 Interior and Exterior Observations

5.3.1 Hazardous/Regulated Substances and Petroleum Products in Connection with Identified Uses.

VEC did not identify any hazardous/regulated substances and/or petroleum products in connection with identified current uses as visually and physically observed on the property at the time of the site visit. However, VEC was limited in their investigation of the entire site (See Section 1.4). While no bulk storage

of regulated substances was observed, it should be noted that small farming operations, like those observed on-site, do commonly use fertilizers and pesticides. VEC observed limited containers of petroleum products that were empty. No bulk storage of petroleum products and associated soil staining was noted.

5.3.2 Hazardous/Regulated Substances and Petroleum Products/Containers (not in connection with identified current uses).

VEC did not identify any hazardous/regulated substances and/or petroleum products that are not in connection with identified current uses as visually and physically observed on the property at the time of the site visit. There is no evidence of any historic misuse, improper bulk storage, or significant spills of hazardous or regulated substances on the subject property. However, VEC was limited in their investigation of the entire site (See Section 1.4).

A review of the historical information identified the subject property to be part of the Wailuku Sugar Company's Plantation that has been operating in this area for several decades. It was also discovered that Maui Land and Pineapple company leased the property for pineapple cultivation for several years up until 1998. Hazardous materials potentially associated with sugarcane and pineapple cultivation include pesticides and herbicides. The U.S. Environmental Protection Agency (EPA) has long recognized these chemicals as a contaminant to surface soils and ground water. Clayton Suzuki, Land Manager for Wailuku Agribusiness has provided a list of chemicals potentially used on site (See letter in Appendix B).

5.3.3 Unidentified Substance Containers

VEC did not observe any unidentified substances suspected of being possible hazardous/regulated substances or petroleum products as visually and physically observed on the property at the time of the site visit.

5.3.4 Storage Tanks

No indication regarding the historic or current presence of underground storage tanks (USTs) on the subject site was obtained through our review of regulatory databases, interviews or through VEC's site reconnaissance.

5.3.5 Odors

VEC identified no suspect odors on the subject property.

5.3.6 Pools of Liquid

The investigators did not observe any pools or sumps of liquids likely to be hazardous substances or petroleum products to the extent visually and/or physically observed on the subject property at the time of the site visit or from interviews or records review.

5.3.7 Indications of PCBs

Pole or pad-mounted transformers numbered 7777 or above are considered non-PCB containing by the Maui Electric Company. One (1) pole-mounted electrical transformer was observed on the subject property at the northeast corner of Lot 1. This transformer was determined to be non-PCB containing based on its ID number (See Photo # 20 and Figure 2 in Appendix A). This transformer appeared to be in good condition with no sign of leaking or staining.

Background Information:

Polychlorinated biphenyls (PCBs) are groups of manufactured organic chemicals that contain 209 individual chlorinated chemicals (known as congeners) and were introduced in 1929. PCBs have been used widely as coolants and lubricants in transformers, capacitors, and other electrical equipment. Products

containing PCBs are old fluorescent lighting fixtures, electrical appliances containing PCB capacitors, old microscope oil, and hydraulic fluids.

The manufacture of PCBs stopped in the United States in 1977 because of evidence that they build up in the environment and cause harmful effects. The distribution in commerce of PCB containing items was banned in 1979 (40 CFR 761.20). The EPA aggressively enforces regulations concerning PCB manufacturing, use, distribution, release and disposal under the Toxic Substance Control Act (TSCA). This federal agency extensively regulates the use, servicing, and disposal of PCBs in electrical equipment by enforcing marking, notification, inspection, and record keeping requirements.

5.4 Interior Observations

5.4.1 Heating and Cooling Systems of On-site Building Structures

VEC identified several small shacks related to the tenant farming activities that did not have any heating or cooling systems. However, VEC was limited in their investigation of the entire site (See Section 1.4).

5.4.2 Stains and Corrosion

VEC did not identify any significant staining or corrosion in the shacks on the subject property. However, VEC was limited in their investigation of the entire site (See Section 1.4).

5.4.3 Indoor Wastewater Drains, Sumps and Grease Interceptors

No drains, sumps or grease interceptors were noted by VEC during the site reconnaissance.

5.5 Exterior Observations

5.5.1 Pits, Ponds, and Lagoons

There were no areas identified as man-made or natural depressions that are, or would have been, likely to hold waste liquids or sludge from industrial operations or other activities.

5.5.2 Stained Soil or Pavement

No significant petroleum-like staining was noted on the subject property. However, VEC was limited in their investigation of the entire site (See Section 1.4).

5.5.3 Stressed Vegetation

There were no areas of stressed vegetation identified on the subject property at the time of the site visit that are, or would have been, likely caused from something other than insufficient water (or flooding).

5.5.4 Solid Waste

There were no indications of significant solid waste dumping or suspect fill materials, mounds, depressions or excavations, observed on this property during the site reconnaissance, nor on historic aerial photographs. Historical on-site disposal practices are unknown. A limited amount of earth moving and filling activities have been undertaken by Goodfellow Brothers in the northeast corner of Lot 1. This is related to adjacent infrastructure improvements and is not considered a significant environmental concern. Agricultural tilling and grading has taken place on the subject property.

The following solid wastes were noted during the site reconnaissance (See Photos #4, #17, #19, #21):

- Landscape debris (i.e. tree limbs, palm fronds, grasses, shrubs, etc.);
- Construction debris (i.e. concrete, lumber, metal, plastics);
- Soil stockpiles of less than 10 square meters (no odors or staining were detected);
- Road material stockpile of less than 10 square meters (tarmac odor detected);

- White goods (discarded washers, dryers or refrigerators, etc.);
- Several abandoned vehicles are located on the subject property.

Some wastes may be considered "Special Wastes" according to the Hawaii Administrative Rules (HAR) on Solid Waste, Title 11, Chapter 58.1. Special wastes are those wastes that do not fit in the mixed municipal solid waste (MMSW) category, either by general nature or because of special handling requirements. Special waste categories include: asbestos, sludge, medical waste, used oil, batteries, agricultural wastes, tires, derelict vehicles and white goods (i.e., appliances). Locally, the County of Maui, Department of Public Works, Solid Waste Division administers the disposal of these materials. These wastes need to be disposed of in a permitted solid waste landfill such as the Maui County Central Landfill. Special wastes' management needs to be performed in a manner that complies with all local, state, and federal regulations as applicable to the specific waste type.

5.5.5 Wastewater or Storm Water – Discharge Drains, Dry Wells, Drainage Ways, and Retention Basins

VEC did not identify any storm water drains located along the property boundaries. Some ditches and sewer manholes were noted along the eastern property boundary. These relate to the future Waikapu Bypass (See Figure 2, Appendix A).

Any future grubbing or grading activity that may take place on the subject site (especially if > 1 acre of soil disturbance) will likely require, both a Maui County Grading Permit and a Department of Health, Clean Water Branch, NPDES (National Pollutant Discharge Elimination System) permit.

5.5.6 Wells

From VEC's observations and database search, there are no production, domestic, abandoned, irrigation or monitor wells located on the subject site. Wells located near the subject property are mainly used for irrigation purposes or are unused at this time. See Figure 1, Appendix A for well locations.

5.5.7 Septic and Cesspool Systems

VEC did not obtain evidence of any current or historic septic or cesspool system located on the subject site. However, VEC was limited in their investigation of the entire site (See Section 1.4).

5.6 Non-Scope Considerations

The concerns listed below are not normally considered relevant under CERCLA, however, they may be considered regulated under other environmental laws and ordinances and may present a potential liability to the property owner.

5.6.1 Asbestos-Containing Materials (ACM)

The on-site structures inspected by VEC did not appear to consist of any asbestos-containing building materials. VEC did not note any significant quantities of construction debris that may contain asbestos. However, VEC was limited in their investigation of the entire site (See Section 1.4).

Background Information:

Asbestos was widely used in building materials and in fire retardant applications up through the 1980s. Asbestos use in the United States did not start to decline until the EPA banned the spray-applied materials during 1973-1978. Further restrictions on U.S. manufactured asbestos products continued into the 1990s. The EPA ban rule and phase-out of all asbestos-containing materials (ACMs) was to be implemented in stages from 1990 to 1997, but the Rule was overturned in federal court.

Asbestos is a known health hazard causing progressive lung scaring and cancer. Asbestos related conditions usually develop within 15 to 40 years after exposure. Exposed smokers have an increased risk factor of 50 to 90 times that of the non-smoking population.

State and federal rules have established standards for the use and control of ACM. These standards apply to worker protection, notification procedures, renovation/demolition activities, and construction debris (waste) management.

Under the EPA's Asbestos Hazard Emergency Response Act (AHERA), 40CFR763, asbestos-containing material (ACM) is defined as any substance whose asbestos content exceeds one percent (1%) of the total volume as determined by Polarized Light Microscopy (PLM) analysis. Building inspector training, sampling procedures and laboratory analysis are also addressed under this rule. Some aspects of this rule have been extended to public and commercial buildings. The Hawaii Administrative Rules 11-502 have essentially adopted EPA's AHERA standard.

Current OSHA regulations for occupational exposure to asbestos hazards require commercial building owners to *presume* all thermal system insulation, sprayed or textured surfacing materials and asphaltic and vinyl flooring installed in buildings constructed before 1981 to contain ACM. The Federal Occupational Safety and Health Act (OSHA) Construction Standard for Asbestos requires that building owners communicate any potential or actual asbestos hazards (29CFR1926.1101(k)). Owner/Operators must inform in-house employees and any outside contractor (workers) who apply or bid for work in or adjacent to areas known or *presumed* to contain asbestos. Included asbestos materials are Thermal system insulation (TSI), sprayed or troweled-on surfacing materials, and asphalt or vinyl flooring material installed prior to 1981. Hawaii Occupational Safety and Health (HIOSH) under HAR 12-141.1 has adopted the federal standard.

Under EPA's National Emission Standards for Hazardous Air Pollutants (NESHAP) 40CFR Part 61, are requirements for renovation and demolition work involving ACM.

5.6.2 Lead-Based Paint

Due to the age of the structures noted by VEC, some of the buildings may contain lead-based paints. VEC did not note any significant quantities of construction debris that may contain lead-based paint. However, VEC was limited in their investigation of the entire site (See Section 1.4).

Background Information:
Lead is a metal element in pure form but is found in other chemical compounds used within manufactured and formulated products. Among these are pipe solder, paint and other coatings and water pipes - items commonly found in older buildings and homes.

Lead becomes toxic to the human body even in low levels by chronic over exposure. The exposure may occur by breathing dust, eating dust (on food, tobacco, fingers, or eating paint chips (children)). Lead poisoning affects the brain and central nervous system; especially susceptible are young children. Lead is also known to impact kidney and liver functions.

The EPA/HUD defines lead-based paint as paint or other coatings containing lead equal to or in excess of 0.5% lead by weight or 1.0 mg/cm^2. The prevalence of lead-based paint in housing built before 1940 is especially high according to research conducted by the U.S. Department of Housing and Urban Development (HUD). After 1940, its use diminished until 1972 when U.S. manufactured housing paint became regulated at 0.5 percent lead by weight and "banned" in 1978; this means that paint could not be manufactured and sold for housing use if it contained lead above the U.S. Consumer Products Safety Commission's (CC) 0.06 percent by weight. The "ban" provided a basis for using the cut-off date of 1978 when disclosing the possibility of lead-containing paint in sales and rentals of housing units.

Any detected lead-level in paint below HUD and the CPSC's criteria remains an environmental concern under the U.S. Occupational Safety and Health Administration's (OSHA) Lead Standard for Construction Workers, 29CFR1926.62 and the HIOSH equivalent, HAR 12-148.1. Communication of lead-levels in

paint is required for worker safety, when conducting renovation or demolition, and for construction debris (waste) management.

5.6.3 Arsenic-Containing Substances

The on-site structures inspected by VEC did not appear to contain arsenic (canec). VEC did not note any significant quantities of construction debris that may contain elevated levels of arsenic. Pesticides historically used on-site could have included arsenic-containing compounds. However, VEC was limited in their investigation of the entire site (See Section 1.4).

Background Information

Arsenic, like several other heavy metals, tends to accumulate in the body. Ingestion of a small dose may seemingly exert no adverse effect at all, while ingestion of multiple small doses could cause death. In lesser amounts, arsenic-containing compounds cause other health problems, like mottling of the skin, skin lesions, nervous disorder, and severe, irreversible liver damage. Arsenic is a human carcinogen, causing skin tumors when ingested and lung tumors when inhaled.

Arsenic-containing compounds were once used as components of some inorganic pesticides. In the 1940s, these pesticides were used to control insects and rodents.

To protect against exposure to high arsenic concentrations, OSHA requires workers to use air-purifying respirators and to wear protective clothing in areas where airborne arsenic compounds are known to exist.

The Resource Conservation and Recovery Act (RCRA), Subtitle C lists arsenic and arsenic-containing compounds as a hazardous waste. Therefore, construction/demolition debris (waste) management should be conducted in accordance with all Federal, State, and Local regulations. This typically requires waste segregation into construction material and dust/debris waste. Sampling using the Toxicity Leach Characteristic Procedure (TCLP) for arsenic is required for hazardous waste determination.

5.6.4 Radon

VEC did not identify any man-made products on the subject property that are known or suspected to emit radioactive decay elements.

Background Information:

Radon is a colorless and odorless radioactive gas that can produce health effects such as cellular injury. Radon gas can occur in the natural environment as concentrations from certain rocks and geologic conditions have a high radon-emanation potential.

These surface rock types are not known to occur in Hawaii. It is possible that increased concentrations of Radon could occur in regions where geologic fault and volcanic rift zones may release gases from deeper earth sources. However, the State of Hawaii, Department of Health (DOH) has not addressed concerns for any significant levels of gas to occur anywhere in Hawaii. This was based on the 1992 and 1996 DOH investigations conducted in elementary schools throughout the State.

5.6.5 Lead in Drinking Water

The subject property is not developed for potable water. This section does not apply.

5.6.6 Ecological Resources, Endangered Species, Cultural and Historic Resources, and Wetlands

There are no known wetlands, critical habitats, or threatened and endangered species designated for the subject site. The subject site is not located within the County of Maui's Special Management Area (SMA).

5.6.7 Indoor Air Quality

VEC did not identify any building surfaces that had characteristics that resembled possible mold contamination at the time of the site visit. VEC did not observe any mold related odors. However, VEC was limited in their investigation of the entire site (See Section 1.4).

Background Information:
Indoor air quality (IAQ) problems primarily result from indoor pollution sources that release gases or airborne particles. The term "Sick Building Syndrome" (SBS) is used to describe situations in which building occupants experience acute health and discomfort effects that appear to be linked to time spent in a building and may be localized in a particular room or zone or may be widespread throughout the building. Frequently, problems result when a building is operated or maintained in a manner that is inconsistent with its original design or prescribed operating procedures or as a result of poor building design or occupant activities.
Sources of indoor air contaminants can originate from within the building or be drawn in from the outdoors. The following causes contribute to IAQ problems:

1. *Inadequate ventilation* – As a result of the oil embargo in 1973, national energy conservation measures called for a reduction in the amount of outdoor air provided for ventilation. In many cases the reduced outdoor air ventilation rates were found to be inadequate to maintain the health and comfort of building occupants. Potential air pollutant sources in ventilation or heating, ventilating, or air-conditioning (HVAC) systems include, but are not limited to: dust or dirt in ductwork; microbiological growth (i.e. mold, mildew, or bacteria); improper use of biocides, sealants, and cleaning compounds; improper venting of combustion products; and refrigerant leakage. Inadequate ventilation may increase the concentrations of these indoor air contaminants.
2. *Biological contaminants* – Bacteria, molds, pollen and viruses are types of biological contaminants. These contaminants may breed in stagnant water that has accumulated in ducts, humidifiers and drain pans, or where water has collected on ceiling tiles, carpeting, or insulation. Surfaces exposed to high humid conditions with limited air movement may also be subject to microbiological contamination.
3. *Chemical contaminants from indoor sources* – Most indoor air pollution comes from sources inside the building. Potential air pollutant sources of indoor chemical contaminants include, but are not limited to: adhesives, carpeting, upholstery, manufactured wood products, pesticides, combustion products (i.e. carbon monoxide, carbon dioxide, and nitrogen oxides), and cleaning agents emitting volatile organic compounds (VOCs). Tobacco smoke contributes high levels of VOCs, other toxic compounds, and respirable particulate matter. Research has shown that some VOCs can cause chronic and acute health effects at high concentrations, and some are known carcinogens.
4. *Chemical contaminants from outdoor sources* – The outdoor air that enters a building can be a source of indoor air pollution. Potential air pollutant sources of outdoor chemical contaminants include, but are not limited to: motor vehicle exhausts; plumbing vents; combustion products (i.e. carbon monoxide, carbon dioxide, and nitrogen oxides); and building exhausts (i.e. bathrooms and kitchens). These contaminants can enter the building through poorly located air intake vents, windows, and other openings.

Indicators of SBS or IAQ related health problems include, but are not limited to, headache, eye, nose, or throat irritation, dry cough, dry or itchy skin, dizziness or nausea, fatigue, and sensitivity to odors. Most complaints or symptoms are relieved soon after leaving the building.

5.6.8 High Voltage Transmission Lines

Transmission and or distribution lines are located along the northern, eastern and western property boundaries. These lines are not a concern to the subject property at this time and would unlikely be a

concern for any future development on site. However, an EMF (Electromagnetic Frequency) survey can be conducted by MECO (Maui Electric Company) if there is client concern.

End of Section

6.0 FINDINGS, OPINIONS, AND CONCLUSIONS

6.1 Recognized Environmental Conditions

Recognized environmental conditions, as defined by ASTM Standard E1527-00, are the presence or likely presence of any hazardous substance or petroleum products on a property under conditions that indicate an existing release, a past release, or a material threat of a release of any hazardous substances or petroleum products into structures on the property or into the ground, ground water, or surface water of the property. ***Recognized environmental conditions*** are described with regard to (1) the nature and extent of the environmental condition, (2) potential or actual environmental threat, (3) potential for transport (migration) of any environmental conditions, and (4) consideration for further investigation. The term is not intended to include *de minimis* conditions that generally do not present a material risk of harm to public health or the environment and that generally would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies.

VEC has performed this Phase I Environmental Site Assessment in conformance with the scope and limitations of the ASTM Practice E 1527-00 for the property located southeast of the intersection of Honoapiilani Highway and Kuikahi Drive in the community of Wailuku, Maui (TMK Number (2) 3-5-02:01 portion, defined as the subject property. Any exceptions to or deletions from, this practice are described in Section 1.4, Limitations and Exceptions, of this report.

This assessment has revealed no evidence of *recognized environmental conditions* in connection with the property, except for the following:

6.1.1 Database Listings (See Section 4.0 & EDR Report, Appendix B)

Findings/Concerns:

The subject site is not listed on any Federal, State or County databases as a site with any recognized environmental concerns. There is one (1) nearby listed site (Waiale Ash Pile), as indicated by the EDR Report, within the appropriate search distance from the subject property. In addition, a former county landfill (Waikapu Dump) is located adjacent to the subject property (See Figure 2, Appendix A and EDR Report Addendum, Appendix B). These sites are located down gradient of the subject site.

Opinions and Conclusions:

Due to the close proximity of the former Waikapu Landfill relative to Lot 2 of the subject property it is possible that this site has or has had reasonable potential to adversely impact the environmental condition of Lot 2 of the subject property. However, due to the down gradient and predominantly down wind location of this landfill relative to Lot 2 of the subject property it is less likely that groundwater and or surface soils would contain contamination above regulated levels. Groundwater and or soil sampling could be conducted to confirm this.

6.1.2 Current and Historic Use or Storage of Hazardous and Regulated Substances (See Section 5.3.2)

Findings/Concerns:

There is no evidence of any historic or current significant misuse of hazardous or regulated substances on the subject property. Historically, pineapple and sugarcane agriculture had been occurring on, and adjacent to, the subject property for several decades. These operations have been associated with the application of pesticides and fertilizers.

Opinions and Conclusions:

While the use of pesticides and herbicides on and near the property does not necessarily result in adverse impacts to the environmental condition of the subject site, it is possible (yet unlikely) for residual amounts of these substances to accumulate to concentrations that present a potential threat to human health or the environment. Soil sampling and laboratory testing would provide additional information to evaluate

potential environmental effects from these agricultural activities. A standard, pro-active procedure would be to conduct such a survey prior to future development at this site. There is, however, no regulatory requirement to conduct this sampling.

6.2 Other Environmental Concerns

The concerns listed below may not be considered ***recognized environmental conditions*** by ASTM definition. However, they may be considered regulated under other environmental laws and ordinances and may present a potential liability to the property owner.

6.2.1 Solid Waste Management (See Section 5.5.4)

Findings/Concerns:

A moderate amount of "wildcat" dumping has taken place on-site. Some items noted included regulated items (white goods). Due to some heavily vegetated areas, the entire subject site and underlying soils were not visibly inspected.

Opinions and Conclusions:

Any waste disposal should be in a permitted solid waste landfill or recycled in a manner that complies with all local, state, and federal regulations as applicable to the specific waste type with special attention given to regulated items.

It is important to note that if additional clearing of the property commences and large amounts of construction debris or unidentifiable substances (containers) are further discovered, proper waste identification, testing and applicable waste handling/disposal procedures are followed.

6.2.2 Surface Waters and Area Aquifer Protection (See Section 5.5.5)

Findings/Concerns:

Development may be planned for the subject site. For any future grubbing and grading and construction activities planned for the site, the property owner should be aware of the potential for contaminants to run off-site and into on-site watercourses or adjacent storm water drains. Products of concern relating to any future development activity would be earthen material (silt), oils, antifreezes and other fluids from automobile or on-site machinery, or leaks from on-site stocked items.

Opinions and Conclusions:

Future land clearing projects will likely require a County of Maui grading/grubbing permit and if the size of a project creates greater than one (1) acre of soil disturbance, the developer will also require a National Pollution Discharge Elimination System (NPDES) General Permit (State of Hawaii, Department of Health, Clean Water Branch).

In order to minimize any potential regulatory profiling of the subject site as a potential responsible party for any newly discovered groundwater or surface water contamination, management may consider practicing conservative, proactive environmental policies. These policies might include written environmental protection contracts with any construction contractors and posted notices regarding any use, storage and handling of hazardous substances and/or petroleum product. Special attention should be addressed to storm water entering the nearby storm drains or drainageways.

Yuich Environmental **End of Section**

The conclusions stated above should not be construed to mean that any regulatory agency would have the same opinion as this author, nor is any implication proposed therefrom. The results of this environmental assessment are intended for general reference purposes only and are not intended as legal advice. The advice of legal counsel should be sought in regard to individual facts, circumstances and interpretation of environmental liability.

7.0 REFERENCES

7.1 Published References

1. American Standard of Testing and Materials, Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process, E1527-00, 2000.
2. "Atlas of Hawaii", 2nd Edition, Department of Geography, University of Hawaii at Hilo, 1983, University of Hawaii Press.
3. "Atlas of Hawaii", 3rd Edition, Department of Geography, University of Hawaii at Hilo, 1998, University of Hawaii Press.
4. County of Maui, Real Property Tax Division, Historical Records for TMK Number (2) 3-5-02:01 (portion). April 21, 2004.
5. Hawaii Administrative Rules, Title 11, Department of Health, Chapter 58.1, Solid Waste Management Control.
6. State of Hawaii, Department of Health, Solid and Hazardous Waste Branch, Underground Storage Tank Section, List of Leaking Underground Storage Tank Release Sites, August 2003.
7. State of Hawaii, Department of Health, Solid and Hazardous Waste Branch, Underground Storage Tank Section, List of Underground Storage Tank Facilities, August 2003.
8. State of Hawaii, Department of Health, Voluntary Response Program (VRP), List of Voluntary Response Program Sites, October 2003.
9. State of Hawaii, Department of Health, Office of Hazard Evaluation and Emergency Response, List of Release Notifications, September 2000.
10. State of Hawaii, Department of Health, Office of Hazard Evaluation and Emergency Response, List of Sites List, July 2001.
11. State of Hawaii, Department of Land and Natural Resources, Registered Wells and Dry Wells, 2002.
12. State of Hawaii, Department of Land and Natural Resources, "State of Hawaii Water Quality Plan and Groundwater Map", June 1990, Revised December 1991.
13. U.S. Department of Agriculture, Soil Conservation Service, "Soil Survey of the Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii", 1972.
14. U.S. Environmental Protection Agency, Office of Air and Radiation et al., Indoor Air Facts No. 4 (revised) Sick Building Syndrome, April 1991.
15. U.S. Environmental Protection Agency, Building Air Quality: A Guide for Building Owners and Facility Managers, 1991.

7.2 Map and Other References

1. Environmental Data Resources, Inc., "The EDR Field Check Report", May 11, 2004.
2. Federal Emergency Management Agency, "Flood Insurance Rate Map", Number #150003 0170B dated June 1, 1981.
3. R.M. Towill Corporation, Aerial Photographs, Honolulu, Hawaii.
4. Air Survey Hawaii, Aerial Photographs, Honolulu, Hawaii.
5. Sanborn Maps (no coverage)
6. U.S. Geological Survey, 7.5 Minute Topographic Map, Wailuku Quadrangle, Hawaii 1983.
7. Site plan map provided by Carlsmith Ball, LLC.

7.3 Record of Personal Communications

Table 3.0. List of personal interviews conducted by VEC.

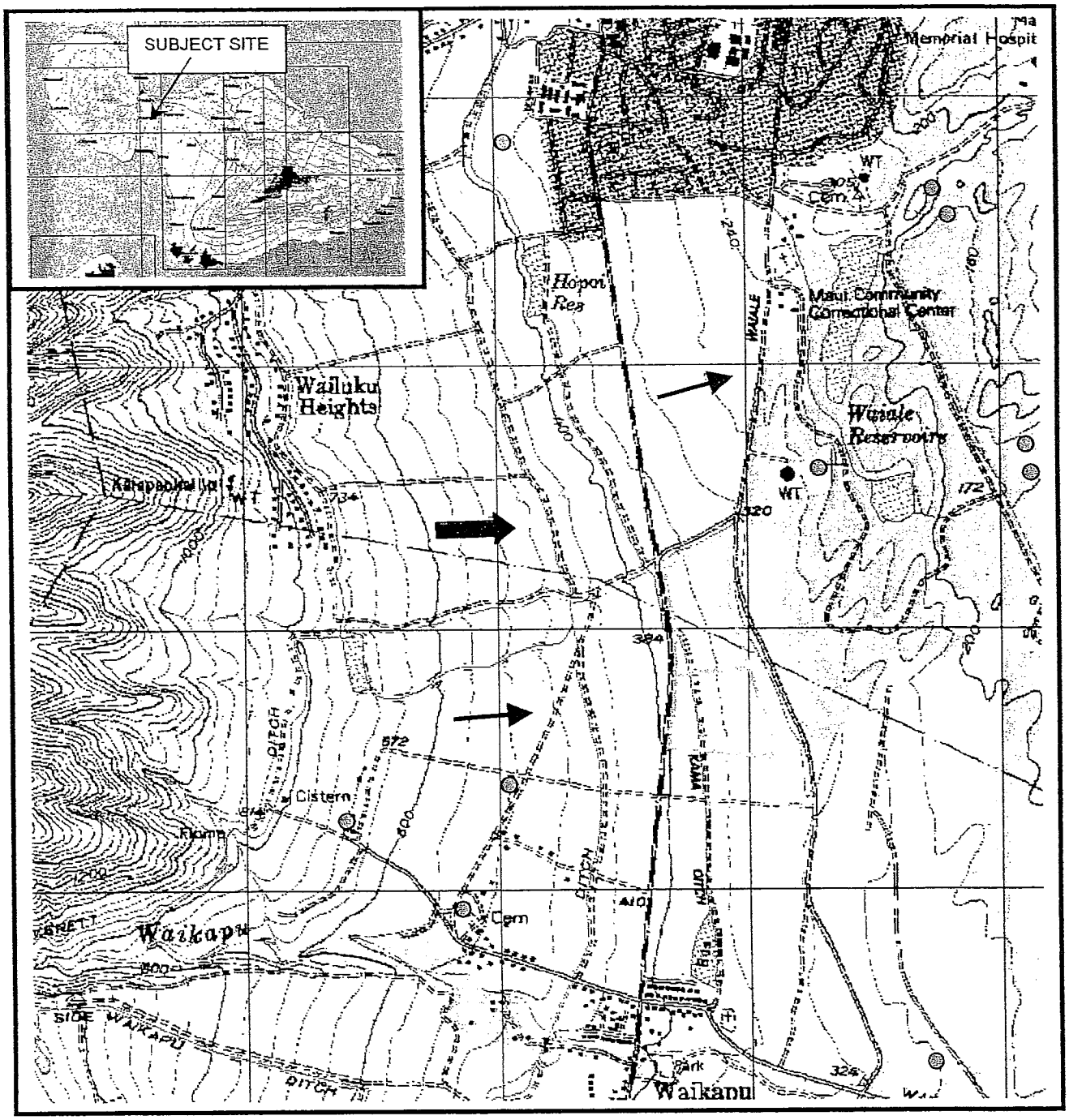
Date	Interviewee	Title & Organization	Address	Phone Number
4/14/04	Mr. Thomas Leuteneker	Counsel, Carlsmith Ball, LLC.	One Main Plaza, 2200 Main St., Wailuku, HI 96793	(808)242-4535
4/22/04	Mr. Clayton Suzuki	Land Manager, Wailuku Agribusiness	255 Waiko Rd Wailuku, HI 96793	(808)244-2208
4/22/04	Ms. Jackie Takakura	Administrative Officer, Maui County Department of Water Supply	200 South High Street Wailuku, HI 96793	(808) 270-8046
4/26/04	Mr. Randall Moore	Manager, Hawaii Commercial & Sugar Company	Puunene, HI	(808) 877-6968
4/28/04	Mr. Derrick Heafey	Environmental Manager, Hawaii Commercial & Sugar Company	Puunene, HI	(808) 877-2958

Yuich Environmental End of Section

Appendix A:

Maps, Plans, and Photographs

FIGURE 1: REGIONAL SETTING MAP



Subject Property

Projected Groundwater Flow

Regional Surface Water Flow

USGS Water Wells (10/2002)

N

W E

S

FIGURE 3: TAX MAP KEY

NORTH

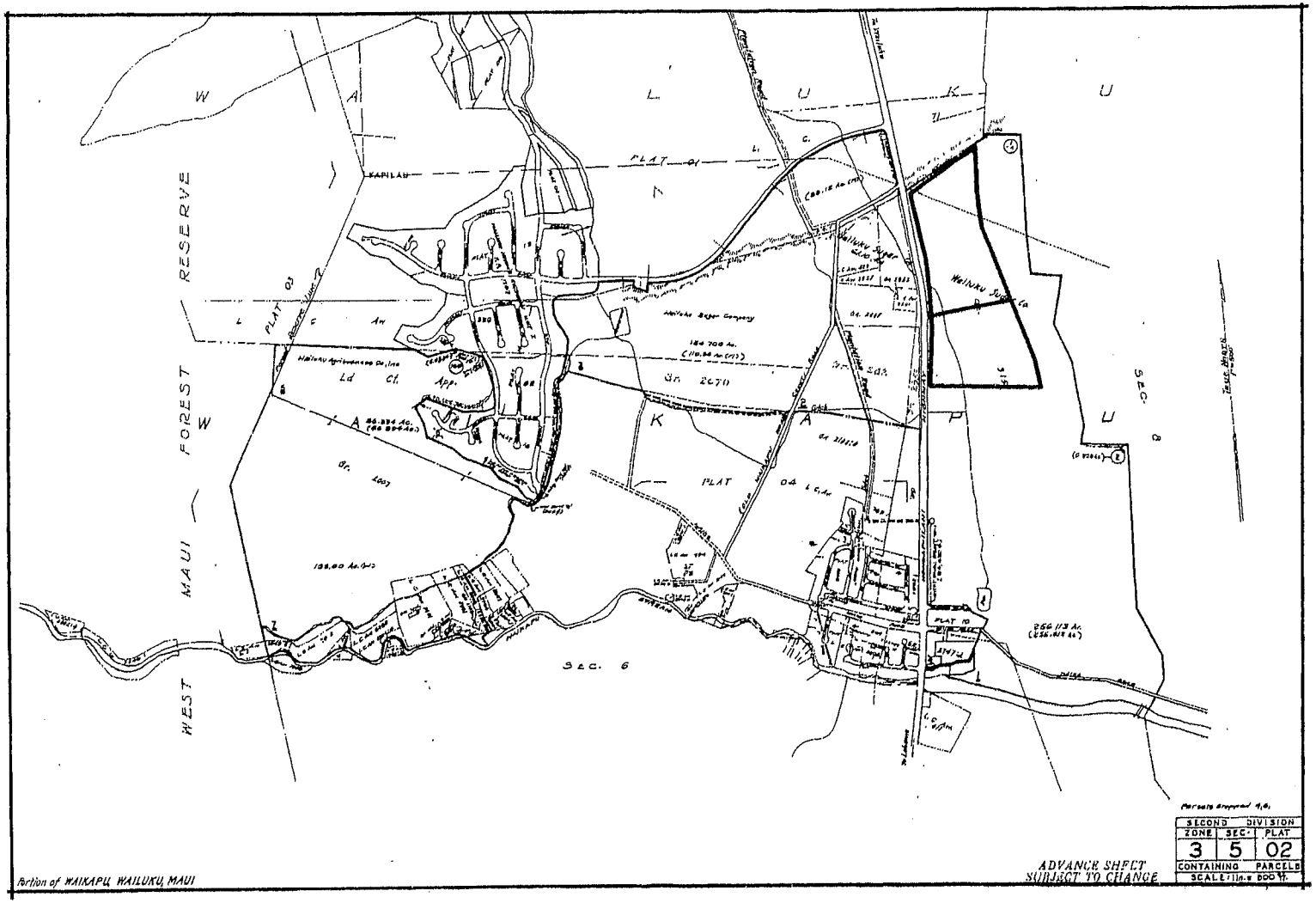


PHOTO 1

Northwesterly view of the central portion of Lot 1 of the subject property from the eastern property line.

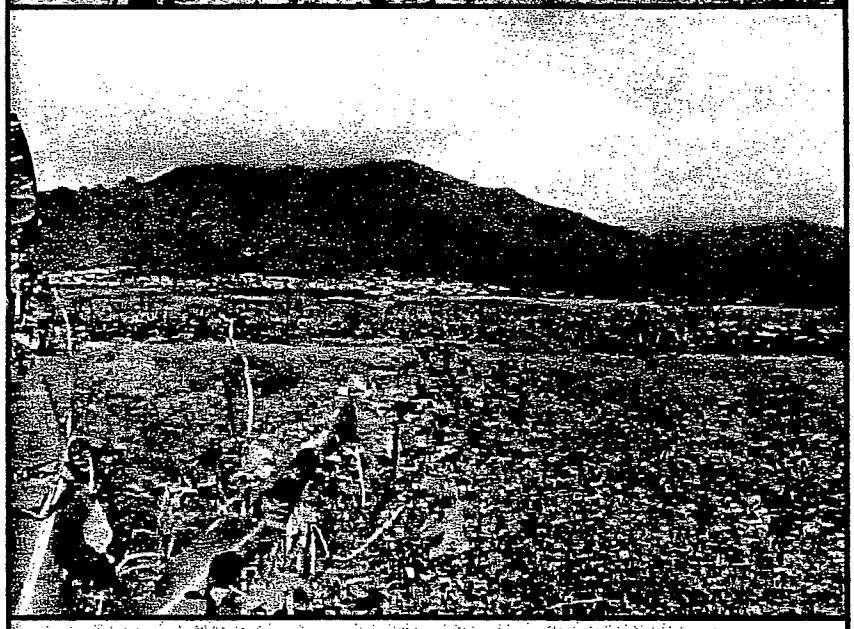


PHOTO 2

Westerly view of the eastern portion of Lot 2 from the eastern property line.

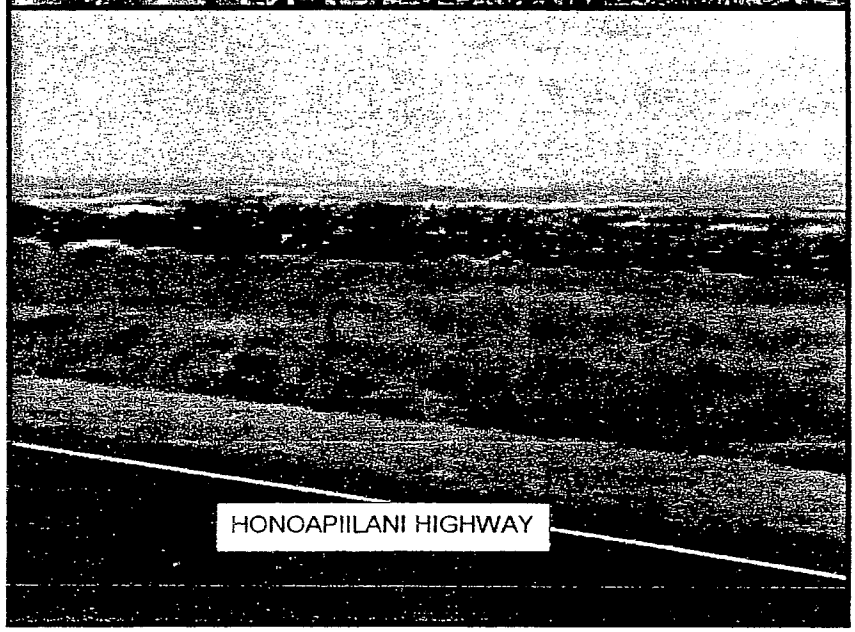


PHOTO 3

Northeasterly view of the south-western portion of Lot 2 of the subject property. The picture was taken from the southern portion of the western property line.

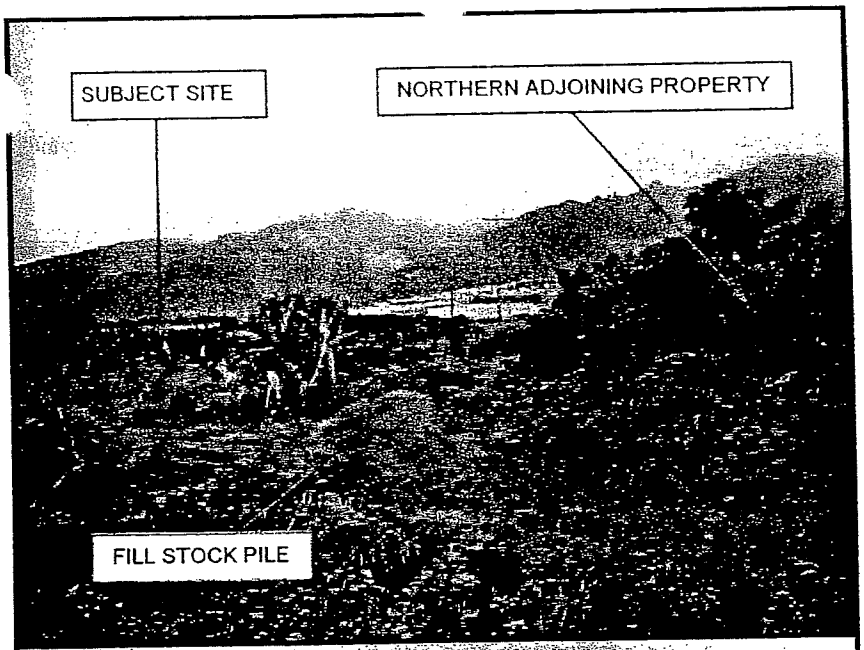


PHOTO 4

Westerly view of Lot 1's northern boundary line from the northeast property corner.

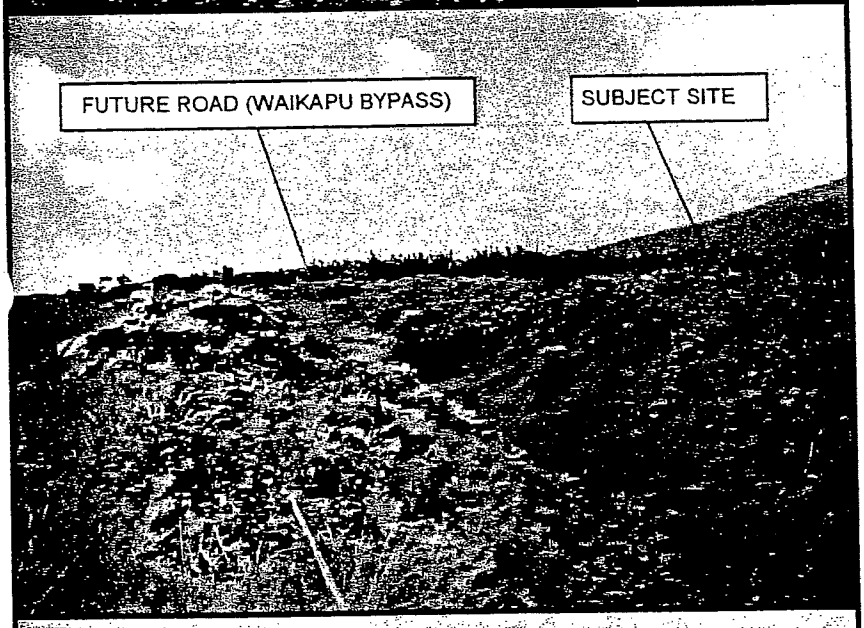


PHOTO 5

Southerly view of Lot 1's eastern property line from the northeast property corner.

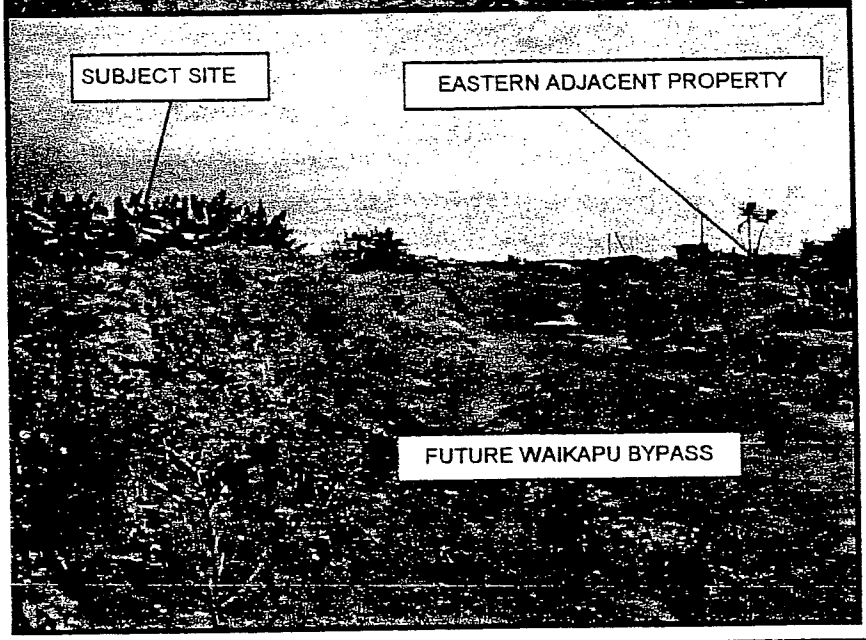


PHOTO 6

Northerly view of Lot 1's eastern property line from near the intersection of Lot 1 and Lot 2 on the eastern property line.

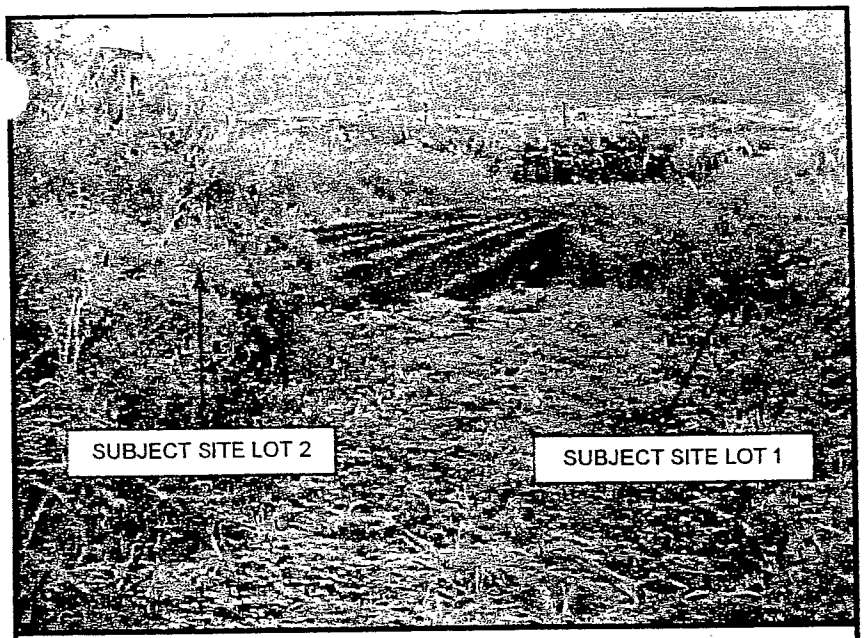


PHOTO 7

Easterly view along Lot 1's southern property line from the intersection of Lot 1 and Lot 2 on the eastern property line.

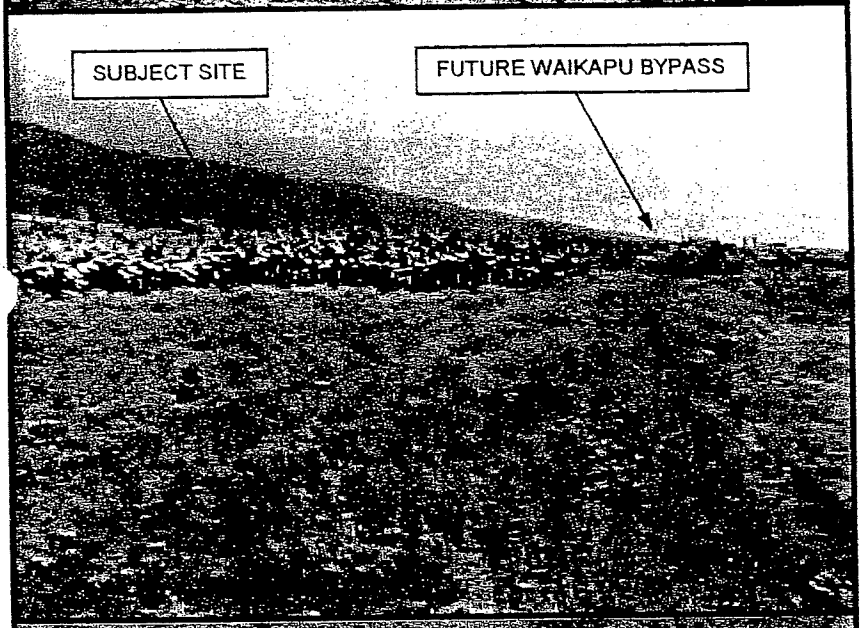


PHOTO 8

Northerly view of Lot 2's eastern property line from the southeast property corner.

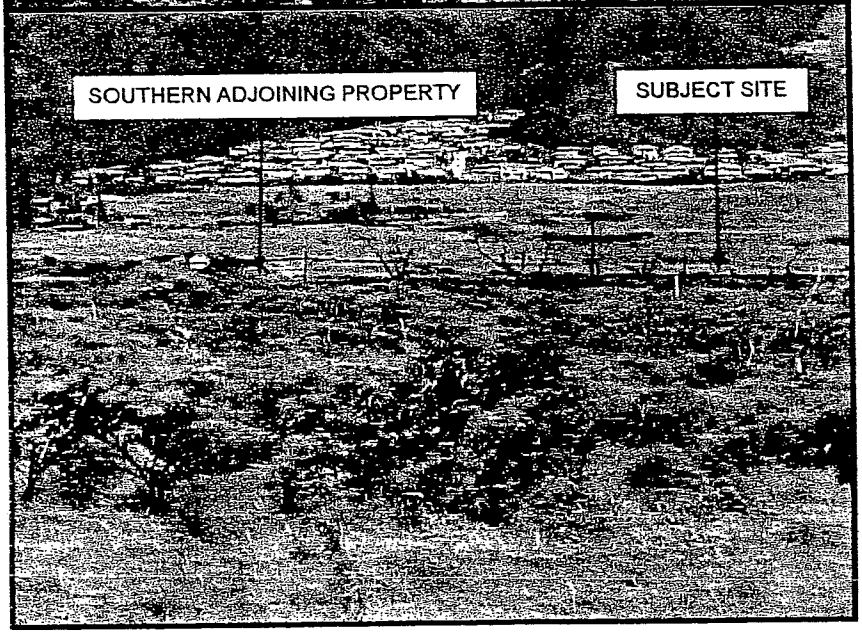


PHOTO 9

Easterly view along Lot 2's southern property line from the southeast property corner.

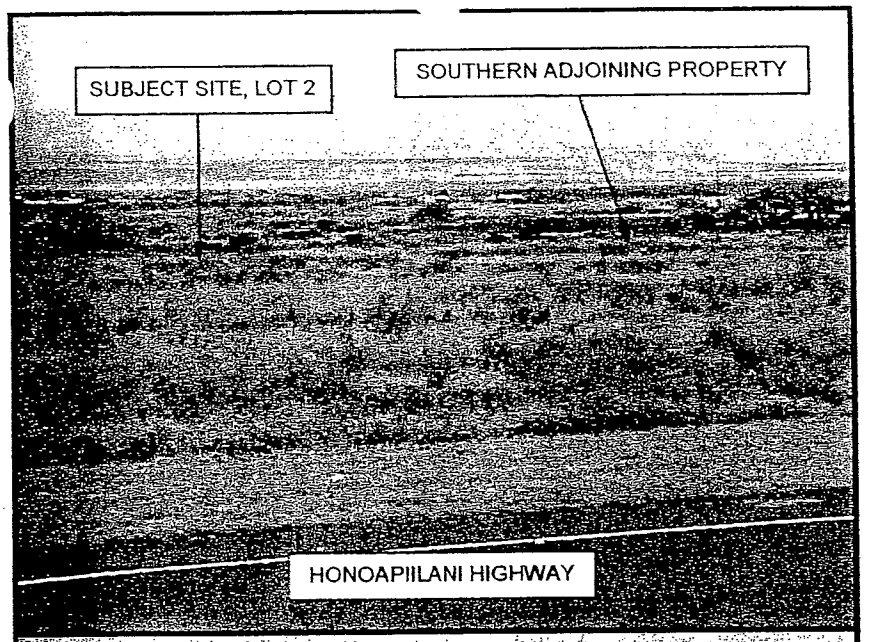


PHOTO 10

Easterly view of Lot 2's southern property line from the southwest property corner.

PHOTO 11

Northerly view of Lot 2's western boundary line from the southwest property corner.

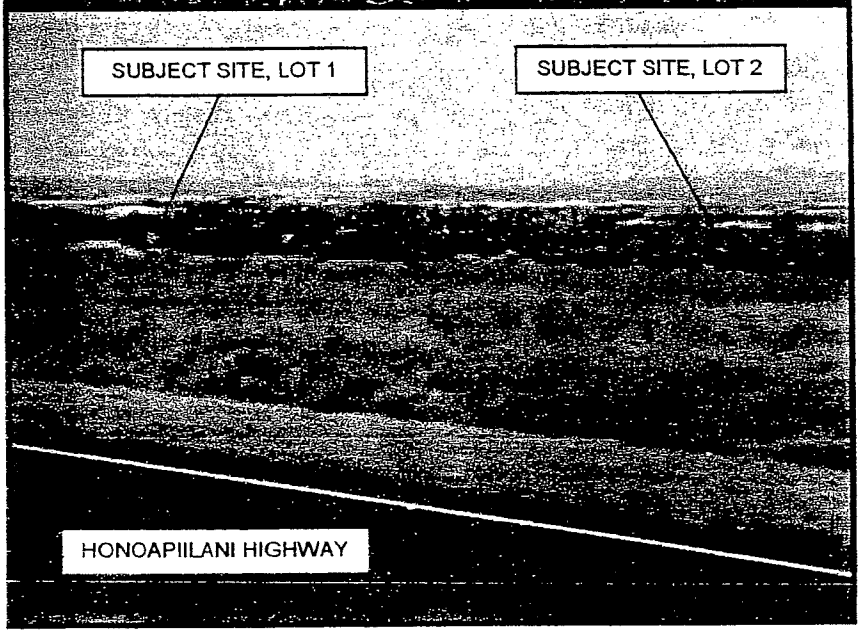


PHOTO 12

Easterly view along Lot 2's northern property line from near the intersection of Lot 1 and Lot 2 on the western property line.

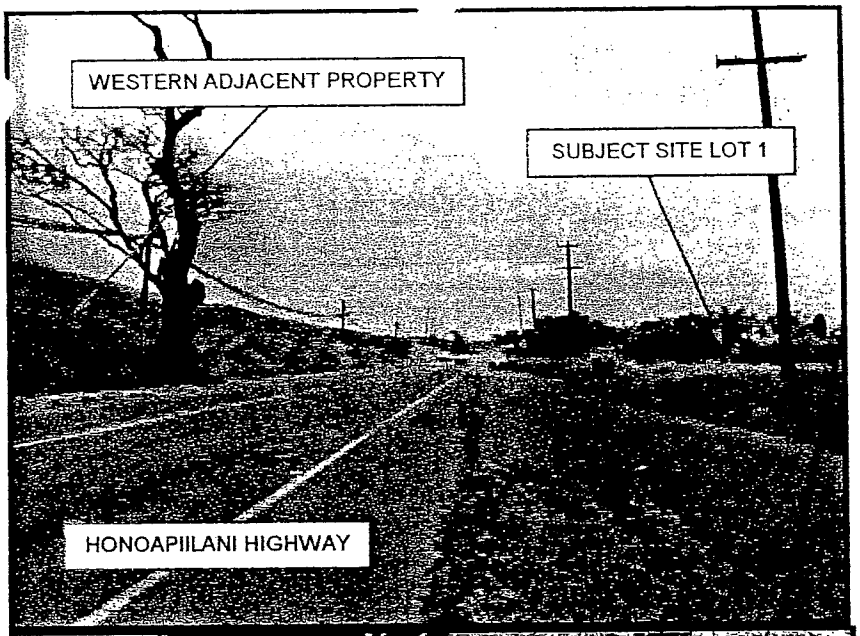


PHOTO 13

Northerly view along Lot 1's western property line from near the intersection of Lot 1 and Lot 2's western property line.

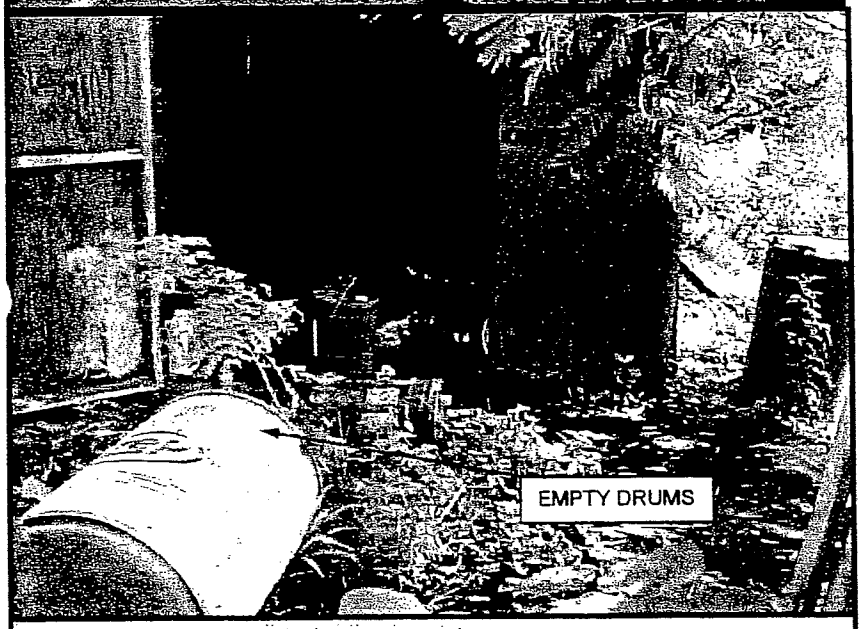


PHOTO 14

Agricultural shed located on the eastern portion of Lot 1. See Figure 2, Appendix A.

PHOTO 15

Typical small agricultural field located on Lot 1 and Lot 2 of the subject property.

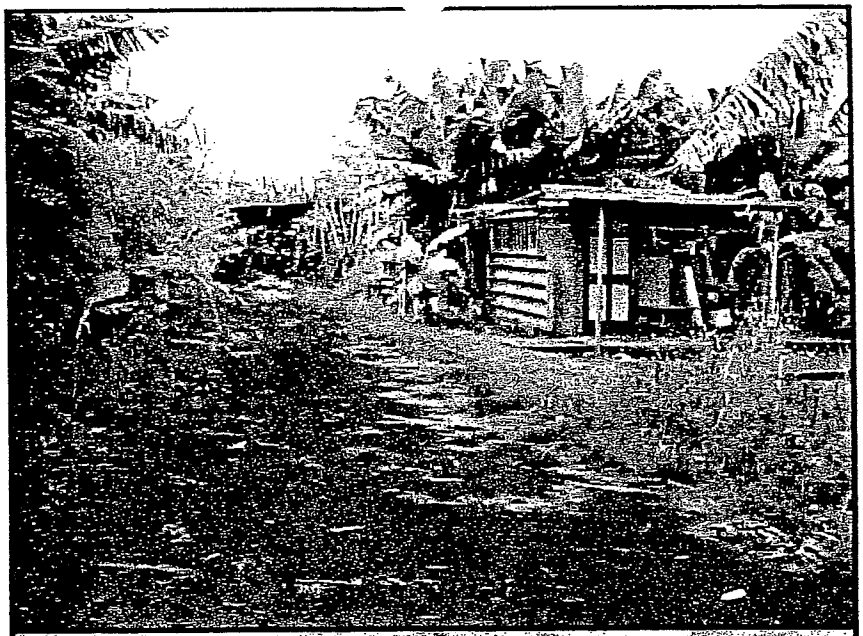


PHOTO 16

Typical banana shack located on Lot 2 of the subject site.

PHOTO 17

Fill stockpile of tarmac material located on Lot 2. See Figure 2, Appendix A.

PHOTO 18

Derelict vehicles located on the southern portion of Lot 2.

PHOTO 19

Derelict vehicles located on the central southern portion of Lot 1 of the subject property.

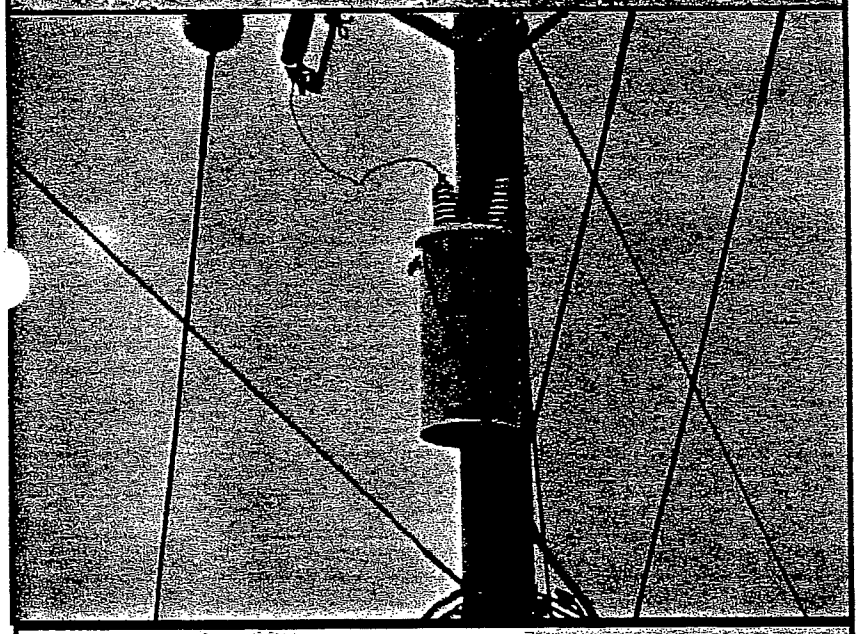


PHOTO 20

Pole-mounted transformer located at the northeast corner of Lot 1 of the subject property.

PHOTO 21

Miscellaneous debris located on the southeastern portion of Lot 1.

Appendix B:

Regulatory Records Documentation
Site Specific Documentation

Yuich Environmental

Preliminary Environmental Investigation

According to ASTM Standard 1527-00, the user's (or client's) responsibility in this investigation is to help identify the possibility of recognized environmental conditions in connection with the property. Please assist us by responding to the following request for data and information you may have, or of which you may have some specialized knowledge. This questionnaire will be included in the Appendices of the final report as an indication of user assistance.

Please Supply As Many of the Following Documents As Possible

A. ☐ **Tax Map Key Number/Tax Code Number** 3-5-02-1(2)

B. ☐ **Title Information** *(Current, and any previous ownership.)* TITLE IS GOOD

C. ☐ **Property Legal Description** *(If Title Information is not available)* DO NOT HAVE

D. ☐ **Tax Map and/or Site Development Drawing/Plat** MAPS ENCLOSED

E. ☐ **Special Property Information** *(Well-development data, endangered species listings, historical registration or environmental deed restrictions.)* NONE

F. ☐ **Real Estate Appraisal Report** NONE

G. ☐ **Special Management Area Permit Report (SMA)** NOT NECESSARY

Please Provide the Following Information to The Best Of Your Ability

1. **Environmental Site Assessments (ESA):** Are you aware of any previous assessments: *Cleanup Closure Reports, Permit Characterization Reports, etc.* conducted on the subject site or *within the immediate area?* If yes, please supply details. NO

2. **Local-State-Federal Inspections:** Are you aware of any environmental inspections *conducted by any regulatory agency*, i.e., Hawaii Dept. of Health (Environmental Health Services), OSHA, U.S. Army Corps of Engineers, Department of Land & Natural Resources, Fish & Wildlife Services, HUD, EPA, or County Wastewater or Solid Waste Division of the Public Works/Waste Management Department etc.? If yes, please supply details. NO

3a. **Structures/Buildings:** Are there any as-built or other construction drawings available for review? *Contact Name and Telephone Number:* NO

3b. **Site improvements?** *(Renovation Date & Extent)* BANANA SHACKS ONLY

4. **Purchase Price:** Is the property's purchase price within a normal market range or *significantly lower? If lower, please supply details.*
PURCHASE PRICE IS $675,000 / $27,000 per acre - is below market
Buyer is a non-profit church and school

1498 Lower Main Street, Suite C, Wailuku, Hawaii 96793 ▼ (808) 249-2777 Phone ▼ (808) 249-2778 Fax

5. **Name of Current Owner:** WAILUKU AGRIBUSINESS

6. **Name of former Owner:**

7. **Proceedings Against the Property:** Are you aware of any administrative or legal proceedings against the property for environmental concerns i.e., Compliance Orders, Notices of Violation? If yes, please supply details. NO

8. **Property Liens:** Are there any recorded liens or consent decrees on the property that is environmentally related, i.e., property clean-up, waste removal, asbestos abatement, wastewater issues, etc.? If yes please supply details. NONE THAT WE KNOW ABOUT

9. Specialized **Historic Information:** Are you aware of any previous owner, neighbor, business affiliate or other individual who might have knowledge of any special or unusual historic use of, and/or previous operations conducted on the subject property? *Contact Name and Telephone Number:* KNOW OF NONE

10. **Manufacturing or Processing:** If there are manufacturing or processing activities conducted on-site, is there an operation flow chart, diagram or procedures manual available for review? *Contact Name and Telephone Number* LAND WAS IN SUGAR CANE

11. **This Report is Prepared For: (*Please Print*)**
Attention: EMMANUEAL LUTHERAN CHURCH (north) VALLEY ISLE FELLOWSHIP (south
Organization: to TOM LEUTENEKER
Address: POBOX 1086 Wailuku Maui HI 96790
Phone no.: 242-4535 Fax no.: 244-4974

12. **Please List Other Organizations (Lenders) Who Will Require a Listing as "Also Prepared For:" on the report cover and signature page.** NONE

(a) Attention:
Organization:
Address:

(b) Attention:
Organization:
Address:

We will submit 2 signed reports for each project. If additional copies are required, an additional fee will be charged for processing.

Who Prepared This Starter Package Information?

Name: (Please Print) TOM LEUTENEKER	**Title:**
Company/Organization:	
Address:	
Tel. No.:	**Fax No.:**
Signature:	**Date:** 4/7/2004

1498 Lower Main Street, Suite C, Wailuku, Hawaii 96793 ▼ (808) 249-2777 Phone ▼ (808) 249-2778 Fax

NDA LINGLE
OR OF HAWAII

CHIYOME L. FUKINO, M.D.
DIRECTOR OF HEALTH

STATE OF HAWAII
DEPARTMENT OF HEALTH
P.O. BOX 3378
HONOLULU, HAWAII 96801-3378

In reply, please refer to:
EMD / CWB

04059ESM.04

April 21, 2004

Ms. Massy Cashen
Vuich Environmental Consultants, Inc.
1498 Lower Main Street, Suite C
Wailuku, Hawaii 96793

Dear Ms. Cashen:

Subject: Request for Public Records

The Department of Health, Clean Water Branch ("DOH-CWB") received your request for public records dated April 14, 2004. Our staff searched the DOH-CWB database and found a Notice of General Permit Coverage ("NGPC") No. R23A787 that maybe near to your following site(s):

(1) Address: Vacant Land, Honoapiilani Highway
TMK: (2)3-5-02:01

Should you have any questions, please contact Mr. Michael Tsuji, Supervisor of the Enforcement Section, for enforcement concerns and Mr. Alec Wong, Supervisor of the Engineering Section, for permitting concerns, Clean Water Branch, at (808) 586-4309.

Sincerely,

DENIS R. LAU, P.E., CHIEF
Clean Water Branch

Enclosure: NGPC No. R23A787

R23A787

FILE COPY

October 9, 1997

Mr. Fredrick H. Kubota
Vice President
Brewer Environmental Industries, LLC
311 Pacific Street
Honolulu, Hawaii 96817

Dear Mr. Kubota:

Subject: **Notice of General Permit Coverage (NGPC)**
Brewer Environmental Industries Wailuku Facility
275 East Waiko Road
Wailuku, Maui, Hawaii 96793
TMK: (2)5-02-01
File No. HI R23A787

In compliance with the provisions of the Clean Water Act, as amended, (33 U.S.C. § 1251 et seq.; the "Act") and Chapter 342D, Hawaii Revised Statutes, and Chapters 11-54 and 11-55, Hawaii Administrative Rules ("HAR"), Department of Health, State of Hawaii,

BREWER ENVIRONMENTAL INDUSTRIES LLC

(hereinafter "PERMITTEE")

is authorized to discharge storm water runoff associated with industrial activity from its facility located at 275 East Waiko Road, Wailuku, Maui, Hawaii, 96793, TMK: (2)5-02-01, to the receiving waters named the Waikapu Stream, at coordinates Latitude 20°50'55"N, Longitude 156°30'15"W.

This Notice of General Permit Coverage (NGPC) is subject to compliance with the following regulations and conditions:

1. HAR Chapter 11-55, Appendix B, NPDES General Permit Authorizing Discharges of Storm Water Associated With Industrial Activities;

2. HAR Chapter 11-55, Appendix A, Department of Health Standard General Permit Conditions;

3. HAR Sections 11-55-34.04(a), 11-55-34.07, 11-55-34.11, 11-55-34.12, and any other applicable sections of HAR Chapter 11-55;

4. Plans, reports, specifications and other related materials submitted in and with the Notice of Intent (NOI) dated September 25, 1997, and/or later amendments to the NOI;

5. A copy of this NGPC and its enclosures; and plans, reports, specifications and other related materials submitted in and with the NOI dated September 25, 1997, and/or later amendments to the NOI shall be kept at the facility until termination of subject activities;

6. Discharge quality data as required by NOI Form A shall be collected during the next representative rainfall event and submitted within 30 days of such sampling. Data shall include all parameters listed under Item 2.a and parameters listed under Item 2.b believed to be present in the discharge;

7. In accordance with HAR Chapter 11-55, Appendix B, Table 34.1, the discharge shall be limited and monitored by the Permittee as follows:

Parameter	Discharge Limitation	Cutoff Concentration	Units	Measurement Frequency	Type of Sample
Flow	N/L	N/A	MGD	Annually[1]	Calculated or Estimated
Biochemical Oxygen Demand (5-Day)	N/L	N/A	mg/l	Annually[1]	Composite or Grab
Chemical Oxygen Demand	N/L	N/A	mg/l	Annually[1]	Composite or Grab
Total Suspended Solids	N/L	N/A	mg/l	Annually[1]	Composite or Grab
Total Phosphorus	N/L	2.0	mg/l	Annually[1]	Composite or Grab
Total Nitrogen	N/L	N/A	mg/l	Annually[1]	Composite or Grab
Nitrate + Nitrite Nitrogen	N/L	0.68	mg/l	Annually[1]	Composite or Grab
Oil and Grease	15	N/A	mg/l	Annually[1]	Grab

Parameter	Discharge Limitation	Cutoff Concentration	Units	Measurement Frequency	Type of Sample
pH Range	5.5 to 8.0	N/A	Standard Units	Annually[1]	Grab
Iron	N/L	1.0	mg/l	Annually[1]	Grab
Lead	N/L	0.0816	mg/l	Annually[1]	Grab
Zinc	N/L	0.117	mg/l	Annually[1]	Grab

N/L No Limitation at this time. Only monitoring and reporting required.
N/A Not Applicable.
MGD Million gallons per day
mg/l Milligrams per liter
µg/l Micrograms per liter
[1] The monitoring year shall start on the effective date of this NGPC.

8. Reporting of monitoring results shall be in accordance with HAR Chapter 11-55, Appendix B, Section 9;

9. The Director may specify additional monitoring requirements and limitations, in addition to the monitoring requirements specified in Item 7 of this NGPC;

10. The Permittee shall submit a Storm Water Pollution Control Plan in accordance with HAR Chapter 11-55, Appendix B, Sections 5 and/or 6 within 120 days of issuance of this NGPC;

11. The Permittee shall revise their SWPCP should any discharge limitation or cutoff concentration be exceeded. The revisions shall include measures to reduce the amount of pollutants found to be in exceedance from entering storm water runoff;

12. The Permittee shall notify the Department of Health upon termination of the subject activities; and

13. The Permittee shall be responsible for ensuring that anyone working under this NGPC understands the NGPC's terms and conditions.

This NGPC will take effect on the date of this notice. This NGPC will expire at midnight, September 21, 2002, or when amendments to HAR Chapter 11-55, Appendix B are adopted, whichever occurs first.

Should you have any questions regarding this NGPC, please contact Ms. Kris Poentis, Engineering Section of the Clean Water Branch, at (808)586-4309.

Sincerely,

for THOMAS E. ARIZUMI, P.E., CHIEF
Environmental Management Division

KP\cr

Enclosures:
1. HAR Chapter 11-55, Section 34, Appendices A and B
2. Discharge Monitoring Report Form
3. Title 40, Code of Federal Regulations Citations as referenced in Chapter 11-55, Appendix A

Consultants, Inc.

April 14, 2004

State of Hawaii Department of Health
Environmental Management Division
919 Ala Moana Boulevard, Room 309
Honolulu, HI 96814
Phone: (808) 586-4200
Fax: (808) 586-5800
Attn: Clean Air Branch

Subject: REQUEST FOR PUBLIC RECORDS

Dear Sir/Madam:

We are requesting a search for any past or pending environmental permits, licenses, citations, or other information pertaining to the site(s) described below.

SITE INFORMATION:

Project Number:	**0403-760**
Tax Map Key No.:	**(2) 3-5-02:01**
Address:	**Vacant Land, Honoapiilani Highway**
Current Owner:	**Wailuku Agribusiness Company, Inc.**
Former Owner:	**N. A.**
Current Occupant:	**Banana farmers**
Type of Business:	**Agricultural**

Tax Map Key is enclosed.

Truly yours,

Massy Cashen

Consultants, Inc.

April 14, 2004

State of Hawaii Department of Health
Environmental Management Division
919 Ala Moana Boulevard, Room 301
Honolulu, HI 96814
Phone: (808) 586-4309
Attn: Clean Water Branch

Subject: REQUEST FOR PUBLIC RECORDS

Dear Sir/Madam:

We are requesting a search for any past or pending environmental permits, licenses, citations, or other information pertaining to the site(s) described below.

SITE INFORMATION:

Project Number:	**0403-760**
Tax Map Key No.:	**(2) 3-5-02:01**
Address:	**Vacant Land, Honoapiilani Highway**
Current Owner:	**Wailuku Agribusiness Company, Inc.**
Former Owner:	**N. A.**
Current Occupant:	**Banana farmers**
Type of Business:	**Agricultural**

Tax Map Key is enclosed.

Truly yours,

Massy Cashen

Maui (Main) Office: 1498 Lower Main Street, Suite C, Wailuku, Maui, Hawaii 96793 • (808) 249-2777 Phone (808) 249-2778 Fax
Oahu Office: Hanua Industrial Complex, 91-110 Hanua Street, Unit 317, Kapolei, Oahu, Hawaii 96707

Consultants, Inc.

4/14/2004

State of Hawaii Department of Health
Environmental Management Division
919 Ala Moana Boulevard, Room 206
Honolulu, HI 96814
Phone: (808) 586-4249
Attn: Office of Hazard Evaluation
& Emergency Response (HEER)

Subject: REQUEST FOR PUBLIC RECORDS

Dear Sir/Madam:

We are requesting a search for any past or pending environmental permits, licenses, citations, or other information pertaining to the site(s) described below.

SITE INFORMATION:

Project Number:	**0403-760**
Tax Map Key No.:	**(2) 3-5-02:01**
Address:	**Vacant Land, Honoapiilani Highway**
Current Owner:	**Wailuku Agribusiness Company, Inc.**
Former Owner:	**N. A.**
Current Occupant:	**Banana farmers**
Type of Business:	**Agricultural**

Tax Map Key is enclosed.

Truly yours,

Massy Cashen

Yuich Environmental
Consultants, Inc.

4/14/2004

State of Hawaii Department of Health
Environmental Management Division
919 Ala Moana Boulevard, Room 308
Honolulu, HI 96814
Phone: (808) 586-4258
Fax: (808) 586-4370
Attn: Safe Drinking Water Branch

Subject: REQUEST FOR PUBLIC RECORDS

Dear Sir/Madam:

We are requesting a search for any past or pending environmental permits, licenses, citations, or other information pertaining to the site(s) described below.

SITE INFORMATION:

Project Number:	**0403-760**
Tax Map Key No.:	**(2) 3-5-02:01**
Address:	**Vacant Land, Honoapiilani Highway**
Current Owner:	**Wailuku Agribusiness Company, Inc.**
Former Owner:	**N. A.**
Current Occupant:	**Banana farmers**
Type of Business:	**Agricultural**

Tax Map Key is enclosed.

Truly yours,

Massy Cashen

Yuich Environmental
Consultants, Inc.

4/14/2004

State of Hawaii Department of Health
Environmental Management Division
919 Ala Moana Boulevard, Room 212
Honolulu, HI 96814
Phone: (808) 586-4226
Attn: Solid & Hazardous Waste Branch

Subject: REQUEST FOR PUBLIC RECORDS

Dear Sir/Madam:

We are requesting a search for any past or pending environmental permits, licenses, citations, or other information pertaining to the site(s) described below.

SITE INFORMATION:

Project Number:	**0403-760**
Tax Map Key No.:	**(2) 3-5-02:01**
Address:	**Vacant Land, Honoapiilani Highway**
Current Owner:	**Wailuku Agribusiness Company, Inc.**
Former Owner:	**N. A.**
Current Occupant:	**Banana farmers**
Type of Business:	**Agricultural**

Tax Map Key is enclosed.

Truly yours,

Massy Cashen

Vuich Environmental
Consultants, Inc.

April 14, 2004

FAXED By: Date:

Maui County Fire Department
Fire Prevention Bureau
21 Kinipopo Street
Wailuku, Hawaii 96793
Attn: Capt. Neal Bal
Via Fax No: 270-7889

RE: Request for Public Records for Vuich Environmental Consultants (VEC)

Dear Capt. Bal:

VEC is requesting any past or present information of environmental concern pertaining to the subject site and adjacent sites from the Maui County Fire Department's database. This could include information on environmental releases (spills), permits, citations, inspections, etc.

SITE INFORMATION:

Project Number:	**0403-760**
Tax Map Key No.:	**(2) 3-5-02:01**
Address:	**Vacant Land, Honoapiilani Highway**
Current Owner:	**Wailuku Agribusiness Company, Inc.**
Former Owner:	**N. A.**
Current Occupant:	**Banana farmers**
Type of Business:	**Agricultural**

Thank you for your assistance.

Sincerely yours,

Massy Cashen

Attachment: TMK map

Vuich Environmental
Consultants, Inc.

April 14, 2004

Maui County Fire Department
Hazardous Materials Division
200 Dairy Road
Kahului, Hawaii 96732
Attn: Mr. Jeffrey M. Kihune
Acting Officer
Via Fax No: 270-7919

FAXED By: Date:

RE: Request for Public Records for Vuich Environmental Consultants (VEC)

Dear Mr. Kihune:

VEC is requesting any past or present information of environmental concern pertaining to the subject site and adjacent sites from the Maui County Fire Department's database. This could include information on environmental releases (spills), permits, citations, inspections, etc.

SITE INFORMATION:

Project Number:	**0403-760**
Tax Map Key No.:	**(2) 3-5-02:01**
Address:	**Vacant Land, Honoapiilani Highway**
Current Owner:	**Wailuku Agribusiness Company, Inc.**
Former Owner:	**N. A.**
Current Occupant:	**Banana farmers**
Type of Business:	**Agricultural**

Thank you for your assistance.

Sincerely yours,

Massy Cashen

Attachment: TMK map

Maui (Corporate) Office: 1498 Lower Main Street, Suite C, Wailuku, Hawaii 96793 • (808) 249-2777 Phone / (808) 249-2778 Fax
Oahu Office: 650 Kakoi Street, Unit 3, Honolulu, Hawaii 96819 • (808) 836-1611 Phone / (808) 836-6299 Fax
Inter-Island: (800) 572-1165 • www.vuichenvironmental.com

EDR FieldCheck™ Report

EDR™ Environmental
Data Resources Inc

Emmanuel Lutheran Church
Honoapiilani Hwy
Wailuku, HI 96793

Inquiry Number: 01189151.1r

May 11, 2004

The Standard in Environmental Risk Management Information

440 Wheelers Farms Road
Milford, Connecticut 06460

Nationwide Customer Service

Telephone: 1-800-352-0050
Fax: 1-800-231-6802
Internet: www.edrnet.com

FORM-MER

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Map Findings	6
Orphan Summary	8
Government Records Searched/Data Currency Tracking	GR-1

GEOCHECK ADDENDUM

GeoCheck - Not Requested

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

Important information about The EDR FieldCheck(TM) Report

This is The EDR FieldCheck (TM) Report. Through its continuing emphasis in online technological advancements, EDR has developed the FieldCheck (TM) system, which enables EDR's customers to make certain online modifications to the maps and text contained in EDR Radius Map Reports. With FieldCheck (TM), an EDR customer can relocate and/or delete plotted sites and/or plot or delete orphan sites that would otherwise appear or be noted with an EDR Radius Map Report. Such modifications may be based on site visits, independent data verification and/or other actions taken or decisions made by EDR's customer. As a result, the maps and text contained in The EDR FieldCheck (TM) Report that you receive may have been so modified. Please note: EDR has not taken any action to verify any such modifications, and this report and the findings set forth herein must be read in light of this fact. VUICH ENVIRONMENTAL should be contacted for information concerning all such modifications.

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EXECUTIVE SUMMARY

At the request of VUICH ENVIRONMENTAL, a search of the environmental records covering the area detailed herein was conducted by Environmental Data Resources, Inc. (EDR). This report was derived from the results of such search, which, as conducted by EDR, met the government records search requirements of ASTM Standard Practice for Environmental Site Assessments, E 1527-00. Search distances were per ASTM standard or custom distances requested by the user.

NOTE: ALL MAPS AND TEXT INCLUDED HEREIN MAY HAVE BEEN MODIFIED BY VUICH ENVIRONMENTAL BASED ON SITE VISITS, INDEPENDENT DATA VERIFICATION AND/OR OTHER ACTIONS TAKEN OR DECISIONS MADE BY VUICH ENVIRONMENTAL. EDR HAS NOT TAKEN ANY ACTION TO VERIFY ANY OF SUCH MODIFICATIONS, AND THIS REPORT AND THE FINDINGS SET FORTH HEREIN MUST BE READ IN LIGHT OF THIS FACT. VUICH ENVIRONMENTAL SHOULD BE CONTACTED FOR INFORMATION CONCERNING ALL SUCH MODIFICATIONS.

TARGET PROPERTY INFORMATION

ADDRESS

HONOAPIILANI HWY
WAILUKU, HI 96793

COORDINATES

Latitude (North):	20.866800 - 20° 52' 0.5"
Longitude (West):	156.501300 - 156° 30' 4.7"
Universal Tranverse Mercator:	Zone 4
UTM X (Meters):	759982.6
UTM Y (Meters):	2309290.0
Elevation:	355 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property:	20156-G5 LAHAINA, HI
Source:	USGS 7.5 min quad index

TARGET PROPERTY SEARCH RESULTS

The target property was not listed in any of the databases searched by EDR.

DATABASES WITH NO MAPPED SITES

No sites were found in an online review and analysis by VUICH ENVIRONMENTAL of EDR's search of available ("reasonably ascertainable") government records either on the target property or within the ASTM E 1527-00 search radius around the target property for the following databases:

FEDERAL ASTM STANDARD

NPL	National Priority List
Proposed NPL	Proposed National Priority List Sites
CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Information System

EXECUTIVE SUMMARY

CERC-NFRAP..... CERCLIS No Further Remedial Action Planned
CORRACTS..... Corrective Action Report
RCRIS-TSD..... Resource Conservation and Recovery Information System
RCRIS-LQG..... Resource Conservation and Recovery Information System
RCRIS-SQG..... Resource Conservation and Recovery Information System
ERNS..... Emergency Response Notification System

STATE ASTM STANDARD

SWF/LF..... Permitted Landfills in the State of Hawaii
LUST..... Leaking Underground Storage Tank Database
UST..... Underground Storage Tank Database
VCP..... Voluntary Response Program Sites

FEDERAL ASTM SUPPLEMENTAL

CONSENT..... Superfund (CERCLA) Consent Decrees
ROD..... Records Of Decision
Delisted NPL..... National Priority List Deletions
FINDS..... Facility Index System/Facility Identification Initiative Program Summary Report
HMIRS..... Hazardous Materials Information Reporting System
MLTS..... Material Licensing Tracking System
MINES..... Mines Master Index File
NPL Liens..... Federal Superfund Liens
PADS..... PCB Activity Database System
FUDS..... Formerly Used Defense Sites
INDIAN RESERV..... Indian Reservations
US BROWNFIELDS..... A Listing of Brownfields Sites
DOD..... Department of Defense Sites
RAATS..... RCRA Administrative Action Tracking System
TRIS..... Toxic Chemical Release Inventory System
TSCA..... Toxic Substances Control Act
SSTS..... Section 7 Tracking Systems
FTTS INSP..... FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

STATE OR LOCAL ASTM SUPPLEMENTAL

SPILLS..... Release Notifications

EDR PROPRIETARY HISTORICAL DATABASES

Coal Gas..... Former Manufactured Gas (Coal Gas) Sites

BROWNFIELDS DATABASES

US BROWNFIELDS..... A Listing of Brownfields Sites
BROWNFIELDS..... Brownfields Sites
VCP..... Voluntary Response Program Sites

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were identified.

EXECUTIVE SUMMARY

Elevations have been determined from the USGS Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified. Sites with an elevation equal to or higher than the target property have been differentiated below from sites with an elevation lower than the target property.
Page numbers and map identification numbers refer to the EDR Radius Map report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

Unmappable (orphan) sites are not considered in the foregoing analysis.

STATE ASTM STANDARD

SHWS: The State Hazardous Waste Sites records are the states' equivalent to CERCLIS. These sites may or may not already be listed on the federal CERCLIS list. Priority sites planned for cleanup using state funds (state equivalent of Superfund) are identified along with sites where cleanup will be paid for by potentially responsible parties. The data come from the Department of Health.

An online review and analysis by VUICH ENVIRONMENTAL of the SHWS list, as provided by EDR, and dated 07/12/2001 has revealed that there is 1 SHWS site within approximately 1 mile of the target property.

Lower Elevation	Address	Dist / Dir	Map ID	Page
WAIALE ASH PILE	WAIALE STREET	1/2 - 1 NNE	1	6

OVERVIEW MAP - 01189151.1r - Vuich Environmental

0 1/4 1/2 1 Miles

- ☆ Target Property
- ▲ Sites at elevations higher than or equal to the target property
- ◆ Sites at elevations lower than the target property
- Coal Gasification Sites
- National Priority List Sites
- Landfill Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Oil & Gas pipelines
- 100-year flood zone
- 500-year flood zone
- Federal Wetlands

TARGET PROPERTY:	Emmanuel Lutheran Church	CUSTOMER:	Vuich Environmental
ADDRESS:	Honoapiilani Hwy	CONTACT:	Massy Cashen
CITY/STATE/ZIP:	Wailuku HI 96793	INQUIRY #:	01189151.1r
LAT/LONG:	20.8668 / 156.5013	DATE:	May 11, 2004 5:58 pm

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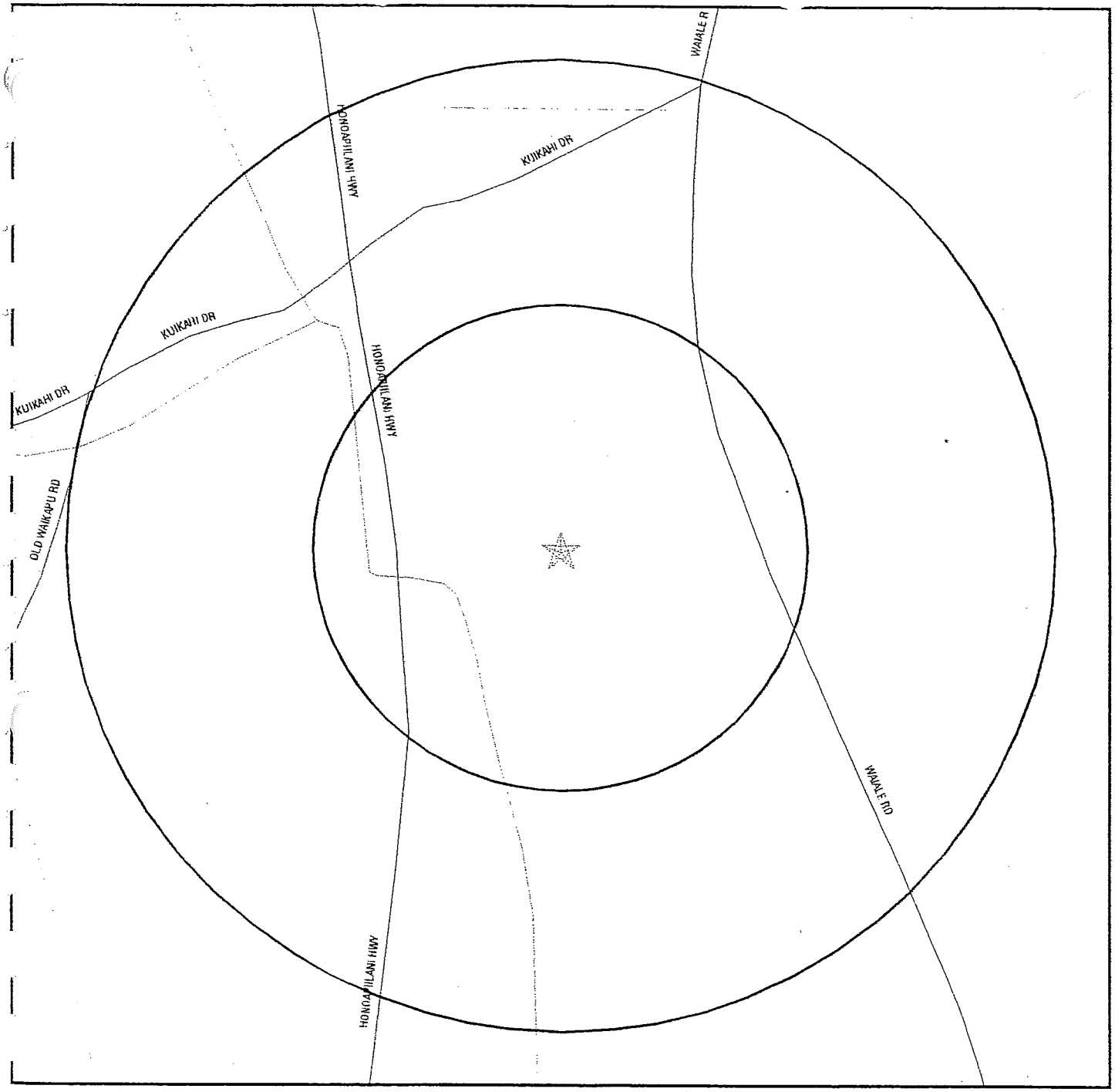
DETAIL .P - 01189151.1r - Vuich Environ ntal



- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Coal Gasification Sites
- Sensitive Receptors
- National Priority List Sites
- Landfill Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Oil & Gas pipelines
- 100-year flood zone
- 500-year flood zone

0 1/16 1/8 1/4 Miles

TARGET PROPERTY:	Emmanuel Lutheran Church	CUSTOMER:	Vuich Environmental
ADDRESS:	Honoapiilani Hwy	CONTACT:	Massy Cashen
CITY/STATE/ZIP:	Wailuku HI 96793	INQUIRY #:	01189151.1r
LAT/LONG:	20.8668 / 156.5013	DATE:	May 11, 2004 5:59 pm

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EXECUTIVE SUMMARY

Due to poor or inadequate address information, the following sites were not mapped:

Site Name	Database(s)
SMILE'S AUTO SPECIALISTS	SHWS
KANAHA POND EAST	CERC-NFRAP, SHWS
RAINBOW HAULING	SHWS
E & E BLACK CONTRACTORS	SHWS
HOBRON AVENUE AREA	SHWS, SPILLS
MAUI PALMS HOTEL UST	SHWS
ALEXANDER AND BALDWIN DUMP SITE	SHWS
MAUI MEAT FACILITY-FORMER	SHWS
KALAMAULA LANDFILL	SHWS
KAHOOLAWE ISLAND	SHWS
BEN FRANKLIN STORES PROPERTY	SHWS
OLOWALU TRANSFER STATION	SHWS
PICRIC ACID AT MAUI COMMUNITY COLLE	SHWS
PICRIC ACID AT MAUI MEMORIAL HOSPIT	SHWS
MAALAEA	SWF/LF
KAKAMAULA LANDFILL	SWF/LF
KALUAKOI LANDFILL	SWF/LF
MAUNALOA LANDFILL	SWF/LF
CENTRAL MAUI LF, PHASE I&II LF-0034-95)	SWF/LF
DAVID PICO CESSPOOL DIGGING	LUST, UST
PAIA SEWER PUMP STATION	UST

MAP FINDINGS SUMMARY

Database	Target Property	Search Distance (Miles)	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
FEDERAL ASTM STANDARD								
NPL		1.000	0	0	0	0	NR	0
Proposed NPL		1.000	0	0	0	0	NR	0
CERCLIS		0.500	0	0	0	NR	NR	0
CERC-NFRAP		0.250	0	0	NR	NR	NR	0
CORRACTS		1.000	0	0	0	0	NR	0
RCRIS-TSD		0.500	0	0	0	NR	NR	0
RCRIS Lg. Quan. Gen.		0.250	0	0	NR	NR	NR	0
RCRIS Sm. Quan. Gen.		0.250	0	0	NR	NR	NR	0
ERNS		TP	NR	NR	NR	NR	NR	0
STATE ASTM STANDARD								
SHWS		1.000	0	0	0	1	NR	1
State Landfill		0.500	0	0	0	NR	NR	0
LUST		0.500	0	0	0	NR	NR	0
UST		0.250	0	0	NR	NR	NR	0
VCP		0.500	0	0	0	NR	NR	0
FEDERAL ASTM SUPPLEMENTAL								
CONSENT		1.000	0	0	0	0	NR	0
ROD		1.000	0	0	0	0	NR	0
Delisted NPL		1.000	0	0	0	0	NR	0
FINDS		TP	NR	NR	NR	NR	NR	0
HMIRS		TP	NR	NR	NR	NR	NR	0
MLTS		TP	NR	NR	NR	NR	NR	0
MINES		0.250	0	0	NR	NR	NR	0
NPL Liens		TP	NR	NR	NR	NR	NR	0
PADS		TP	NR	NR	NR	NR	NR	0
FUDS		1.000	0	0	0	0	NR	0
INDIAN RESERV		1.000	0	0	0	0	NR	0
US BROWNFIELDS		0.500	0	0	0	NR	NR	0
DOD		1.000	0	0	0	0	NR	0
RAATS		TP	NR	NR	NR	NR	NR	0
TRIS		TP	NR	NR	NR	NR	NR	0
TSCA		TP	NR	NR	NR	NR	NR	0
SSTS		TP	NR	NR	NR	NR	NR	0
FTTS		TP	NR	NR	NR	NR	NR	0
STATE OR LOCAL ASTM SUPPLEMENTAL								
SPILLS		TP	NR	NR	NR	NR	NR	0
EDR PROPRIETARY HISTORICAL DATABASES								
Coal Gas		1.000	0	0	0	0	NR	0

MAP FINDINGS SUMMARY

Database	Target Property	Search Distance (Miles)	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
BROWNFIELDS DATABASES								
US BROWNFIELDS		0.500	0	0	0	NR	NR	0
BROWNFIELDS		0.500	0	0	0	NR	NR	0
VCP		0.500	0	0	0	NR	NR	0

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

Coal Gas Site Search: No site was found in a search of Real Property Scan's ENVIROHAZ database.

1
NNE
1/2-1
5190 ft.

WAIALE ASH PILE
WAIALE STREET
WAILUKU, HI

SHWS **S104657531**
N/A

Relative:
Lower

Actual:
206 ft.

SHWS:

File Section :	Central
Type :	Not reported
Department 1 :	Not reported
Department 2 :	Not reported
Department 3 :	Not reported
Table :	Sitelist
Island :	Maui
Zip :	Not reported
Discovery Assesment and Remediation :	6/14/99
Initial Site Screening Team Lead :	Laura Young
ISST Assigned :	3/9/00
ISST Date :	8/10/00
ISST Priority :	High
ISST Letter :	Not reported
Env Justice Eligible :	Not reported
Preliminary Assesment :	No
PA Lead :	Not reported
PA Date :	Not reported
PA Result :	Not reported
Site Investigation :	No
SI Lead :	Not reported
SI Date :	Not reported
SI Result :	Not reported
Remediation Action Planned :	Not reported
VRP :	Not reported
Brownfields :	Not reported
Agreement :	Not reported
Remedial Investigation :	Not reported
RAA :	Not reported
Response Action Memo :	Not reported
REM Lead :	Not reported
REM Date :	Not reported
REM Last Update :	8/14/00
Input By :	Bryce
Case :	Not reported
Fed Id :	Not reported
UST :	Not reported
Permits :	Not reported
RCRA :	Not reported
Program :	Not reported
Priority :	Not reported
Lat/Long :	Not reported
Cost :	Not reported
CU QNTY Site :	Not reported
Enforcement :	Not reported
CU Method :	Not reported
Ownership :	Not reported
Tax Map Key :	Not reported
Form :	Not reported

WAIALE ASH PILE (Continued) **S104657531**

EPCRA :	Not reported
EPCRA FIL :	Not reported
Pathways :	Not reported
Targets :	Not reported
Manager :	Not reported
REM Result :	Not reported
Identifier :	Not reported
Site Code :	Not reported
Event :	Not reported
Event Type :	Not reported
Notes :	Not reported
Site :	Not reported
Site_ :	Not reported
Operator :	Not reported
Current :	Not reported
Compounds :	Dioxins, heavy metals
Oname :	Not reported

ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
KAHULUI	1000816953	SMILE'S AUTO SPECIALISTS	AMALA PLACE	96732	SHWS
KAHULUI	1001475719	KANAHA POND EAST	AMALA PLACE	96732	CERC-NFRAP, SHWS
KAHULUI	1000855952	RAINBOW HAULING	AMALA PL	96732	SHWS
KAHULUI	1000816952	E & E BLACK CONTRACTORS	AMALA PL	96732	SHWS
KAHULUI	S104534206	HOBRON AVENUE AREA	HOBRON AVE	96732	SHWS, SPILLS
KAHULUI	S104534290	MAUI PALMS HOTEL UST	150 KAAHUMANU AVE	96732	SHWS
KAHULUI	U001236769	DAVID PICO CESSPOOL DIGGING	OLD HALEAKALA HWY	96732	LUST, UST
KAHULUI	1001032388	ALEXANDER AND BALDWIN DUMP SITE	W PAPA AVE	96732	SHWS
KAHULUI	U003222223	PAIA SEWER PUMP STATION	PUNA RD/HANA HWY	96732	UST
KAHULUI	S104534289	MAUI MEAT FACILITY-FORMER	601 2ND ST	96732	SHWS
KALAMAULA	S104534228	KALAMAULA LANDFILL	SOUTH MOLOKAI, KALAMAULA	96793	SHWS
MAUI COUNTY	S106100522	MAALAEA	INTERSECTION OF KIHEI RD AND HONOAPIILANI HWY		SWF/LF
MAUI COUNTY	S104534222	KAHOOLAWE ISLAND	KAHOOLAWE ISLAND	96732	SHWS
MAUI COUNTY	S103763653	KAKAMAULA LANDFILL	KALAMAULA MOLOKAI		SWF/LF
MAUI COUNTY	S103763654	KALUAKOI LANDFILL	KALUAKOI ROAD MAUNALOA		SWF/LF
MAUI COUNTY	S104534094	BEN FRANKLIN STORES PROPERTY	KAUNAKAKAI, MOLOKAI		SHWS
MAUI COUNTY	S103763656	MAUNALOA LANDFILL	MAUNALOA MAUI		SWF/LF
MAUI COUNTY	S103763652	CENTRAL MAUI LF, PHASE I&II LF-0034-95)	PUNENE, MAUI		SWF/LF
OLOWALU	1000435092	OLOWALU TRANSFER STATION	OLOWALU	96793	SHWS
WAILUKU	S104657498	PICRIC ACID AT MAUI COMMUNITY COLLE	310 KAAHUMANU AVE	96793	SHWS
WAILUKU	S104657499	PICRIC ACID AT MAUI MEMORIAL HOSPIT	MAUI	96793	SHWS

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Elapsed ASTM days: Provides confirmation that this EDR report meets or exceeds the 90-day updating requirement of the ASTM standard.

FEDERAL ASTM STANDARD RECORDS

NPL: National Priority List
Source: EPA
Telephone: N/A
National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 01/29/04
Date Made Active at EDR: 02/27/04
Database Release Frequency: Semi-Annually

Date of Data Arrival at EDR: 02/06/04
Elapsed ASTM days: 21
Date of Last EDR Contact: 02/06/04

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1
Telephone 617-918-1143

EPA Region 6
Telephone: 214-655-6659

EPA Region 3
Telephone 215-814-5418

EPA Region 8
Telephone: 303-312-6774

EPA Region 4
Telephone 404-562-8033

Proposed NPL: Proposed National Priority List Sites
Source: EPA
Telephone: N/A

Date of Government Version: 01/07/04
Date Made Active at EDR: 02/27/04
Database Release Frequency: Semi-Annually

Date of Data Arrival at EDR: 02/06/04
Elapsed ASTM days: 21
Date of Last EDR Contact: 02/06/04

CERCLIS: Comprehensive Environmental Response, Compensation, and Liability Information System
Source: EPA
Telephone: 703-413-0223
CERCLIS contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). CERCLIS contains sites which are either proposed to or on the National Priorities List (NPL) and sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 02/26/04
Date Made Active at EDR: 04/02/04
Database Release Frequency: Quarterly

Date of Data Arrival at EDR: 03/22/04
Elapsed ASTM days: 11
Date of Last EDR Contact: 03/22/04

CERCLIS-NFRAP: CERCLIS No Further Remedial Action Planned
Source: EPA
Telephone: 703-413-0223
As of February 1995, CERCLIS sites designated "No Further Remedial Action Planned" (NFRAP) have been removed from CERCLIS. NFRAP sites may be sites where, following an initial investigation, no contamination was found, contamination was removed quickly without the need for the site to be placed on the NPL, or the contamination was not serious enough to require Federal Superfund action or NPL consideration. EPA has removed approximately 25,000 NFRAP sites to lift the unintended barriers to the redevelopment of these properties and has archived them as historical records so EPA does not needlessly repeat the investigations in the future. This policy change is part of the EPA's Brownfields Redevelopment Program to help cities, states, private investors and affected citizens to promote economic redevelopment of unproductive urban sites.

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Government Version: 02/26/04
Date Made Active at EDR: 04/02/04
Database Release Frequency: Quarterly

Date of Data Arrival at EDR: 03/22/04
Elapsed ASTM days: 11
Date of Last EDR Contact: 03/22/04

CORRACTS: Corrective Action Report
Source: EPA
Telephone: 800-424-9346
CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 03/15/04
Date Made Active at EDR: 04/15/04
Database Release Frequency: Semi-Annually

Date of Data Arrival at EDR: 03/25/04
Elapsed ASTM days: 21
Date of Last EDR Contact: 03/08/04

RCRIS: Resource Conservation and Recovery Information System
Source: EPA
Telephone: 800-424-9346
Resource Conservation and Recovery Information System. RCRIS includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs): generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month. Small quantity generators (SQGs): generate between 100 kg and 1,000 kg of hazardous waste per month. Large quantity generators (LQGs): generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month. Transporters are individuals or entities that move hazardous waste from the generator off-site to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 03/09/04
Date Made Active at EDR: 04/02/04
Database Release Frequency: Varies

Date of Data Arrival at EDR: 03/18/04
Elapsed ASTM days: 15
Date of Last EDR Contact: 04/20/04

ERNS: Emergency Response Notification System
Source: National Response Center, United States Coast Guard
Telephone: 202-260-2342
Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 12/31/03
Date Made Active at EDR: 03/12/04
Database Release Frequency: Annually

Date of Data Arrival at EDR: 01/26/04
Elapsed ASTM days: 46
Date of Last EDR Contact: 04/26/04

FEDERAL ASTM SUPPLEMENTAL RECORDS

BRS: Biennial Reporting System
Source: EPA/NTIS
Telephone: 800-424-9346
The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/01/01
Database Release Frequency: Biennially

Date of Last EDR Contact: 03/16/04
Date of Next Scheduled EDR Contact: 06/14/04

CONSENT: Superfund (CERCLA) Consent Decrees
Source: EPA Regional Offices
Telephone: Varies
Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: N/A
Database Release Frequency: Varies

Date of Last EDR Contact: N/A
Date of Next Scheduled EDR Contact: N/A

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

ROD: Records Of Decision
Source: EPA
Telephone: 703-416-0223
Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 01/09/04
Database Release Frequency: Annually

Date of Last EDR Contact: 04/05/04
Date of Next Scheduled EDR Contact: 07/05/04

DELISTED NPL: National Priority List Deletions
Source: EPA
Telephone: N/A
The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 01/29/04
Database Release Frequency: Quarterly

Date of Last EDR Contact: 02/06/04
Date of Next Scheduled EDR Contact: 05/01/04

FINDS: Facility Index System/Facility Identification Initiative Program Summary Report
Source: EPA
Telephone: N/A
Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 04/08/04
Database Release Frequency: Quarterly

Date of Last EDR Contact: 04/05/04
Date of Next Scheduled EDR Contact: 07/05/04

HMIRS: Hazardous Materials Information Reporting System
Source: U.S. Department of Transportation
Telephone: 202-366-4555
Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 12/18/03
Database Release Frequency: Annually

Date of Last EDR Contact: 04/20/04
Date of Next Scheduled EDR Contact: 07/19/04

MLTS: Material Licensing Tracking System
Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 01/15/04
Database Release Frequency: Quarterly

Date of Last EDR Contact: 04/05/04
Date of Next Scheduled EDR Contact: 07/05/04

MINES: Mines Master Index File
Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959

Date of Government Version: 03/05/04
Database Release Frequency: Semi-Annually

Date of Last EDR Contact: 03/30/04
Date of Next Scheduled EDR Contact: 06/28/04

NPL LIENS: Federal Superfund Liens
Source: EPA
Telephone: 202-564-4267
Federal Superfund Liens. Under the authority granted the USEPA by the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner receives notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/91
Database Release Frequency: No Update Planned

Date of Last EDR Contact: 03/12/04
Date of Next Scheduled EDR Contact: 05/24/04

PADS: PCB Activity Database System
Source: EPA
Telephone: 202-564-3887
PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 12/30/03
Database Release Frequency: Annually

Date of Last EDR Contact: 02/09/04
Date of Next Scheduled EDR Contact: 05/10/04

DOD: Department of Defense Sites
Source: USGS
Telephone: 703-692-8801
This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 10/01/03
Database Release Frequency: Semi-Annually

Date of Last EDR Contact: 02/02/04
Date of Next Scheduled EDR Contact: 05/10/04

STORMWATER: Storm Water General Permits
Source: Environmental Protection Agency
Telephone: 202 564-0746
A listing of all facilities with Storm Water General Permits.

Date of Government Version: N/A
Database Release Frequency: Quarterly

Date of Last EDR Contact: N/A
Date of Next Scheduled EDR Contact: N/A

INDIAN RESERV: Indian Reservations
Source: USGS
Telephone: 202-208-3710
This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 10/01/03
Database Release Frequency: Semi-Annually

Date of Last EDR Contact: 02/02/04
Date of Next Scheduled EDR Contact: 05/10/04

US BROWNFIELDS: A Listing of Brownfields Sites
Source: Environmental Protection Agency
Telephone: 202-566-2777
Included in the listing are brownfields properties addresses by Cooperative Agreement Recipients and brownfields properties addressed by Targeted Brownfields Assessments. Targeted Brownfields Assessments-EPA's Targeted Brownfields Assessments (TBA) program is designed to help states, tribes, and municipalities--especially those without EPA Brownfields Assessment Demonstration Pilots--minimize the uncertainties of contamination often associated with brownfields. Under the TBA program, EPA provides funding and/or technical assistance for environmental assessments at brownfields sites throughout the country. Targeted Brownfields Assessments supplement and work with other efforts under EPA's Brownfields Initiative to promote cleanup and redevelopment of brownfields. Cooperative Agreement Recipients-States, political subdivisions, territories, and Indian tribes become BCRLF cooperative agreement recipients when they enter into BCRLF cooperative agreements with the U.S. EPA. EPA selects BCRLF cooperative agreement recipients based on a proposal and application process. BCRLF cooperative agreement recipients must use EPA funds provided through BCRLF cooperative agreement for specified brownfields-related cleanup activities.

Date of Government Version: 07/15/03
Database Release Frequency: Semi-Annually

Date of Last EDR Contact: 03/15/04
Date of Next Scheduled EDR Contact: 06/14/04

RMP: Risk Management Plans
Source: Environmental Protection Agency
Telephone: 202-564-8600
When Congress passed the Clean Air Act Amendments of 1990, it required EPA to publish regulations and guidance for chemical accident prevention at facilities using extremely hazardous substances. The Risk Management Program Rule (RMP Rule) was written to implement Section 112(r) of these amendments. The rule, which built upon existing industry codes and standards, requires companies of all sizes that use certain flammable and toxic substances to develop a Risk Management Program, which includes a(n): Hazard assessment that details the potential effects of an accidental release, an accident history of the last five years, and an evaluation of worst-case and alternative accidental releases; Prevention program that includes safety precautions and maintenance, monitoring, and employee training measures; and Emergency response program that spells out emergency health care, employee training measures and procedures for informing the public and response agencies (e.g the fire department) should an accident occur.

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Government Version: N/A
Database Release Frequency: N/A

Date of Last EDR Contact: N/A
Date of Next Scheduled EDR Contact: N/A

FUDS: Formerly Used Defense Sites
Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 10/01/03
Database Release Frequency: Varies

Date of Last EDR Contact: 04/26/04
Date of Next Scheduled EDR Contact: 07/05/04

RAATS: RCRA Administrative Action Tracking System
Source: EPA
Telephone: 202-564-4104
RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/95
Database Release Frequency: No Update Planned

Date of Last EDR Contact: 03/08/04
Date of Next Scheduled EDR Contact: 06/07/04

TRIS: Toxic Chemical Release Inventory System
Source: EPA
Telephone: 202-566-0250
Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/01
Database Release Frequency: Annually

Date of Last EDR Contact: 03/23/04
Date of Next Scheduled EDR Contact: 06/21/04

TSCA: Toxic Substances Control Act
Source: EPA
Telephone: 202-260-5521
Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/02
Database Release Frequency: Every 4 Years

Date of Last EDR Contact: 03/05/04
Date of Next Scheduled EDR Contact: 06/07/04

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
Source: EPA
Telephone: 202-564-2501

Date of Government Version: 01/21/04
Database Release Frequency: Quarterly

Date of Last EDR Contact: 03/22/04
Date of Next Scheduled EDR Contact: 06/21/04

SSTS: Section 7 Tracking Systems
Source: EPA
Telephone: 202-564-5008
Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 12/31/01
Database Release Frequency: Annually

Date of Last EDR Contact: 04/19/04
Date of Next Scheduled EDR Contact: 07/19/04

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Telephone: 202-564-2501
FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 01/30/04
Database Release Frequency: Quarterly
Date of Last EDR Contact: 03/22/04
Date of Next Scheduled EDR Contact: 06/21/04

STATE OF HAWAII ASTM STANDARD RECORDS

SHWS: Sites List
Source: Department of Health
Telephone: 808-586-4249
Facilities, sites or areas in which the Office of Hazard Evaluation and Emergency Response has an interest, has investigated or may investigate under HRS 128D (includes CERCLIS sites).

Date of Government Version: 07/12/01
Date Made Active at EDR: 10/16/01
Database Release Frequency: Semi-Annually
Date of Data Arrival at EDR: 09/24/01
Elapsed ASTM days: 22
Date of Last EDR Contact: 03/25/04

SWF/LF: Permitted Landfills in the State of Hawaii
Source: Department of Health
Telephone: 808-586-4245
Solid Waste Facilities/Landfill Sites. SWF/LF type records typically contain an inventory of solid waste disposal facilities or landfills in a particular state. Depending on the state, these may be active or inactive facilities or open dumps that failed to meet RCRA Subtitle D Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 11/01/03
Date Made Active at EDR: 01/13/04
Database Release Frequency: Varies
Date of Data Arrival at EDR: 11/24/03
Elapsed ASTM days: 50
Date of Last EDR Contact: 04/26/04

LUST: Leaking Underground Storage Tank Database
Source: Department of Health
Telephone: 808-586-4228
Leaking Underground Storage Tank Incident Reports. LUST records contain an inventory of reported leaking underground storage tank incidents. Not all states maintain these records, and the information stored varies by state.

Date of Government Version: 08/01/03
Date Made Active at EDR: 09/17/03
Database Release Frequency: Semi-Annually
Date of Data Arrival at EDR: 09/02/03
Elapsed ASTM days: 15
Date of Last EDR Contact: 03/30/04

UST: Underground Storage Tank Database
Source: Department of Health
Telephone: 808-586-4228
Registered Underground Storage Tanks. UST's are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA) and must be registered with the state department responsible for administering the UST program. Available information varies by state program.

Date of Government Version: 08/01/03
Date Made Active at EDR: 09/11/03
Database Release Frequency: Semi-Annually
Date of Data Arrival at EDR: 09/02/03
Elapsed ASTM days: 9
Date of Last EDR Contact: 03/30/04

VCP: Voluntary Response Program Sites
Source: Department of Health
Telephone: 808-586-4249

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Government Version: 10/10/03
Date Made Active at EDR: 10/21/03
Database Release Frequency: Varies

Date of Data Arrival at EDR: 10/13/03
Elapsed ASTM days: 8
Date of Last EDR Contact: 03/22/04

STATE OF HAWAII ASTM SUPPLEMENTAL RECORDS

SPILLS: Release Notifications
Source: Department of Health
Telephone: 808-586-4249
Releases of hazardous substances to the environment reported to the Office of Hazard Evaluation and Emergency Response since 1988.

Date of Government Version: 09/01/00
Database Release Frequency: Varies

Date of Last EDR Contact: 03/25/04
Date of Next Scheduled EDR Contact: 06/21/04

EDR PROPRIETARY HISTORICAL DATABASES

Former Manufactured Gas (Coal Gas) Sites: The existence and location of Coal Gas sites is provided exclusively to EDR by Real Property Scan, Inc. ©Copyright 1993 Real Property Scan, Inc. For a technical description of the types of hazards which may be found at such sites, contact your EDR customer service representative.

Disclaimer Provided by Real Property Scan, Inc.

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BROWNFIELDS DATABASES

BROWNFIELDS: Brownfields Sites
Source: Department of Health
Telephone: 808-586-4249

Date of Government Version: 10/10/03
Database Release Frequency: Varies

Date of Last EDR Contact: 03/22/04
Date of Next Scheduled EDR Contact: 06/21/04

VCP: Voluntary Response Program Sites
Source: Department of Health
Telephone: 808-586-4249

Date of Government Version: 10/04/03
Database Release Frequency: Varies

Date of Last EDR Contact: 03/22/04
Date of Next Scheduled EDR Contact: 06/21/04

US BROWNFIELDS: A Listing of Brownfields Sites
Source: Environmental Protection Agency
Telephone: 202-566-2777
Included in the listing are brownfields properties addresses by Cooperative Agreement Recipients and brownfields properties addressed by Targeted Brownfields Assessments. Targeted Brownfields Assessments-EPA's Targeted Brownfields Assessments (TBA) program is designed to help states, tribes, and municipalities--especially those without EPA Brownfields Assessment Demonstration Pilots--minimize the uncertainties of contamination often associated with brownfields. Under the TBA program, EPA provides funding and/or technical assistance for environmental assessments at brownfields sites throughout the country. Targeted Brownfields Assessments supplement and work with other efforts under EPA's Brownfields Initiative to promote cleanup and redevelopment of brownfields. Cooperative Agreement Recipients-States, political subdivisions, territories, and Indian tribes become BCRLF cooperative agreement recipients when they enter into BCRLF cooperative agreements with the U.S. EPA. EPA selects BCRLF cooperative agreement recipients based on a proposal and application process. BCRLF cooperative agreement recipients must use EPA funds provided through BCRLF cooperative agreement for specified brownfields-related cleanup activities.

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Date of Government Version: N/A
Database Release Frequency: Semi-Annually

Date of Last EDR Contact: N/A
Date of Next Scheduled EDR Contact: N/A

OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

Oil/Gas Pipelines: This data was obtained by EDR from the USGS in 1994. It is referred to by USGS as GeoData Digital Line Graphs from 1:100,000-Scale Maps. It was extracted from the transportation category including some oil, but primarily gas pipelines.

Electric Power Transmission Line Data
Source: PennWell Corporation
Telephone: (800) 823-6277
This map includes information copyrighted by PennWell Corporation. This information is provided on a best effort basis and PennWell Corporation does not guarantee its accuracy nor warrant its fitness for any particular purpose. Such information has been reprinted with the permission of PennWell.

Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:
Source: American Hospital Association, Inc.
Telephone: 312-280-5991
The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

Medical Centers: Provider of Services Listing
Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000
A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

Nursing Homes
Source: National Institutes of Health
Telephone: 301-594-6248
Information on Medicare and Medicaid certified nursing homes in the United States.

Public Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.

Private Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on private school locations in the United States.

Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 1999 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002 from the U.S. Fish and Wildlife Service.

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

STREET AND ADDRESS INFORMATION

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EDR® Environmental
Data Resources Inc

EDR Site Report™

WAIKAPU DUMP-MAUI COUNTY DUMP
CENTRAL MAUI
KAHULUI, HI 96732

Inquiry Number:

May 11, 2004

The Standard in Environmental Risk Management Information

440 Wheelers Farms Road
Milford, Connecticut 06460

Nationwide Customer Service

Telephone: 1-800-352-0050
Fax: 1-800-231-6802
Internet: www.edrnet.com

TABLE OF CONTENTS

The EDR-Site Report™ is a comprehensive presentation of government filings on a facility identified in a search of over 4 million government records from more than 600 federal, state and local environmental databases. The report is divided into three sections:

Section 1: Facility Summary ..... **Page 3**

Summary of facility filings including a review of the following areas: waste management, waste disposal, multi-media issues, and Superfund liability.

Section 2: Facility Detail Reports ..... **Page 4**

All available detailed information from databases where sites are identified.

Section 3: Databases Searched and Update Information ..... **Page 5**

Name, source, update dates, contact phone number and description of each of the databases searched for this report.

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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SECTION 1: FACILITY SUMMARY

FACILITY AREA	FACILITY 1 WAIKAPU DUMP-MAUI COUNTY DUMP CENTRAL MAUI KAHULUI, HI 96732 EDR ID #1003879111 EPA #HID050340843
WASTE MANAGEMENT Facility generates hazardous waste (RCRIS)	NO
Facility treats, stores, or disposes of hazardous waste on-site (RCRIS/TSDF)	NO
Facility has received Notices of Violations (RCRIS/VIOL)	NO
Facility has been subject to RCRA administrative actions (RAATS)	NO
Facility has been subject to corrective actions (CORRACTS)	NO
Facility handles PCBs (PADS)	NO
Facility uses radioactive materials (MLTS)	NO
Facility manages registered aboveground storage tanks (AST)	NO
Facility manages registered underground storage tanks (UST)	NO
Facility has reported leaking underground storage tank incidents (LUST)	NO
Facility has reported emergency releases to the soil (ERNS)	NO
Facility has reported hazardous material incidents to DOT (HMIRS)	NO
WASTE DISPOSAL Facility is a Superfund Site (NPL)	NO
Facility has a known or suspect abandoned, inactive or uncontrolled hazardous waste site (CERCLIS)	YES - p4 (NFRAP)
Facility has a reported Superfund Lien on it (LIENS)	NO
Facility is listed as a state hazardous waste site (SHWS)	NO
Facility has disposed of solid waste on-site (SWF/LF)	NO
MULTIMEDIA Facility uses toxic chemicals and has notified EPA under SARA Title III, Section 313 (TRIS)	NO
Facility produces pesticides and has notified EPA under Section 7 of FIFRA (SSTS)	NO
Facility manufactures or imports toxic chemicals on the TSCA list (TSCA)	NO
Facility has inspections under FIFRA, TSCA or EPCRA (FTTS)	NO
Facility is listed in EPA's index system (FINDS)	NO
Facility is listed in a county/local unique database (LOCAL)	NO
POTENTIAL SUPERFUND LIABILITY Facility has a list of potentially responsible parties PRP	NO
TOTAL (YES)	1

SECTION 2: FACILITY DETAIL REPORTS

WASTE DISPOSAL

DATABASE: No Further Remedial Action Planned (CERCLIS/NFRAP)

WAIKAPU DUMP-MAUI COUNTY DUMP
CENTRAL MAUI
KAHULUI, HI 96732
EDR ID #1003879111

CERC-NFRAP Name: WAIKAPU DUMP-MAUI COUNTY DUMP
CENTRAL MAUI
KAHULUI, HI 96732
MAUI County

Congressional Dist:	Not reported	RCRA Facility:	Not reported
IFMS ID:	Not reported	SMSA Num:	Not reported
USGS Hydro Unit:	20020000	Federal Facility:	Not a Federal Facility
Non NPL Status:	NFRAP		
NPL Update Num:	Not Reported	Federal Register Date:	Not Reported
Fed Haz Waste:	No	Site Incident:	Not reported
EPA-ID:	HID050340843		
EPA Region:	Region 9 r9cerc01.r09tok.epa.gov 204.47.91.37 75 Hawthorne St. 94		
NPL Status:	Not on the NPL	Ownership Status:	Unknown
Classification:	Not Reported		
Site Description:	Not Reported		

ENFORCEMENT ACTIVITY

Action Type:	DISCOVERY
Action Anomaly:	Not reported
Planning Status:	Not reported
Priority Level:	Not reported
Operable Unit:	SITEWIDE
Urgency:	Not reported
Actual Start Date:	Not reported
Actual Complete Date:	19791101
Primary Responsibility:	EPA Fund-Financed

Action Type:	ARCHIVE SITE
Action Anomaly:	Not reported
Planning Status:	Not reported
Priority Level:	Not reported
Operable Unit:	SITEWIDE
Urgency:	Not reported
Actual Start Date:	Not reported
Actual Complete Date:	19850101
Primary Responsibility:	EPA In-House

Action Type:	PRELIMINARY ASSESSMENT
Action Anomaly:	Not reported
Planning Status:	Not reported
Priority Level:	NFRAP (No Futher Remedial Action Planned
Operable Unit:	SITEWIDE
Urgency:	Not reported
Actual Start Date:	19841001
Actual Complete Date:	19850101
Primary Responsibility:	State, Fund Financed

SECTION 3: DATABASES SEARCHED AND UPDATE DATES

To maintain currency of the following federal, state and local databases, EDR contacts the appropriate government agency on a monthly or quarterly basis as required.

Elapsed ASTM days: Provides confirmation that this report meets or exceeds the 90-day updating requirement of the ASTM standard.

WASTE MANAGEMENT

RCRIS: Resource Conservation and Recovery Information System
Source: EPA
Telephone: 800-424-9346
Resource Conservation and Recovery Information System. RCRIS includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs): generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month. Small quantity generators (SQGs): generate between 100 kg and 1,000 kg of hazardous waste per month. Large quantity generators (LQGs): generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month. Transporters are individuals or entities that move hazardous waste from the generator off-site to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 03/09/2004
Database Release Frequency: Varies
Date of Last EDR Contact: 04/20/2004
Date of Next Scheduled Update: 06/21/2004

BRS: Biennial Reporting System
Source: EPA/NTIS
Telephone: 800-424-9346
The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/01/2001
Database Release Frequency: Biennially
Date of Last EDR Contact: 03/16/2004
Date of Next Scheduled Update: 06/14/2004

RAATS: RCRA Administrative Action Tracking System
Source: EPA
Telephone: 202-564-4104
RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/1995
Database Release Frequency: No Update Planned
Date of Last EDR Contact: 03/08/2004
Date of Next Scheduled Update: 06/07/2004

CORRACTS: Corrective Action Report
Source: EPA
Telephone: 800-424-9346
CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 03/15/2004
Database Release Frequency: Semi-Annually
Date of Last EDR Contact: 03/08/2004
Date of Next Scheduled Update: 06/07/2004

PADS: PCB Activity Database System
Source: EPA
Telephone: 202-564-3887
PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 12/30/2003
Database Release Frequency: Annually
Date of Last EDR Contact: 02/09/2004
Date of Next Scheduled Update: 05/10/2004

SECTION 3: DATABASES SEARCHED AND UPDATE DATES

...Continued...

MLTS: Material Licensing Tracking System
Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 01/15/2004
Database Release Frequency: Quarterly
Date of Last EDR Contact: 04/05/2004
Date of Next Scheduled Update: 07/05/2004

HI UST: Underground Storage Tank Database
Source: Department of Health
Telephone: 808-586-4228
Registered Underground Storage Tanks. UST's are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA) and must be registered with the state department responsible for administering the UST program. Available information varies by state program.

Date of Government Version: 08/01/2003
Database Release Frequency: Semi-Annually
Date of Last EDR Contact: 03/30/2004
Date of Next Scheduled Update: 06/28/2004

HI LUST: Leaking Underground Storage Tank Database
Source: Department of Health
Telephone: 808-586-4228
Leaking Underground Storage Tank Incident Reports. LUST records contain an inventory of reported leaking underground storage tank incidents. Not all states maintain these records, and the information stored varies by state.

Date of Government Version: 08/01/2003
Database Release Frequency: Semi-Annually
Date of Last EDR Contact: 03/30/2004
Date of Next Scheduled Update: 06/28/2004

ERNS: Emergency Response Notification System
Source: National Response Center, United States Coast Guard
Telephone: 202-260-2342
Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 12/31/2003
Database Release Frequency: Annually
Date of Last EDR Contact: 04/26/2004
Date of Next Scheduled Update: 07/26/2004

HMIRS: Hazardous Materials Information Reporting System
Source: U.S. Department of Transportation
Telephone: 202-366-4555
Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 12/18/2003
Database Release Frequency: Annually
Date of Last EDR Contact: 04/20/2004
Date of Next Scheduled Update: 07/19/2004

WASTE DISPOSAL

NPL: National Priority List
Source: EPA
Telephone: Not reported
National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 01/29/2004
Date Made Active at EDR: 02/27/2004
Database Release Frequency: Semi-Annually
Date of Data Arrival at EDR: 02/06/2004
Elapsed ASTM Days: 21
Date of Last EDR Contact: 02/06/2004

PROPOSED NPL: Proposed National Priority List Sites
Source: EPA
Telephone: Not reported

Date of Government Version: 01/07/2004
Date Made Active at EDR: 02/27/2004
Database Release Frequency: Semi-Annually
Date of Data Arrival at EDR: 02/06/2004
Elapsed ASTM Days: 21
Date of Last EDR Contact: 02/06/2004

SECTION 3: DATABASES SEARCHED AND UPDATE DATES

...Continued...

DELISTED NPL: National Priority List Deletions
Source: EPA
Telephone: Not reported
The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 01/29/2004
Date Made Active at EDR: 02/27/2004
Database Release Frequency: Quarterly
Date of Data Arrival at EDR: 02/06/2004
Elapsed ASTM Days: 21
Date of Last EDR Contact: 02/06/2004

CERCLIS: Comprehensive Environmental Response, Compensation, and Liability Information System
Source: EPA
Telephone: 703-413-0223
CERCLIS contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). CERCLIS contains sites which are either proposed to or on the National Priorities List (NPL) and sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 02/26/2004
Date Made Active at EDR: 04/02/2004
Database Release Frequency: Quarterly
Date of Data Arrival at EDR: 03/22/2004
Elapsed ASTM Days: 11
Date of Last EDR Contact: 03/22/2004

CERCLIS-NFRAP: CERCLIS No Further Remedial Action Planned
Source: EPA
Telephone: 703-413-0223
As of February 1995, CERCLIS sites designated "No Further Remedial Action Planned" (NFRAP) have been removed from CERCLIS. NFRAP sites may be sites where, following an initial investigation, no contamination was found, contamination was removed quickly without the need for the site to be placed on the NPL, or the contamination was not serious enough to require Federal Superfund action or NPL consideration. EPA has removed approximately 25,000 NFRAP sites to lift the unintended barriers to the redevelopment of these properties and has archived them as historical records so EPA does not needlessly repeat the investigations in the future. This policy change is part of the EPA's Brownfields Redevelopment Program to help cities, states, private investors and affected citizens to promote economic redevelopment of unproductive urban sites.

Date of Government Version: 02/26/2004
Database Release Frequency: Quarterly
Date of Last EDR Contact: 03/22/2004
Date of Next Scheduled Update: 06/21/2004

NPL LIENS: Federal Superfund Liens
Source: EPA
Telephone: 202-564-4267
Federal Superfund Liens. Under the authority granted the USEPA by the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner receives notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/1991
Date Made Active at EDR: 03/30/1994
Database Release Frequency: No Update Planned
Date of Data Arrival at EDR: 02/02/1994
Elapsed ASTM Days: 56
Date of Last EDR Contact: 03/12/2004

HI SHWS:

HI SWF/LF: Permitted Landfills in the State of Hawaii
Source: Department of Health
Telephone: 808-586-4245
Solid Waste Facilities/Landfill Sites. SWF/LF type records typically contain an inventory of solid waste disposal facilities or landfills in a particular state. Depending on the state, these may be active or inactive facilities or open dumps that failed to meet RCRA Subtitle D Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 11/01/2003
Database Release Frequency: Varies
Date of Last EDR Contact: 04/26/2004
Date of Next Scheduled Update: 07/26/2004

SECTION 3: DATABASES SEARCHED AND UPDATE DATES

...Continued...

MULTIMEDIA

TRIS: Toxic Chemical Release Inventory System
Source: EPA
Telephone: 202-566-0250
Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/2001
Database Release Frequency: Annually

Date of Last EDR Contact: 03/23/2004
Date of Next Scheduled Update: 06/21/2004

SSTS: Section 7 Tracking Systems
Source: EPA
Telephone: 202-564-5008
Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 12/31/2001
Database Release Frequency: Annually

Date of Last EDR Contact: 04/19/2004
Date of Next Scheduled Update: 07/19/2004

TSCA: Toxic Substances Control Act
Source: EPA
Telephone: 202-260-5521
Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/2002
Database Release Frequency: N/A

Date of Last EDR Contact: 03/05/2004
Date of Next Scheduled Update: 06/07/2004

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Telephone: 202-564-2501
FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 01/30/2004
Database Release Frequency: Quarterly

Date of Last EDR Contact: 03/22/2004
Date of Next Scheduled Update: 06/21/2004

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
Source: EPA
Telephone: 202-564-2501

Date of Government Version: 01/21/2004
Database Release Frequency: Quarterly

Date of Last EDR Contact: 03/22/2004
Date of Next Scheduled Update: 06/21/2004

FINDS: Facility Index System/Facility Identification Initiative Program Summary Report
Source: EPA
Telephone: Not reported
Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 04/08/2004
Database Release Frequency: Quarterly

Date of Last EDR Contact: 04/05/2004
Date of Next Scheduled Update: 07/05/2004

SECTION 3: DATABASES SEARCHED AND UPDATE DATES

...Continued...

HI SPILLS: Release Notifications
Source: Department of Health
Telephone: 808-586-4249
Releases of hazardous substances to the environment reported to the Office of Hazard Evaluation and Emergency Response since 1988.

Date of Government Version: 09/01/2000
Database Release Frequency: Varies

Date of Last EDR Contact: 03/25/2004
Date of Next Scheduled Update: 06/21/2004

HI BROWNFIELDS: Brownfields Sites
Source: Department of Health
Telephone: 808-586-4249

Date of Government Version: 10/10/2003
Database Release Frequency: Varies

Date of Last EDR Contact: 03/22/2004
Date of Next Scheduled Update: 06/21/2004

HI VCP: Voluntary Response Program Sites
Source: Department of Health
Telephone: 808-586-4249

Date of Government Version: 10/10/2003
Database Release Frequency: Varies

Date of Last EDR Contact: 03/22/2004
Date of Next Scheduled Update: 06/21/2004

GA SPILLS: Spills Information
Source: Department of Natural Resources
Telephone: 404-656-6905
Oil or Hazardous Material Spills or Releases.

Date of Government Version: 02/11/2004
Database Release Frequency: Quarterly

Date of Last EDR Contact: 04/26/2004
Date of Next Scheduled Update: 07/26/2004

GA HIST LF:

GA NON-HSI: Non-Hazardous Site Inventory
Source: Rindt-McDuff Associates, Inc.
Telephone: Not reported
This list was obtained by EDR in 1998 and contains property listings that have reported contamination of soil or groundwater under the Georgia Hazardous Site Response Act (HSRA). These sites were not placed on the Georgia Priority list (Hazardous Site Inventory or HSI) because their hazard evaluation scores did not exceed the threshold levels established for sites posing an imminent threat to health or the environment. Disclaimer provided by Rindt-McDuff Associates - the database information has been obtained from publicly available sources produced by other entities. While reasonable steps have been taken to insure the accuracy of the data, RMA does not guarantee the accuracy of the data. No claim is made for the actual existence of pollution at any site. This data does not constitute a legal opinion.

Date of Government Version: 01/20/2004
Database Release Frequency: Annually

Date of Last EDR Contact: 04/05/2004
Date of Next Scheduled Update: 07/05/2004

Former Manufactured Gas (Coal Gas) Sites: The existence and location of Coal Gas sites is provided exclusively to EDR by Real Property Scan, Inc. (C) Copyright 1993 Real Property Scan, Inc. For a technical description of the types of hazards which may be found at such sites, contact your EDR customer service representative.

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SECTION 3: DATABASES SEARCHED AND UPDATE DATES

...Continued...

POTENTIAL SUPERFUND LIABILITY

PRP: Potentially Responsible Parties
Source: EPA
Telephone: 202-564-6064
A listing of verified Potentially Responsible Parties

Date of Government Version: 04/22/2004
Database Release Frequency: Quarterly

Date of Last EDR Contact: 02/23/2004
Date of Next Scheduled Update: 07/05/2004

CARLSMITH BALL LLP

A LIMITED LIABILITY LAW PARTNERSHIP

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DATE: April 20, 2004

TO: Name	Fax No.	Phone No.
Joe @Vuich	249-2778	

FROM: Tom C. Leuteneker

NUMBER OF PAGES INCLUDING THIS COVER SHEET: 2

CASE NAME: Emmanuel Lutheran Church
CASE NUMBER:

☐ ORIGINAL/COPY WILL BE MAILED ☐ ORIGINAL/COPY WILL NOT BE MAILED

MESSAGE: Attached is list showing chemicals and fertilizers that may have been used on TMK 3-5-02:01.

APR-20-04 08:08am FROM-CARLSMITH BALL MAUI T-723 P.002/004 F-812

WAILUKU AGRIBUSINESS CO., INC.

April 15, 2004

To: Tom Leuteneker, via fax
From: Clayton Suzuki

Subject: Tax Map Key: 3-5-02:01

The following chemicals may have been used during the cultivation of sugarcane on Tax Map Key: 3-5-02:01 in Waikapu.

Active Ingredient:	Brand Name:
Atrazine	Aatrex Nine-O
Ametryn	Evik 80W
2, 4-D	Formula 40
Diuron	Karmex DF
Glyphosate	Roundup
Metribuzin	Sinbar
Hexazinone	Velpar
Glyphosate	Polado

The following fertilizers were used in the cultivation of sugarcane.

Nitrogen
Potassium
Phosphorus
Calcium carbonate

The following chemicals may have been used during the cultivation of pineapple in the Waikapu fields.

Alictte	Ethrel
Amdro	Evik
Diazinon	Hyvar X
Karmex (Diuron)	Velpar DF
Roundup (non crop area)	Atrazine
Fruitone	Nemcur 3

The following fertilizers were used in the cultivation of pineapple.

Nitrogen	Sulfate of Potash
Iron Sulfate	Magnesium Sulfate
Zinc Sulfate	Sulfate of Amonia

Appendix C:

Qualifications of Environmental Professionals

Vuich Environmental
Consultants, Inc.

STATEMENT OF QUALIFICATIONS

for

Joseph W. Beaulieu, B.A.

Company Position Environmental Technician

Responsibilities and Duties:

- Phase I & II Environmental Site Assessments/Investigations
- Phase III Environmental Remediation Projects
- Underground Storage Tank (UST) Closures
- Erosion Control Management
- Indoor Air Quality Investigations
- Erosion Control Plan (BMP) Development
- Hazardous/Regulated Waste Management

Experience:

- Environmental Site Assessments
- Disaster Preparedness drills - GIS
- Cartographer – American Automobile Association
- 14 years with the State of New York Mapping and GIS program

Training & Education

- Bachelor of Arts, Environmental Science and Geography (double major), Planning (minor), Mapping Science (minor), Plattsburgh State University College, Plattsburgh, New York. 1986
- GIS Graduate course work, State University at Albany, New York
- GPS training

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(808) 682-1611 Phone • (808) 682-1616 Fax • Inter-Island: (800) 572-1165 • www.vuichenvironmental.com

Vuich Environmental
Consultants, Inc.

STATEMENT OF QUALIFICATIONS

for

Jeffrey E. Kermode, B.A., B. Tech.

Company Position Vice President / Environmental Projects Manager

Responsibilities and Duties:

- Phase I & II Environmental Site Assessments/Investigations
- Phase III Remediation Projects
- Underground Storage Tank (UST) Closures
- Asbestos Inspections, Air Monitoring and Supervision of Removal
- Lead-Based Paint Inspections, Risk Assessments and Supervision of Removal
- Indoor Air Quality Investigations and Mold Remediation Project Management
- Erosion Control Plan (BMP) Development
- Site Safety Officer for Sampling/Remediation Projects

Experience:

- Soil and Groundwater Investigations/Remediation
- UST Removal and Closure
- Hazardous Materials Management
- Asbestos and Lead-Based Paint Projects (Inspections, Monitoring, Removal)
- Air Quality Sampling for Particulate and Microbiological Contaminants
- Wetland Delineation
- Erosion Control and Pollution Prevention Planning and Implementation for Large Scale Construction Projects
- Underground Injection Control (UIC) Permitting
- Environmental Report Writing and Compilation
- Conducted On-Site Oil Spill Response Training Courses, Assessed Clients' Response Preparedness, and Assisted in the Development of Oil Spill Contingency Plans
- Oil Spill Clean-Up Operations
- Pelagic and Coastal Fisheries Research as a Scientific Observer

Training & Education

- Bachelor of Technology, Environmental Engineering, B.C.I.T. Burnaby, B.C., 1999
- Bachelor of Arts, Geography, University of B.C., Vancouver, Canada, 1989
- AHERA (Asbestos Hazard Emergency Response Act) Inspector for Asbestos, US EPA Certified
- AHERA Asbestos Contractor Supervisor, US EPA Certified
- AHERA Project Monitor for Asbestos, US EPA Certified
- OSHA HAZWOPER Certification (40 Hr)
- On-Scene Incident Commander Certification (24 Hr), US EPA Certified
- Lead-Based Paint Inspector, US EPA Certified
- Lead-Based Paint Risk Assessor, US EPA Certified
- Lead-Based Paint Contractor Supervisor, US EPA Certified

6-03

Maui (Main) Office: 1498 Lower Main Street, Suite C, Wailuku, Maui, Hawaii 96793 • (808) 249-2777 Phone (808) 249-2778 Fax
Oahu Office: Hanua Industrial Complex, 91-110 Hanua Street, Unit 317, Kapolei, Oahu, Hawaii 96707
(808) 682-1611 Phone • (808) 682-1616 Fax • Inter-Island: (800) 572-1165 • www.vuichenvironmental.com

Vuich Environmental
Consultants, Inc.

JOHN S. VUICH
President & CEO

STATEMENT OF QUALIFICATIONS:

M. S. Geological Engineering, University of Arizona
B. S. Geological Engineering, University of Arizona
Registered Geologist (California)
Registered Environmental Assessor (California)
Certified Environmental Manager (Nevada)

AREAS OF EXPERTISE

ENVIRONMENTAL

- Site Assessments, Phase I, II, III Investigations
- Underground Storage Tank Closure
- Asbestos Inspection and Monitoring, Management Planning, and Abatement Project Design and Removal
- Lead-Containing Paint Surveys and Inspections, and Disturbance Design and Removal
- Site Characterization for Remedial Investigations
- Facility Operation Compliance Audits-ISO 14000 Audits
- Soils/Groundwater Remediation
- Hazardous Waste Management
- Risk Assessment Investigations
- RCRA Compliance and Closure Projects
- Expert Witness/Litigation Support
- Industrial Hygiene Qualified/Competent Person
- Mold/Fungi Sampling, Remediation and Abatement Design and Removal

GEOLOGICAL

- Hydrogeology
- Geologic Hazards Analysis
- Landuse Planning
- Subsurface Excavations and Drilling Investigations and Sampling

MANAGEMENT

- Program Director - Project Management
- Client - Agency Liaison
- Field Supervision - Administrative Supervisor

Maui (Main) Office: 1498 Lower Main Street, Suite C, Wailuku, Maui, Hawaii 96793 • (808) 249-2777 Phone (808) 249-2778 Fax
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(808) 682-1611 Phone • (808) 682-1616 Fax • Inter-Island: (800) 572-1165 • www.vuichenvironmental.com

RELEVANT EXPERIENCE

Owner-President • Vuich Environmental Consultants, Inc.
Wailuku, Maui, and Honolulu, Oahu • (March, 1994 - Present)
Consulting services and project management for Abatement / Remediation Projects property transfers, sampling and site characterization plans, hazardous and toxic waste management, underground storage tanks, regulatory compliance, landfill sites, site remediation and closure plans, permit applications, litigation support, feasibility planning and contingency and emergency response plans.

Director • CEO Haztech Enviro-Systems
Tucson, AZ • July 1988 - February 1994)
Founder of professional environmental engineering and geological consulting firm. Services included site assessments, site contamination characterizations, facility audits, RCRA closure investigations and hazardous/regulated waste management, remediation projects, and asbestos surveys. Prepared regulatory documentation and permitting for Federal, State and local regulatory agencies on all projects. Supervised professional, technical, sales and administrative/clerical staff.

Project Engineer • Hazchem Environmental Services
Tucson, AZ • March 1987 - June 1988
Performed and supervised RCRA remedial projects and waste management projects.

Independent Consultant Geologist
Laguna Hills, CA and Tucson, AZ • 1982 - 1987
Conducted geological investigations in western United States and Mexico. Performed geochemical sampling and geologic mapping. Prepared technical reports for clients and regulatory agencies.

Environmental/Geotechnical Section Supervisor • TRW: Systems Engineering
Redondo Beach, CA • 1978 - 1981
Directed environmental project management for Department of Defense and Department of Energy related projects in Western U.S. Project, including site selection, planning and environmental impact statements. Supervised staff consisting of geologists and environmental scientists.

Assistant Geologist • Arizona Geological Survey
Tucson, AZ • 1972-1978
Participated in environmental impact studies, geologic hazards analysis, landuse planning. Author of several landuse planning technical publications.

Project Geologist and Staff Geologist • Various Geological Consulting & Mining Companies
Southwestern United States • 1968-1972
Performed geochemical sampling, subsurface investigations including drilling, mineral property valuation and geologic mapping. Prepared geologic reports and maps.

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OTHER CERTIFICATIONS, TRAINING AND SECURITY CLEARANCES

- Asbestos & Demolition Contractor (C-19, C-24) **HI LIC #21212**
- Certified Hazardous Materials First Responder, FEMA and Arizona Division of Emergency Services.
- OSHA Hazmat Worker and Supervisor
- Accredited Asbestos Building Inspector, Asbestos Contractor/Supervisor, Project Monitor, and Asbestos Abatement Project Designer.
- Accredited Lead Inspector and Lead Contractor Supervisor
- Continuing Education in Hazardous Materials Management, Environmental Studies and Environmental Regulations: 628 Classroom Hours since 1987 - Arizona State University, Tempe, AZ, Pima Community College, Tucson, AZ., & The Environmental Training Center Tucson, AZ.
- Security Clearance: Department of Defense, **TOP SECRET** (1980)
- Licensed Private Pilot - 1400 Hours, Single Engine, Land

Maui (Main) Office: 1498 Lower Main Street, Suite C, Wailuku, Maui, Hawaii 96793 ● (808) 249-2777 Phone (808) 249-2778 Fax
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Appendix D:

Acronyms and Abbreviations

Abbreviation	Definition
AST	Aboveground Storage Tank
AHERA	(Federal) Asbestos Hazard Emergency Response Act
ASTM	American Society for Testing and Materials
BACT	Best Available Control Technology
BLM	Bureau of Land Management
BTEX	Benzene, Toluene, Ethylbenzene, and Xylenes
CAA	Clean Air Act: Regulates Air Quality
CAMU	Corrective Action management Unit
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act: Federal Superfund for Cleanup of Environmental Contamination (1980, 1986)
CERCLIS	CERCLA Information System (data base)
CESQG	Conditionally Exempt SQG: Hazardous Waste Generator less than 100 kg/mo.
C.F.R.	Code of Federal Regulations: National Standard Regulations
COLIWASA	Composite Liquid Waste Sampler
CRC	Chlorofluorocarbon
CMU	Concrete Masonry Unit
CWA	Clean Water Act: Regulates Water Quality (1972, 1987)
CZMA	Coastal Zone Management Act
DLNR	Department of Land and Natural Resources
DOT	Department of Transportation: Administers hazardous Waste Containers-Marking-Labeling-Placarding and Transportation Procedures.
DOH	Department Of Health (State Of Hawaii)
DRASTIC	EPA Standardized System for Evaluating Groundwater Pollution Potential Using Hydrogeologic Settings.
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency: Administers CERCLA, RCRA and SARA
FID	Flame Ionization Detector
FIFRA	Federal Insecticide, Fungicide and Rodenticide Act: Regulates Pesticides (1972, 1988)
FSP	Field Sampling Plan
FWPCA	Federal Water Pollution Control Act
HAP	Hazardous Air Pollutant
HCS	(OSHA) Hazard Communication Standard
HSWA	(Federal) Hazardous and Solid Waste Amendments of 1984
LEL	Lower Explosive Limit
LQG	Large Quantity Generators; Hazardous Waste Generator in Excess of 100 kg/mo.
LUST	Leaking Underground Storage Tank.
MCL	Maximum Contaminant Level
MCLG	Maximum Contaminant Level Goal
MSDS	Material Safety Data Sheets: Hazard Information Required for Chemical Substances by OSHA
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NESHAP	National Emission Standards for Hazardous Air Pollutants (Under CAA Regulations)
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
O&M	Operating and Maintenance
OCS	Outer Continental Shelf
OSHA	Occupational Safety and Health Act: Established Hazard Communication Program and Employee Right-to-Know Law (1970)
OVA	Organic Vapor Analyzer
PCB	Polychlorinated Biphenyls: Toxic Substance Used in Electric-Device Cooling.
PCi/l	Picocuries Per Liter
PEL	Permissible Airborne Exposure Level
PID	Photoionization Detector
POTW	Publicly Owned Treatment Works

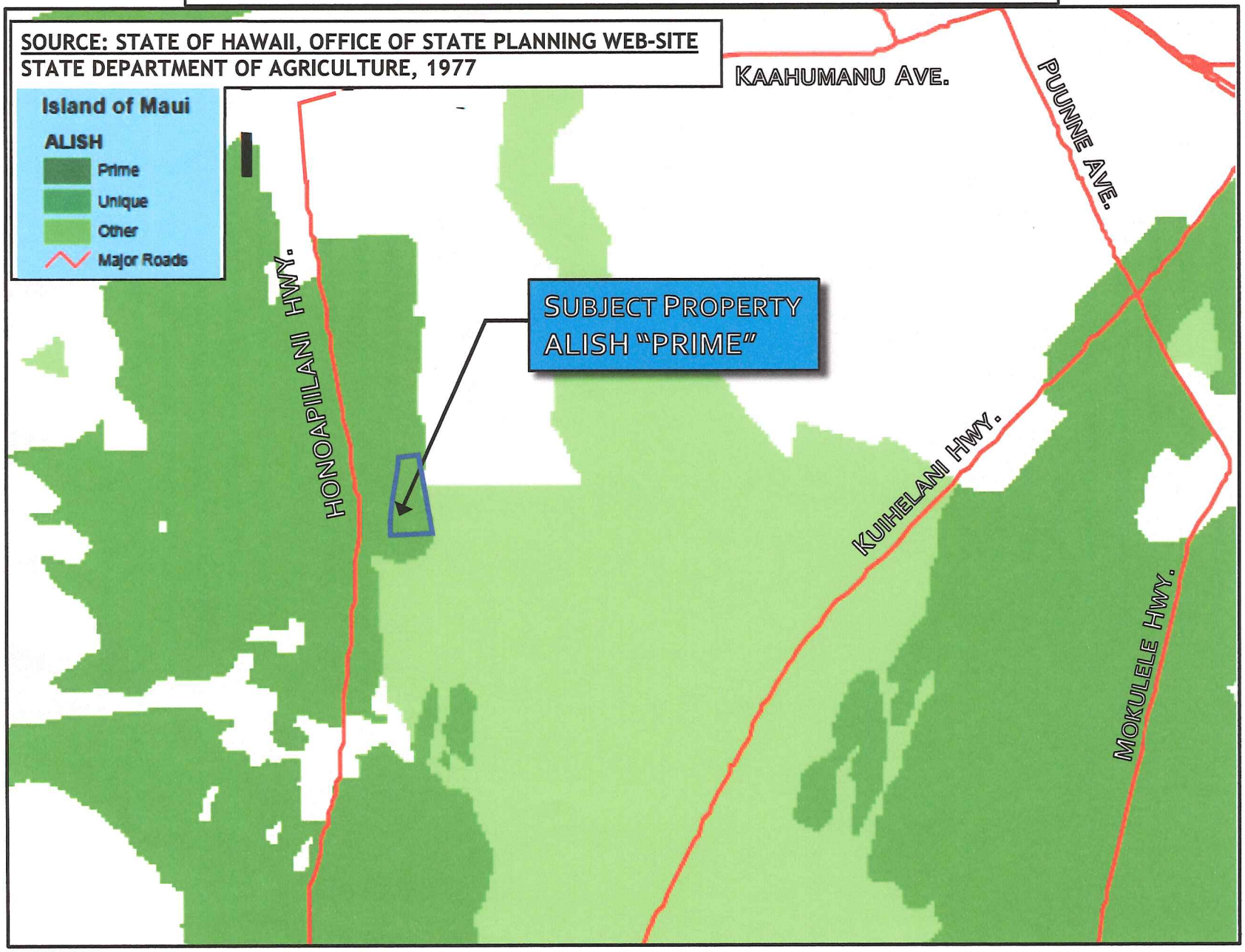
ppb	parts per billion
ppm	parts per million
PWP	Project Work Plan
PRPs	Potentially Responsible Parties
QA/QC	Quality Assurance/Quality Control
QAPP	Quality Assurance Project Plan
RBCA	Risk Based Corrective Action and Decision-Making at Sites with Contaminated Soil and Groundwater. (Hawaii DOH)
RCRA	Resource Conservation and Recovery Act: Federal Hazardous Waste Management Law. Regulates Waste Generation, Transportation, Treatment, Storage or Disposal Sites (1976, 1984)
RQ	Reportable Quantity
RUST	Registry of Underground Storage Tanks
SAP	Sampling & Analysis Plan
SARA	Superfund Amendments and Reauthorization Act: Amends CERCLA and includes Community Right to Know Law. Requires facilities report their chemical inventories and emissions (1986).
SDWA	Safe Drinking Water Act: Establishes maximum contaminant levels for drinking water (1974, 1986).
SHSP	Site Health & Safety Plan
SIC	Standard Industrial Classification
SIP	State implementation plan
SPCC	Spill Prevention Control and Countermeasure
SQG	Small Quantity Generator: Hazardous Waste Generator between 100-1000 kg/mo.
TCLP	Toxicity Characteristic Leaching Procedure: A toxicity test for certain substances declared hazardous by the EPA.
TMK	(Hawaii) Tax Map Key
TPH	Total Petroleum Hydrocarbons
TPQ	Threshold Planning Quantity
TSCA	Toxic Substances Control Act: Regulates PCBs in electrical devices and chromium in evaporative cooling towers, asbestos in schools. (1976)
TSD	Treatment, Storage, and Disposal
UEL	Upper Explosive Limit
UIC	Underground Injection Control
USGS	United States Geological Survey
UST	Underground Storage Tank
VOA	Volatile Organic Analyses
VOC	Volatile Organic Compound: EPA listed toxic or carcinogenic organic substances.
Minimal, Minor or Not Significant	1) An unlikely or remote event, i.e., possible, but not anticipated under current conditions and observed features. 2) Insignificant when compared to regulatory acceptance levels, guideline action levels or when compared to background and/or baseline conditions of the local environment. 3) Any potential effect or impact attributed to the subject factor may be considered as the least likely source among a number of potentially responsible factors. 4) Any potential effect may not be measurable or detected by current technology. 5) Education, experience, and background of the investigator were utilized to conclude the situation or condition as trifle.

Appendix O

ALISH MAP

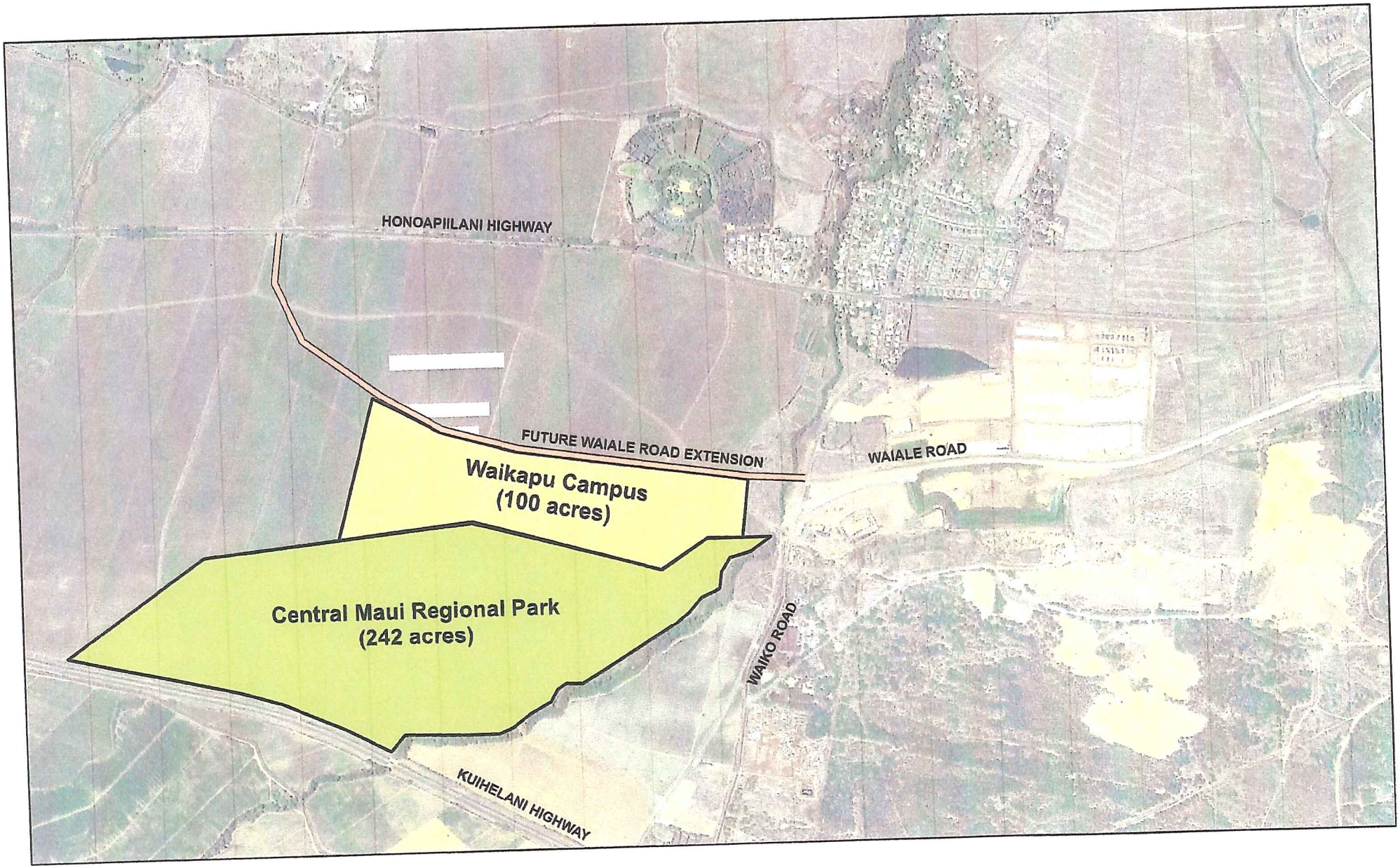
AGRICULTURAL LANDS OF IMPORTANCE TO THE STATE OF HAWAII ("ALISH")

PROPOSED 201-H AFFORDABLE HOUSING PROJECT
WAIKAPU, MAUI, HAWAII
TAX MAP KEY: (2) 3-5-002: 12 (portion)



Appendix P

Maui County's Proposed Central Maui Regional Park


HONOAPIILANI HIGHWAY
FUTURE WAIALE ROAD EXTENSION
WAIALE ROAD
Waikapu Campus
(100 acres)
Central Maui Regional Park
(242 acres)
WAIKO ROAD
KUIHELANI HIGHWAY

Appendix Q

Archaeological Monitoring Plan

DRAFT ARCHAEOLOGICAL MONITORING PLAN FOR THE PROPOSED WAIʻALE AFFORDABLE HOUSING PROJECT WAIKAPŪ *AHUPUA'A*, WAILUKU DISTRICT, PŪʻALI KOMOHANA *MOKU* ISLAND OF MAUI TMK [2] 3-5-002:012 pors.

FOR: Waiʻale Road 201, LLC

BY: Lisa J. Rotunno-Hazuka (B.A.)

JANUARY 2016

ARCHAEOLOGICAL SERVICES HAWAII, LLC.

POB 1015

PUʻUNĒNĒ, HI 96784

"Protecting, Preserving, Interpreting the Past, While Planning the Future"

INTRODUCTION

At the request of Wai`ale Road 201, LLC, and pursuant to past recommendations by the State Historic Preservation Division (SHPD) and the Archaeological Assessment (AA), Archaeological Services Hawaii, LLC (ASH) of Pu`unēnē has prepared this Archaeological Monitoring Plan (AMP) according to the rules and regulations set forth in the Hawaii Administrative Rules (HAR) §13-279. Monitoring will be performed for all ground-disturbing activities associated with the proposed subdivision located off Waiale Road, Waikapū *ahupua'a* and District, Pū`ali Komohana *Moku*; Island of Maui, TMK [2] 3-5-002:012 pors (Figures 1-4).

The proposed improvements consist of the construction of an affordable residential subdivision with roadways, utilities and infrastructure (see Figure 3). Proposed excavations will range from 2.0 to 8.0 ft. deep and will occur within disturbed and original sand and soil matrices.

PROJECT AREA DESCRIPTION

The project area, comprised of 10.5 acres, is located along the isthmus of Central Maui within remnant inland sand dunes. It is adjacent and *mauka* (west) of Waiale Road within the eastern half of Parcel 12. The western half is planned for the Valley Isle Fellowship. The project area is bound to the north by an undeveloped lot, Parcel 11, to the south by Kokololio Street, to the east by Waiale Road, and to the west by a sewer line and a partially developed lot for Valley Isle Fellowship. The subject area has undergone compounded disturbances from past agricultural activities (sugar cane cultivation and individual farm plots) and sand mining operations.

An AA was performed of Parcel 11 and Parcel 12 (current project area) in 2004 for the then proposed Emmanuel Lutheran Church (Parcel 11) and Valley Isle Fellowship (Parcel 12) under former TMK 3-5-002: 001 pors. A total of 24 trenches were executed, five of which were undertaken within the project area and were negative for cultural materials and human remains (see Figure 4). Although no historic properties or burial sites were documented during the AA, several Native Hawaiian burial sites and secondary deposits of skeletal remains have been documented along and in close proximity to Waiale Road. Along Kuikahi Avenue extension (just north of the project) and adjacent to Kihei Nursery (across Waiale to the east from the subject area), numerous burial features and scatters of human

remains (Sites 5556, 6060, 6261 and 6573) were documented within the VMX (C/R) and VMX (R) subdivisions within Maui Lani landholdings (see Figure 1).

EXPECTABILITY OF SUBSURFACE SITES

Based on the foregoing information, the subject parcel is within an area known to contain traditional burial sites. However due to the varied disturbances across the project area; remnant burial features and secondary deposits of human remains may be extant. Thus all ground disturbing activities related to construction will be monitored full time.

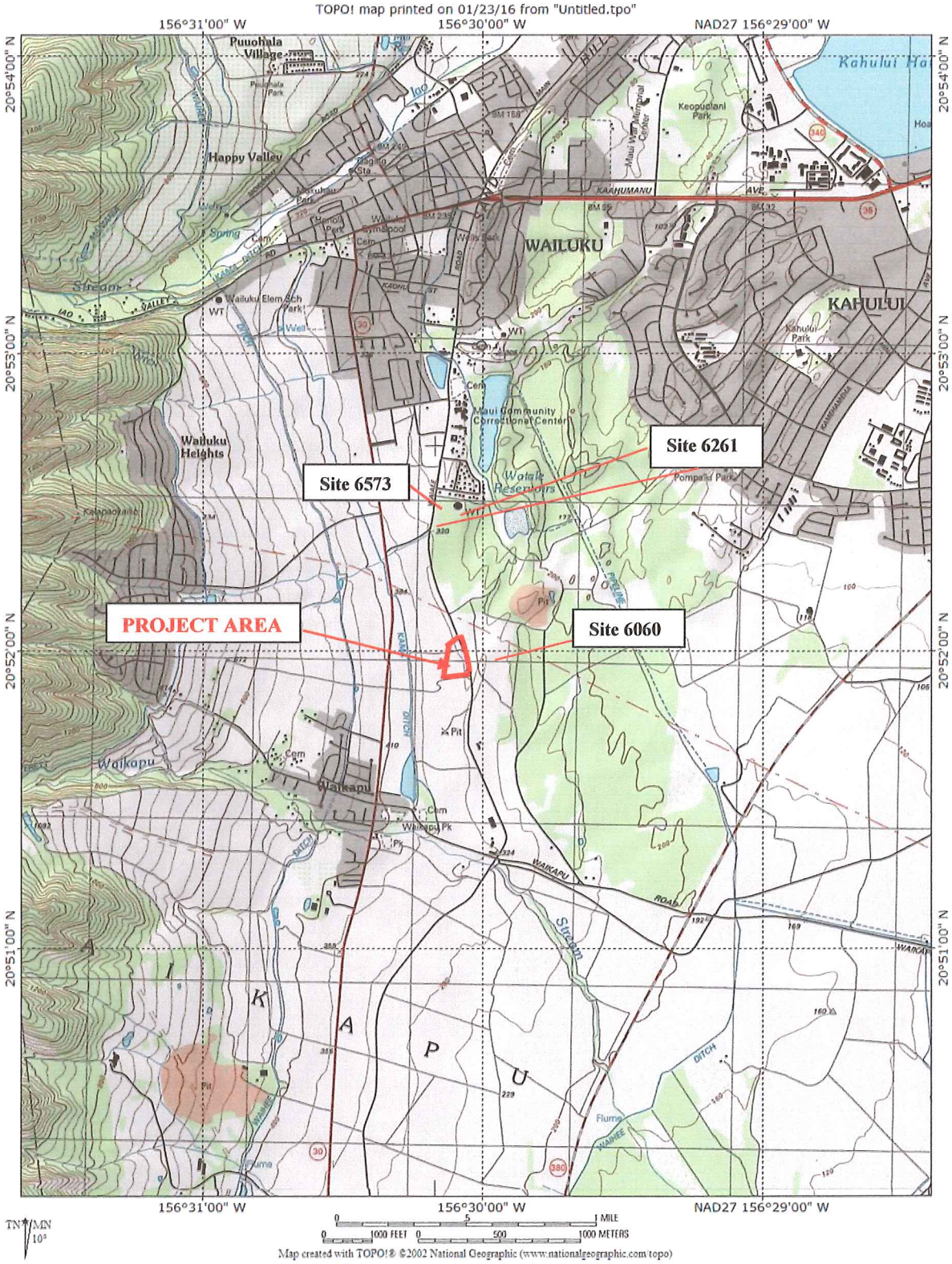


Figure 1. USGS Quadrangle Map Showing Location of Project Area (red) Burial Sites in Close

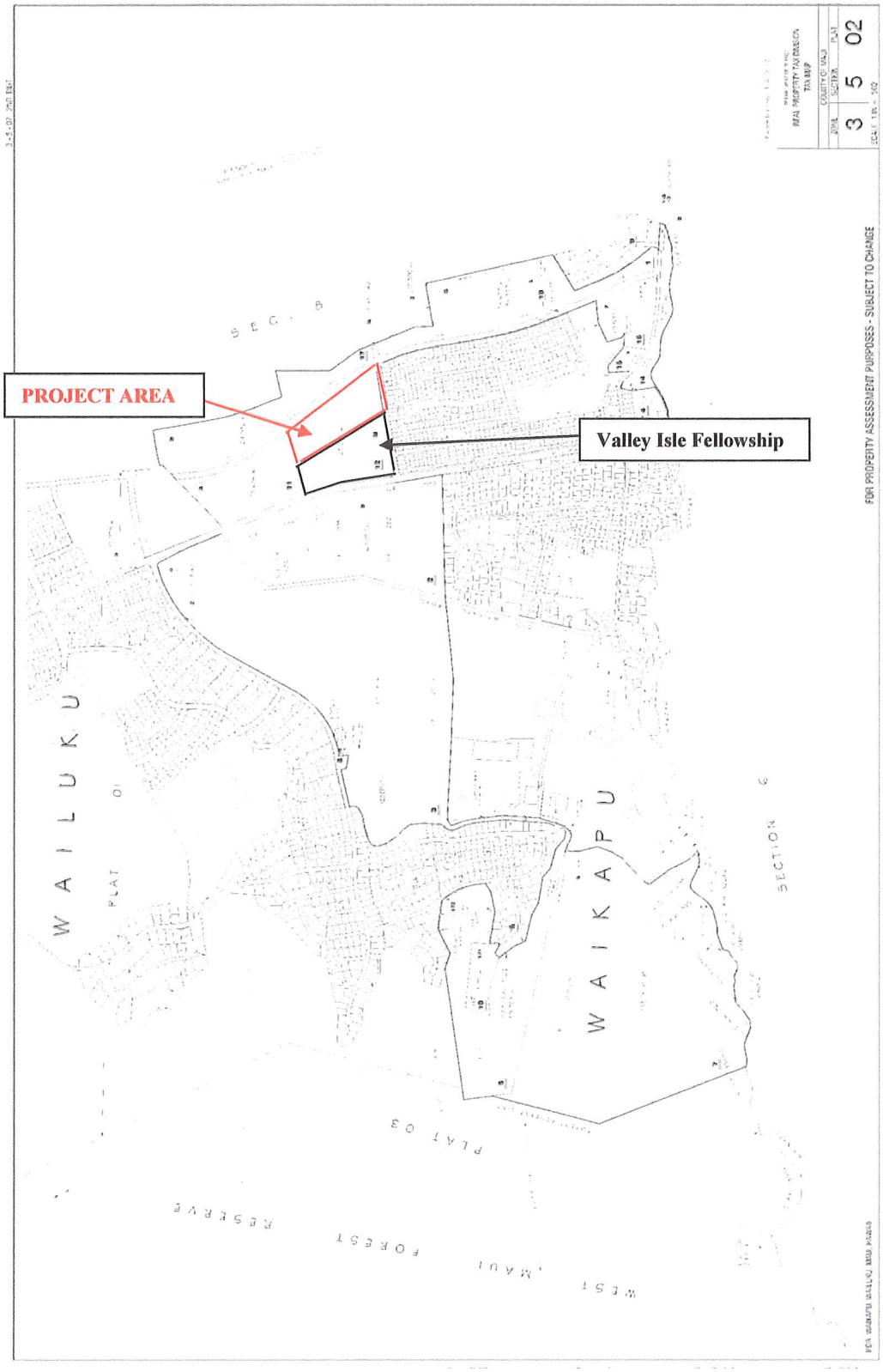


Figure 2. Location of Project Area (red) within Parcel 12 on TMK Map 3-5-002

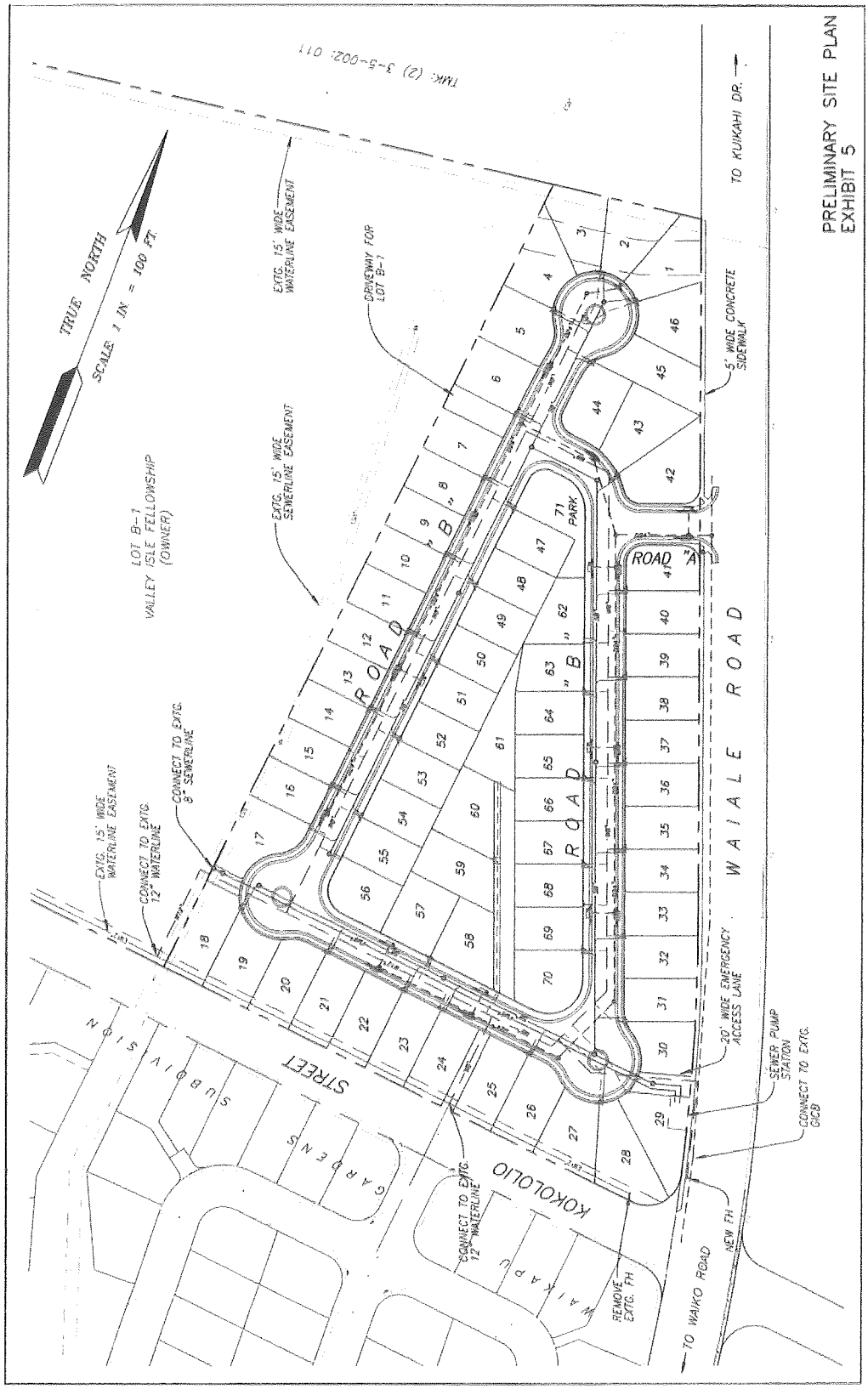


Figure 3. Proposed Residential Subdivision

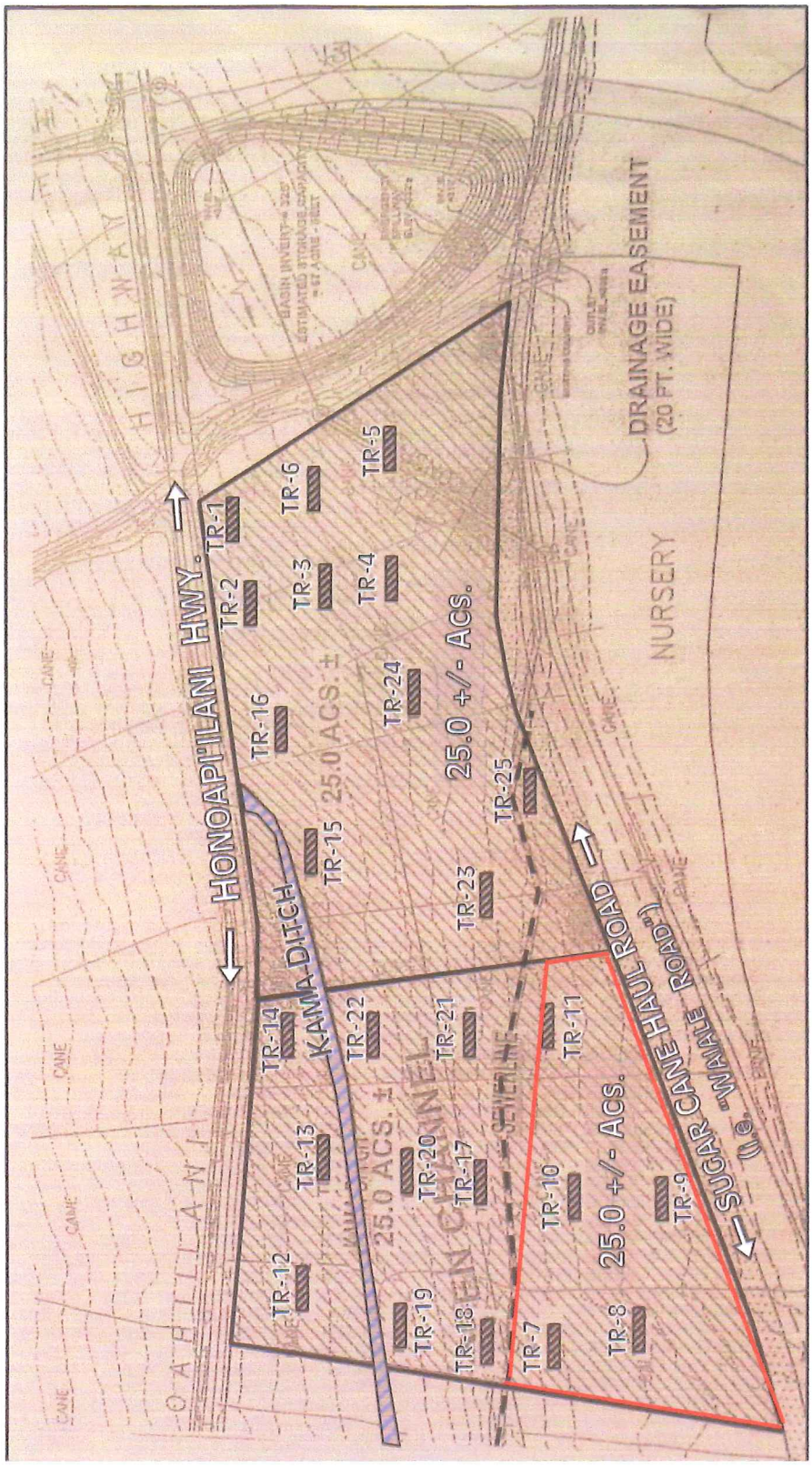


Figure 4. Topographic Map Showing Project Area (red) and Trenches 1-24 from Archaeological Assessment (from Guerriero et. al. 2004)

MONITORING PLAN

The construction plans call for excavations ranging from 2.0 to 8.0 ft. deep and all ground-altering activities will be monitored full-time. In the event that excavations are within bedrock or the water table, monitoring procedures may be suspended; however no changes may be made without consultation and approval by SHPD via telephone and or in writing. SHPD will also be notified of the onset and completion of the proposed undertaking.

One archaeological monitor per piece of ground-disturbing equipment is the protocol for this monitoring project. Dependent on availability, Maui resident archaeologists will be assigned to this project. Prior to the commencement of construction, all pertinent parties including but not limited to construction and archaeological personnel will be informed of the monitoring procedures as stipulated in this monitoring plan, including the monitors' authority to halt work in the vicinity of a find. If subsurface sites are exposed during construction, the procedures for the inadvertent discovery of historic properties pursuant to HAR §13-280 and §13-279 (5)-(6) will be instituted. These procedures include but are not limited to the following steps. If archaeological sites or suspicious anomalies are identified during construction, temporarily halt ground-disturbing activities in the immediate area of the find and project activities may shift to other localities of the project. Once the archaeologist makes an assessment, they will then consult with SHPD to determine the appropriate mitigation measures for the find. The area around the site shall be protected by erecting orange fencing or yellow caution tape. The site will be recorded utilizing all standard archaeological methods and procedures. Stratigraphic profiles will be drawn, photographs will be taken, and soil samples collected not only from the subsurface site, but from selected locations within the project area. During nighttime work, the archaeological monitor has sole discretion to determine if lighting is adequate to perform visual inspections of the soil.

If historic bottles are found they are to be collected by the archaeologist. No bottles may be collected or taken by any construction worker. In the event that human remains are inadvertently exposed during this undertaking, the procedures for the inadvertent discovery of human skeletal remains pursuant to HAR §13-300-40 will be instituted. First, the aforementioned procedures of halting and securing the site will be performed. After an initial assessment is made by the Maui Burial Sites Specialist of SHPD, and in consultation with members of the Maui/Lana'i Islands Burial Council-MLIBC (if the remains are

believed to be Native Hawaiian), procedures for documenting the burial find shall be undertaken. These mitigation measures may include mapping and collecting displaced human skeletal remains after authorization from SHPD, raking and screening of the spoil piles and manual controlled excavations to ascertain the context (*in situ* or displaced) and number of individuals represented by the skeletal remains. Additional documentation comprised of osteological inventory forms, plan view maps and SHPD notification forms will also be completed.

After the above referenced procedures have been performed, a Burial Component of an Archaeological Preservation Plan (BCPP) for burial(s) to be preserved in place, and or a Burial Component of an Archaeological Data Recovery Plan (BCDRP) for burial(s) that will be disinterred and relocated, will be prepared in consultation with the owner, SHPD and the MLIBC (if the remains are believed to be Native Hawaiian).

POSSIBLE PROCEDURES FOR INADVERTENLY DISCOVERED HUMAN SKELETAL REMAINS

Potential procedures for exposed skeletal remains and possible burial pit outlines are presented below.

1. Upon the identification of scattered or fragmented human remains, possible burial pits, and or basalt and coral manuports, all construction activities in the immediate area of the find will be temporarily suspended.

2. SHPD and the MLIBC geographic representative shall be notified.

3. Identify the perimeter of the avoidance area with yellow caution tape, and or orange construction fencing and if applicable, cover exposed skeletal remains to protect them from the elements.

4. Inspect trench walls and base of trench to identify if a primary burial feature is extant. If present, notify SHPD and request permission to test the possible burial feature. Once authorization has been received, conduct the necessary testing and documentation to ascertain the context.

5. Manually rake and screen (if applicable) bulldozed or other mechanically produced push piles to collect all disturbed and fragmented skeletal remains.

6. Complete an osteological inventory of the collected remains to determine the number of individuals and if components may be left *in situ* or missing.

7. Fill out all test excavation and burial forms and cover burial feature with a thin layer of sand (if SHPD and MLIBC have seen the feature) and tarp.

Upon completion of the fieldwork, all necessary lab procedures including but not limited to processing, cataloguing and analyses of artifacts and photographs; analyses of soil samples as warranted and submitting of charcoal samples for radiocarbon dating will be performed. All analyses will be synthesized into a final monitoring report, and the report will be submitted to SHPD for their review and comments. All notes, photographs and artifacts will be archived at the Consulting Archaeologists office. After analysis of the artifacts is completed, all artifactual material, with the exception of grave goods, will be returned to the landowner.

Appendix R

Landscape Plan

TMK:(2)3-5-002:012

HAWAII LAND DESIGN
LANDSCAPE ARCHITECTS
LAND PLANNERS, LLC
2331 W. MAIN STREET
WAILUKU, MAUI, HI 96793
TELEPHONE: 808-249-2803
WWW. bmitchell@hawaiilanddesign.com

LANDSCAPE CONCEPT PLAN

WAIALE AFFORDABLE

SCALE: 1"=50'-0"

DATE: 3-28-16

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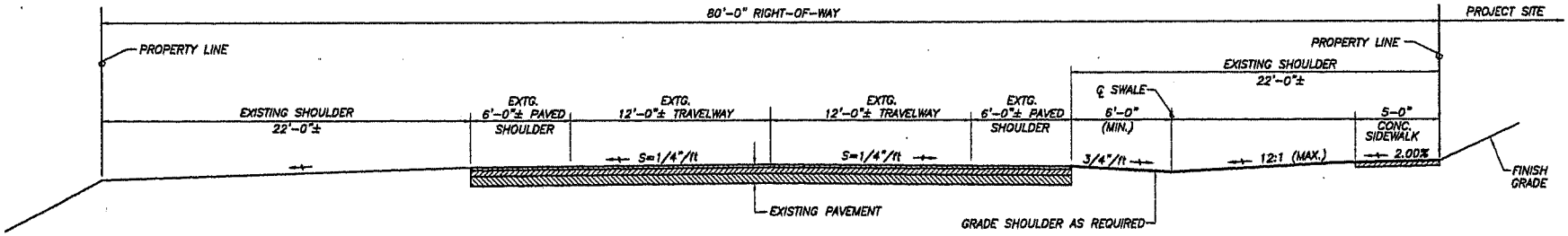
Appendix S

Typical Section For Waiale Road Sidewalk Improvements Fronting Project Site



TYPICAL SECTION – WAIALE ROAD (80 FT. RIGHT-OF-WAY)

NOT TO SCALE