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SEP - 8 2013

LEE SICHTER LLC
45024 MALULANI STREET #1, KANEOHE, HAWAII 96744
PH. (808) 382-3836; FAX. (808) 234-0872; WEB. WWW.LEESICHTER.COM

August 19, 2013

Mr. Gary Gill
Office of Environmental Quality Control
State of Hawai`i
235 S. Beretania Street, Room 702
Honolulu, Hawai`i 96813

Mr. George Atta, AICP, Director
Department of Planning and Permitting
City and County of Honolulu
650 S. King Street, 7th Floor
Honolulu, Hawai`i 96813

'13 AUG 19 A11:06
OFC. OF ENVIRONMENTAL QUALITY CONTROL
RECEIVED

Dear Mr. Gill and Mr. Atta:

Simultaneous Filing of
Final Supplemental Environmental Impact Statement
For Turtle Bay Resort Expansion

On behalf of Turtle Bay Resort, LLC, I hereby transmit the documents package for the Final Supplemental Environmental Impact Statement (SEIS) for the proposed Turtle Bay Resort Expansion project. The proposed action is situated on property identified as TMK 5-6-003: por. 3, por. 10, por. 17, por. 26, 33, 40-42, 44, 46, 48 - 52; 5-7-001:1, 16, 17, 20, 22, 30, 31, 33; 5-7-003:72; and 5-7-006:1, 2, 22, 23. It is located in the district of Ko`olau Loa on the island of O`ahu.

Enclosed are three printed copies and one digital copy for the Department of Planning and Permitting (as requested by Deputy Director Arthur Challacombe on July 24, 2013), and two printed copies and one digital copy for the Office of Environmental Quality Control (as specified on page 80 of the *Guide to Implementation and Practice of the Hawaii Environmental Policy Act (2012 Edition)*).

Also enclosed is a distribution list for the verification of OEQC under Section 11-200-20, Hawai`i Administrative Rules. Upon receiving verification from OEQC (along with the bulletin proof of the notice containing pertinent details for commenters), we will make the Final Supplemental EIS and the bulletin proof available to those indicated on the distribution list. Please note that we will distribute the Final SEIS in digital format only, in keeping with the State's "paperless" policy, to all consulted parties who have supplied a mailing address. Others will be able to access the Final SEIS on line at either the OEQC or TBR website.

Finally, enclosed is a completed OEQC Publication Form in both printed and electronic versions. Simultaneously with this letter, we have submitted the summary of the action in a text file by electronic mail to the OEQC.

If you have any questions or require any additional information, please call me at 382-3836.

Very truly yours,
LEE SICHTER LLC

Lee Sichter

Attachments

cc: D. Stotesbury
R. Sakamoto

Publication Form
The Environmental Notice
Office of Environmental Quality Control

Instructions: Please submit one hardcopy of the document along with a determination letter from the agency. On a compact disk, put an electronic copy of this publication form and a PDF of the EA or EIS. Mahalo.

Date:	August 16, 2013
Title of Action:	Proposed Expansion of Turtle Bay Resort
Type of Document:	Supplemental Final Supplemental EIS
Name of Project:	Turtle Bay Resort Expansion
Type of Document:	Final Supplemental EIS
Name of Applicant:	Turtle Bay Resort, LLC
Address:	57-091 Kamehameha Highway
City, State, Zip:	Kahuku, Hawai`i 96731
Contact and Phone:	Mr. Drew Stotesbury, (808) 447-6951
Consultant:	Lee Sichter LLC
Address:	45024 Malulani Street #1
City, State, Zip:	Kane`ohe, Hawai`i 96744
Contact and Phone:	Lee Sichter, (808) 382-3836
Approving Authority:	Department of Planning and Permitting
Address:	650 South King Street, 7th Floor
City, State, Zip:	Honolulu, Hawai`i 96813
Contact and Phone:	Ms. Sharon Nishiura, (808) 768-8031
Island Affected by Action:	O`ahu
TMK:	5-6-003: por. 3, por. 10, por. 17, por. 26, 33, 40-42, 44, 46, 48-52; 5-7-001:1, 16, 17, 20, 22, 30, 31, 33; 5-7-003:72; 5-7-006:1, 2, 22, 23
Street Address:	Turtle Bay Resort, 57-091 Kamehameha Highway, Kahuku, Hawai`i 96731
Nearest Geographical Landmarks:	Turtle Bay & Kahuku Point

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Latitudinal/Longitudinal Coordinates: Latitude 21.41.51.3162; Longitude -157.59.32.2146

Statutory/Administrative Authority: Chapter 343, HRS & Section 11-200-26, Hawaii Administrative Rules

Project Summary:

This document supplements the Kuilima Resort 1985 Revised Final EIS to address current plans to expand the existing Turtle Bay Resort. The Proposed Action represents an over 60% reduction in density from the 1985 EIS. It limits new hotel development to two new hotels, totaling 625 units, centrally located near the existing hotel; a 75% reduction in the number of hotel units proposed in 1985. It includes 590 new resort-residential units; 160 community housing units that will be priced to be affordable to residents of the region; 73 acres of park area; 12 new public shoreline access ways; shoreline setbacks in excess of requirements ranging from 150 to 300 feet; a new resort entrance; improvements to Marconi Road; a new Equestrian Center; a Farmers Market; and a low-density resort commercial area called the Gathering Place. Proposed for development over an 11-year period (2014-2025), it will create a cumulative total of over 8,700 construction jobs. The Proposed Action enhances the previously proposed expansion in the 1985 EIS by committing to significantly less density and a more culturally and environmentally sensitive approach to development. The Final SEIS will be posted on the Applicant's website (www.turtlebayseis.com).

Form Preparer: Lee Sichter LLC
Address: 45024 Malulani Street #1
City, State, Zip: Kane`ohe, Hawai`i 96744
Contact and Phone: Lee Sichter, (808) 382-3836

Turtle Bay Resort Expansion FSEIS Distribution List:
Agencies, Libraries, Media, and Elected Officials

1. State of Hawaii, Department of Education, Hawaii State Library, Hawaii Documents Center, 478 South King Street, Honolulu, HI 96813

2. State of Hawaii, Department of Education, Hawaii State Library, Kaimuki Regional Library, 1041 Koko Head Avenue, Honolulu, HI 96813

3. State of Hawaii, Department of Education, Hawaii State Library, Kane`ohe Regional Library, 45-829 Kamehameha Highway, Kane`ohe, HI 96744

4. State of Hawaii, Department of Education, Hawaii State Library, Pearl City Regional Library, 1138 Waimano Home Road, Pearl City, HI 96782

5. State of Hawaii, Department of Education, Hawaii State Library, Hawaii Kai Regional Library, 249 Lunalilo Home Road, Honolulu, HI 96825

6. State of Hawaii, Department of Education, Hawaii State Library, Hilo Regional Library, 300 Waianuenue Avenue, Hilo, HI 96720

7. State of Hawaii, Department of Education, Hawaii State Library, Kahului Regional Library, 90 School Street, Kahului, HI 96732

8. State of Hawaii, Department of Education, Hawaii State Library, Lihue Regional Library, 4344 Hardy Street, Lihue, HI 96766

9. State of Hawaii, Department of Hawaiian Home Lands, P.O. Box 1879, Honolulu , HI 96801

10. State of Hawaii, Department of Health, Environmental Health Administration, P.O. Box 3378, Honolulu, HI 96801

11. University of Hawaii Environmental Center, 2540 Dole Street, Room 283, Honolulu, HI 96822

12. University of Hawaii Thomas H. Hamilton Library, 2550 McCarthy Mall, Honolulu, HI 96822

13. University of Hawaii at Hilo Edwin H. Mo`okini Library, 200 W. Kawili Street, Hilo, HI 96720

14. University of Hawaii Maui College Library, 310 Kaumualii Highway, Kahului, HI 96732

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15. University of Hawaii Kaua`i Community College Library, 3-1901 Kaumualii Highway, Lihue, HI 96766

16. Legislative Reference Bureau Library, State Capitol, 415 S. Beretania Street, Room 005, Honolulu, HI 96813

17. Kahuku Public & School Library, 56-490 Kamehameha Highway, Kahuku, Hawai`i 96731

18. Waialua Public Library, 67-068 Kealohanui Street, Waialua, Hawai`i 96791

19. Kaneohe Public Library, 45-829 Kamehameha Highway, Kaneohe, Hawai`1 96744

20. Honolulu Star Advertiser, Restaurant Row 7, Waterfront Plaza, Suite 210, 500 Ala Moana Blvd., Honolulu, HI 96813

21. Hawai`i Tribune Herald, P.O. Box 767, Hilo, HI 96721

22. West Hawai`i Today, P.O. Box 789, Kailua-Kona, HI 96745-0789

23. The Garden Isle, P.O. Box 231, Lihue, HI 96766

24. Maui News, 100 Mahalani Street, Wailuku, HI 96793

25. Moloka`i Dispatch, P.O. Box 482219, Kaunakakai, HI 96748

26. Honorable Clayton Hee, Senator, District 23, Hawaii State Capitol, Room 407, Honolulu, Hawai`i 96813

27. Honorable Donovan Dela Cruz, State Senator, District 22, Hawaii State Capitol, Room 202, Honolulu, Hawai`i 96813

28. Honorable Marcus Oshiro, State Representative, District 46, Hawaii State Capitol, Room 424, Honolulu, Hawai`i 96813

29. Honorable Richard Fale, State Representative, District 47, Hawaii State Capitol, Room 319, Honolulu, Hawai`i 96813

30. Honorable Ernest Martin, Council District 2, Honolulu Hale, 530 S. King Street, Room 202, Honolulu, Hawai`i 96813

31. U.S. Senator Brian Schatz, 300 Ala Moana Blvd., Room 7-212, Honolulu, Hawai`i 96850

32. U.S. Senator Mazie Hirono, 300 Ala Moana Blvd., Room 3-106, Honolulu, Hawai`i 96850

33. U.S. Representative Tulsi Gabbard, 5-104 Prince Kuhio Bldg., 300 Ala Moana Blvd., Honolulu, Hawai`i 96850

34. U.S. Representative Collene Hanabusa, 300 Ala Moana Blvd., Room 4-104, Honolulu, Hawai`i 96850

35. Chair, Ko`olauloa NB #28, c/o Neighborhood Comm. Office, Honolulu Hale, Room 406, Honolulu, Hawai`i 96813

36. Chair, North Shore NB #27, c/o Neighborhood Commission, Honolulu Hale, Room 406, Honolulu, Hawai`i 96813

Consulted Parties

The following individuals, organizations, and agencies submitted written comments on the Draft SEIS by letter or email. They will be sent a digital copy of the Final SEIS where possible. For those parties who did not provide a mailing address, a copy of the Final SEIS will be posted on the Turtle Bay Website (www.turtlebayseis.com) to facilitate their review of the document.

In addition, several hundred parties signed petitions either supporting or opposing the Proposed Action. The copy of the Final SEIS posted on the Turtle Bay Website (www.turtlebayseis.com) will enable them to review the document if they so choose. (Please note: the following list does not match the list provided in Chapter Eight – Public Outreach of the FSEIS because several parties provided multiple comments and those multiple listings of the same person/organization while included in Chapter Eight have been removed from the list below. In addition, the Maui County Department of Housing has been removed because they were inadvertently sent a copy of the Draft SEIS and they responded that the Proposed Action is outside their jurisdiction.)

	Letters and Emails:
1.	Aaron Efferson
2.	Achintya Paez
3.	Adrian Alvarez
4.	Adriann Gin
5.	Alan Lennard
6.	Alberto Cacal
7.	Alice Lunt
8.	Alison Mitchell
9.	Amy Kimura
10.	Andrea Anixt

11.	Andrea Woods
12.	Angela Breene
13.	Angela Huntemer
14.	Angelina Rommaldo
15.	Ann Becks
16.	Ann Meckelborg
17.	Anonymous
18.	Aukai Ferguson
19.	Beau Sheil
20.	Beth Hyams
21.	Bill Nations
22.	Bill Quinlan 1
23.	Bruce Clark
24.	Bryan Ashlock
25.	Burt Sutherland
26.	Cara Ballard 1
27.	Carol Philips
28.	Carol Silva
29.	Carter Griffin
30.	Cathi Allen
31.	Cathleen Piilani Mattoon
32.	Chelsea Pavone
33.	Chiharu Tsukidate
34.	Chloe B
35.	Choon James 1 20130105 8:51 PM
36.	Chris Bruns
37.	Chris Cramer
38.	Chris Goody
39.	Chris Kraynek
40.	Chris Pirrone
41.	Christina Cummings
42.	Christina Monroe
43.	Christine Bueno
44.	Ciera Molloy
45.	Cindy Gagle
46.	City and County of Honolulu, Board of Water Supply
47.	City and County of Honolulu, Department of Design and Construction
48.	City and County of Honolulu, Department of Facility Maintenance,
49.	City and County of Honolulu, Honolulu City Council, Ernest Y. Martin
50.	City and County of Honolulu, Honolulu Police Dept., Bart Huber
51.	City and County of Honolulu, Department of Parks and Recreation
52.	City and County of Honolulu, Department of Planning and Permitting
53.	City and County of Honolulu, Department of Transportation Services
54.	Clyde S. Tateishi

55.	Colleen Mellor 1 20130107
56.	Creighton Mattoon
57.	Curt Okimoto
58.	Cynthia Stiles 1 20121128 11:08 AM
59.	DahnaRae N. Dudoit
60.	Dali Pyzel
61.	Danna Holck
62.	David Orr
63.	Dawn Nakayama
64.	Dean Hamer
65.	Debbie Aldrich
66.	Deborah Bukala 1
67.	Deborah Driscoll
68.	Dee Dee Letts
69.	Defend Oahu Coalition
70.	Denise Antolini
71.	Diane Anderson
72.	Diga
73.	Dominique Desroches
74.	Don & Judy Cole
75.	Donna Wang
76.	Dorothy Aeto
77.	Dory Andres
78.	Douglas Page
79.	Douglass Cole
80.	Drew Wheeler
81.	Drew Wilkinsen
82.	Dylan Portillo 1 20130101
83.	E. Jerry Jones
84.	Earline Iaea
85.	Edmont D'Ascoli
86.	El Seeley
87.	Eliza Kaka
88.	Elizabeth Willsey
89.	Elsye Lewin 1
90.	Emiko Donnelly
91.	Enterprise Honolulu, Pono Shin
92.	Environmental Center, University of Hawaii, David Penn
93.	Evelyn Lane
94.	Friends of Kewalos, Ronald Iwam
95.	Gary Hong
96.	Gary Nagy
97.	Gayl Loose 1 20130103 9:18 AM
98.	George Cox

99.	Ginger Lunt
100.	Gopal Butler
101.	Grace Kamae
102.	Hawaii Construction Alliance, Tyler Dos Santos-Tam
103.	Hawaiifish
104.	Hawaii's 1000 Friends
105.	Henry Matson and Elizabeth Lacy
106.	Hina Norey
107.	Ian Cooke
108.	Ian Hoskins
109.	Ikaika Lowe
110.	Ilona Hemperly
111.	J.E. Yarborough
112.	Jacqueline Leinau
113.	James Donnelly, Jr
114.	James O'Shea
115.	Jan Olson
116.	Janna Plant
117.	Jay Hayden
118.	Jay Iranon
119.	Jean and Mark Martinson
120.	Jeff Compoc
121.	Jennifer Ching
122.	Jennifer Davidson
123.	Jennifer Scelfo-Jones
124.	Jesse Ryan Kawela Allen 1 20121226
125.	Jessica dos Santos
126.	Jim Blattau & Sue Cortes
127.	Jim Frisbie
128.	Jim Hebert
129.	Joan Gossett
130.	Joanne Amberg
131.	Jodi Lam 1 20130117
132.	Joe and Paula Michelsen
133.	Johanna Durvie Yerxa
134.	John Bain
135.	John C. Vaughan
136.	John Stimson
137.	Jonathan Beteta
138.	Joseph Grassadonia
139.	Josephine P. Bird
140.	Joy Silver 1 20130107
141.	Judith Nelson
142.	Judy Thurston

143.	Juliana Simone
144.	Kaaawaal
145.	Karen Moore
146.	Karen Pawn
147.	Karyn Spencer
148.	Katharine Chambers
149.	Katherine Killebrew 1
150.	Kathleen Pahinui
151.	Kathryn Waddell Takara, Ph.D. 1
152.	Katie Hiltbrand
153.	Keep North Shore Country
154.	Kelly Fitzgerald
155.	Kelly Tsutsui
156.	Kelly Viszolay
157.	Kenneth and Kendra Martin
158.	Kenneth Nakayama
159.	Kent Fonoimoana
160.	Kimberly Johnston
161.	Kioni Dudley 1
162.	Klaus Van Der Leeden
163.	Kuilima North Shore Strategy Planning Committee
164.	Ku'ulei Tengan
165.	Larry Lopez
166.	Larry McElheny
167.	Laura Moritz
168.	Leah Nakayama
169.	Lee Higgins
170.	Lee Ohana
171.	Life of the Land
172.	Lisa Kawai
173.	Luann Casey
174.	Lucia You
175.	Luta Sua
176.	Lynch
177.	Lynsey Stone
178.	Makani Christensen 1
179.	Malia Damon
180.	Malia Souza
181.	Mariah Metzger
182.	Marilyn Cole
183.	Marjorie Ziegler
184.	Mark Button
185.	Mark Cunningham
186.	Mark Jacobsen

187.	Mark Walsh
188.	Marvin Iseke
189.	Mary Barter
190.	Mary Guinger
191.	Mary Jo Buell
192.	Mary Lacques 1
193.	Matt Buckman
194.	Matt Johnson
195.	Matt L
196.	Matt McHale
197.	Matthew Cabamongan
198.	Meagan Ostrem
199.	Meghan and Lion Gardner
200.	Meleana and Alex Cox
201.	Michael Lilly
202.	Mike Casey
203.	Mike Dixon
204.	Mike Takahashi
205.	Mitchell Smith
206.	Monique Mironesco
207.	Myah Kalama
208.	Nancy and Mike McGovern
209.	Natalie Iwasa
210.	Nic Slocum 1
211.	Noah Gomes
212.	Noel Smith Muraki (No Address Provided)
213.	Noelani Macasting
214.	North Shore Chamber of Commerce
215.	North Shore Community Land Trust, Douglass Cole
216.	North Shore Outdoor Circle
217.	Nova Jean McKenzie
218.	Ole Barre
219.	Pamela Sue
220.	Pamela Tong
221.	Pat and Bill Goding
222.	Pat Goding
223.	Patsy Gibson
224.	Paul Gamblin
225.	Paul S. Nelson 1
226.	Paula Cole
227.	Penny Kaiman-Rayner 1
228.	Peter Hodgson
229.	Philip Weber
230.	Pradeep Bhagvandas

231.	Priscilla Yin
232.	R. Comeau
233.	Randy Joseph Hernandez
234.	Reed Matsuura
235.	Rex Dubiel
236.	Richard Anton St. Onge
237.	Rick Johann
238.	Rick Wu
239.	Riley Moffat
240.	Rita Ann Loose
241.	Robert Kealoha Domingo 1
242.	Robert Yonover and Ellie Crowe
243.	Robin Young
244.	Rochelle da Silva Pereira
245.	Roger Allen
246.	Ruth Gerrity
247.	Sabrina Krauss
248.	Sally Cole
249.	Sally Fyke
250.	Sandra Budlong
251.	Sandra Cashman
252.	Sandra Williams
253.	Sara Ackerman
254.	Sara Steiner
255.	Schuyler "Lucky" Cole
256.	Sharon Ishii
257.	Sierra Club, Hawai'i
258.	Stacy Fineran
259.	Stanley M 1
260.	State of Hawaii, Department of Business, Economic Development and Tourism, Office of Planning
261.	State of Hawaii, Department of Defense, Civil Defense, Office of Director
262.	State of Hawaii, Department of Education
263.	State of Hawaii, Department of Health
264.	State of Hawaii, Dept. of Land and Natural Resources, Aquatic Resources Division
265.	State of Hawaii, Dept. of Land and Natural Resources, Land Division, Oahu District
266.	State of Hawaii, Dept. of Land and Natural Resources, Land Division, Oahu District and Division of State Parks
267.	State of Hawaii, Dept. of Land and Natural Resources, Land Division, Office of Conservation and Coastal Lands
268.	State of Hawaii, Department of Transportation
269.	State of Hawaii, Department of Transportation 2
270.	State of Hawaii, Office of Hawaiian Affairs
271.	Stephen Tschudi

272.	Steve Villiger
273.	Stewart Ring
274.	Surfrider Foundation 1
275.	Susan Meister
276.	tbike4
277.	Teddi Anderson
278.	Terry Loose
279.	Terry Mocai
280.	The Pacific Resource Partnership, John White, Executive Director
281.	The Soloray Corporation, Cully Judd & Carol Silva
282.	Thomas Shirai
283.	Thorne Abbott 1
284.	Tim Honderick
285.	Tom Pohaku Stone
286.	Tony Cano
287.	Travis Hylton
288.	Turtle Island Restoration Network (Chris Pincetich) 1
289.	Ty Tengan
290.	Unite Here! Local 5
291.	U.S. Department of Commerce, National Marine Fisheries Service
292.	U.S. Department of Commerce, National Marine Fisheries Service, Essential Fish Habitat – Levin Transmitting Mehroff Comment
293.	U.S. Department of Commerce, National Marine Fisheries Service, Essential Fish Habitat – Mehrhoff Comment
294.	U.S. Fish and Wildlife Service
295.	Walter Ambjorn
296.	Warren Scoville
297.	West Kawela Bay Community Association
298.	William R. Bailey
299.	William Sager
300.	William T. Ballard
301.	Woody Adamz
302.	Zach Dilonno

~~Draft~~ Final Supplemental Environmental Impact Statement for

TURTLE BAY RESORT EXPANSION

Portions of Ahupuaʻa O ʻŌpana-Kawela, Ahupuaʻa O Hanakaʻoe, and Ahupuaʻa O Kahuku, Koʻolau Loa District, Island of Oʻahu

Volume One of Four

PREPARED FOR TURTLE BAY RESORT, LLC by LEE SICHTER LLC • ~~NOVEMBER 2012~~ JULY 2013

~~Draft~~ Final Supplemental Environmental Impact Statement for

TURTLE BAY RESORT EXPANSION

Portions of Ahupuaʻa O ʻŌpana-Kawela, Ahupuaʻa O Hanakaʻoe, and Ahupuaʻa O Kahuku, Koʻolau Loa District, Island of Oʻahu

This document is prepared pursuant to Chapter 343, Hawaiʻi Revised Statutes as amended, and Hawaiʻi Administrative Rules Chapter 200 of Title 11, Department of Health (environmental impact statement rules).

This document and all other ancillary documents were prepared under my direction.

July 1, 2013

Drew Stotesbury, CEO, Turtle Bay Resort, LLC *Date*

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Note to Reader for Final Supplemental EIS:

Pursuant to Section 11-200-18, Hawaii Administrative Rules, A Final EIS, or in this case the Final Supplemental Environmental Impact Statement, shall consist of

A. The Draft EIS revised to incorporate substantive comments received during the consultation and review processes;
B. Reproductions of all letters received containing substantive questions, comments, or recommendations, and, as applicable, summaries of any scoping meetings held;
C. A list of persons, organizations, and public agencies commenting on the Draft EIS; and
D. The responses of the applicant or the proposing agency to each substantive question, comment or recommendation received in the review and consultation processes. The text of the Final EIS shall be written in a format that allows the reader to easily distinguish changes made to the text of the Draft EIS.

To address 11-200-18A and 18D above, for the purposes of this Final SEIS, we have employed the following strategy for identifying substantive changes:

- Deleted text is struck through (~~struck through~~);
- New text is underlined (<u>underlined</u>).

For non-substantive changes, such as the correction of typographical errors or misspellings, the insertion of a diacritical mark in a Hawaiian word, changes in capitalization, or the addition or deletion of font style or size, the text has been corrected but strike-through/underlining has not been employed.

In instances where a word was underlined in the Draft EIS, that word has been changed to italics (*italics*) in the Final EIS so as to not suggest that the word is new text.

In the case where a new Figure has been added, as in the case of Figures 2-3 and 2-4 in Chapter Two, the title of the Figure has been underlined and the word "new" has been inserted at the end of the Figure title.

A table of contents has been added to the beginning of each chapter so that the reader need not refer back to the front of the document. A table of contents has also been added to each volume.

To address 11-200-18B and 18C, Volume Two has been expanded to include several additional volumes (labeled 2a, 2b, 2c etc.) that contain all written comments received, together with copies of our response letters. A list of all parties who commented on the Draft SEIS has been added to the end of Chapter 8.

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EXECUTIVE SUMMARY:

INTRODUCTION

This Supplemental Environmental Impact Statement (SEIS) is being prepared pursuant to and in accordance with the requirements of Hawaii Revised Statutes, Chapter 343; Hawaii Administrative Rules, Chapter 11-200; and the ruling of the Hawaii Supreme Court in *Unite HERE Local 5 et. al. v City and County of Honolulu and Kuilima Resort Company*, Civil No. 06-1-0265 (2010). It is intended to supplement the 1985 Kuilima Revised Final EIS (hereinafter, "the 1985 EIS").

The Court decision was rendered just after a change of ownership of the Resort. Before beginning preparation of the SEIS, the new owners of the resort, Turtle Bay Resort, LLC, (TBR) initiated an extensive public outreach program for the purpose of listening to the community's concerns and vision for the Resort. They also sought to identify key elements of a development plan for the resort that would reflect a balance of needs of the community, the investors and the environment. TBR also retained an expert team of local consultants to help prepare a new Comprehensive Plan for its properties. After a year of meeting with elected officials, agencies, private organizations, members of the general public, and *kūpuna* (elders); and as the result of extensive master planning efforts; the owners decided to significantly reduce the size, scope and area of the proposed resort expansion. The resulting efforts of the project team resulted in the formulation of the Proposed Action.

T~~Because the 1985 EIS was limited to an analysis of the lands proposed for resort expansion (and did not include the existing hotel, condominium apartments, or *mauka* agricultural lands), the project team determined that the required SEIS would need to replicate the scope of the original document. Therefore, t~~he Proposed Action, which is the subject of this SEIS is limited to the general area addressed in the 1985 document and now referred to as the SEIS Lands.

The SEIS enhances the 1985 EIS by recommending a more culturally sensitive approach and practical sustainable development and guidelines. The approach developed by the project team to inform the planning and development of the Proposed Action is ~~called~~ referred to as *Tomorrow's Ahupuaʻa*, which is detailed in the Striving for Sustainability document attached as Appendix A. *Tomorrow's Ahupuaʻa* provides a cultural framework and philosophy for the resort expansion that embraces traditional Hawaiian principles of land stewardship. It acknowledges cultural traditions, evaluates their applicability to contemporary environmental, socio-political, and economic objectives, and recommends a detailed program (guidelines) for expanding the Resort in a manner that strives to be more environmentally sustainable and culturally sensitive. TBR's preferred alternative, hereinafter the Proposed Action, in the SEIS substantially reduces the scope, density and area of the resort expansion. The SEIS also includes a Cultural Impact Assessment and an updated Supplemental Archaeological Inventory Survey.

Brief Overview of the SEIS

The SEIS consists of four volumes. The first volume contains the following (in addition to this Executive Summary and a Glossary of Terms):

- **Chapter One – Statement of Purpose and Need:** This chapter states the purpose of the Proposed Action and the reasons that is needed. It also presents introductory information about the SEIS and the site of the Proposed Action.

- **Chapter Two – Environmental Setting:** This chapter presents the existing conditions at the resort; establishing a baseline against which the impacts resulting from the Proposed Action, and defined alternatives, can be evaluated. In support of the cultural orientation embraced in the new plan for the resort expansion, the baseline setting is presented and oriented in a manner that corresponds to the traditional Hawaiian land divisions associated with the SEIS Lands. The environmental setting is divided into two categories;

  1) the natural environment, and
  2) the human environment.

- **Chapter Three – Proposed Action:** This chapter describes in detail, the elements of the proposed resort expansion that constitute the Proposed Action.

- **Chapter Four – Alternatives:** This chapter presents an extensive discussion of the alternate development programs that were considered as part of the project team's extensive planning process that resulted in the formulation of the Proposed Action.

- **Chapter Five – Probable Impacts and Mitigation Measures:** This chapter discusses the impacts that will result from the implementation of the Proposed Action, in the same sequence as the baseline information was presented in Chapter Two. The discussion of impacts is divided into two categories;

  1) the natural environment, and
  2) the human environment.

  The chapter also identifies measures proposed to mitigate significant impacts.

- **Chapter Six – Contextual Issues:** This chapter discusses the relationship of the Proposed Action to the governmental programs, policies, land use approvals, and regulations that would guide its implementation. It also addresses several aspects of environmental assessment that are proscribed by Chapter 343.

- **Chapter Seven – Preparation and References:** This chapter discloses who prepared the SEIS and also identifies the reference material used in the analysis.

Volume Two contains the following:

- **Chapter Eight – Public Outreach:** By law, an EIS is required to include all substantive written comments received during official comment periods, and the project team's written response to each comment. This chapter contains all the written comments received after the publication of the SEIS Preparation Notice and the Draft Supplemental Environmental Impact Statement responses to them. It also contains written comments received at an Open House sponsored by TBR and responses to them. The chapter begins with a discussion of public outreach. An extensive proactive community engagement process conducted by the new TBR management team sought to understand community aspirations, concerns and build relationship with the community. A deliberate attempt was made by the TBR project team to initiate a request with the various stakeholders to genuinely "listen" to not only their concerns but their vision for their community in general and TBR in particular. The TBR project team and owners committed to and listened to the community before proposing any specific plan. Input from the community influenced the TBR project team in their substantial revisions to the Proposed Action ~~Master Plan~~ to incorporate a more culturally sensitive approach to land stewardship and consequently substantially reduced density and increased public benefits. This chapter also discloses how the SEIS was distributed for review.

Volumes Three and Four contain the following:

- **Appendices:** The SEIS contains copies of all technical documents and detail of *Tomorrow's Ahupua'a* as a cultural approach to a higher level of sustainability that were prepared by the project team as part of the environmental assessment process. Following are the appendices included in the Volume ~~3~~ Three of the SEIS:

  A. A Cultural Approach to Sustainability
  B. Unilateral Agreement
  C. Draft Supplemental Archaeological Inventory Survey
  D. Cultural Impact Assessment
  E. Marine Resources Impact Analysis

  Following are the appendices included in Volume Four of the SEIS:

  F. Flora and Fauna Impact Analysis
  G. Supplemental Archaeological Inventory Survey Plan
  H. Socio-Economic Impact Analysis
  I. Traffic Impact Analysis Report
  J. Air Impact Analysis
  K. Noise Impact Analysis
  L. Cultural and Natural Resources Management Plan
  M. Trip Generation Survey Report

Summary of the Proposed Action

In accordance with *Tomorrow's Ahupuaʻa*, the Proposed Action identifies three primary land areas within the SEIS Lands, based on historic and cultural Hawaiian land divisions:

1. Ahupuaʻa O ʻŌpana-Kawela – at the western part of the resort property and fronting Kawela Bay
2. Ahupuaʻa O Hanakaʻoe – in the middle of the resort property and fronting both Turtle Bay and Kuilima Cove.
3. Ahupuaʻa O Kahuku – at the eastern part of the resort property, including the Palmer golf course, fronting Kuilima Bay, and the Punahoʻolapa Marsh.

The Proposed Action represents an over 60% percent density reduction from the original expansion project that was granted land use and zoning approvals in 1986. (see Figure ES-1)

Consistent with the historic uses of the Ahupuaʻa of Hanakaʻoe, the Proposed Action concentrates hotels and higher density development in the resort's existing core area. It specifically proposes two (2) new hotel sites and a new community Gathering Place in proximity to the existing Turtle Bay Hotel. This is a substantial reduction from the five (5) hotel sites contemplated in the 1985 EIS. Further, the Proposed Action provides for 625 new hotel units, rather than the 2,500 new hotel units in the original plan – a 75% reduction.

Pursuant to numerous considerations, including community input, the oceanfront sites originally proposed in 1985 for hotel development in Ahupuaʻa O ʻŌpana-Kawela (to the west) and Ahupuaʻa O Kahuku (to the east) have been reprogrammed to much lower densities and resort-residential use. At ʻŌpana-Kawela, density will be reduced by over 75% percent of what is allowable under existing zoning. Similarly, Ahupuaʻa O Kahuku is planned for 160 affordable Community Housing Units over ~~170%~~ 271% increase over the requirement and resort-residential development with ~~65%~~ over 60% less density than is allowed under existing entitlements. The result is the concentration of development in the central core of the SEIS Lands and the general preservation of a rural character to the east and west. By implementing generous shoreline setbacks, this development concept also provides wide, unencumbered public access to the entire shoreline.

The Proposed Action includes the following:

- Two (2) new full-service hotels with a combined total of 625 units. The hotels may be operated as time-share or traditional service hotels;
- 590 new ~~r~~Resort-~~r~~Residential ~~u~~Units, consisting of a combination of multi-family and single-family units;
- 160 Community Housing ~~u~~Units, in excess of the 59 units required, that will be priced to be affordable to residents of the Koʻolau Loa/North Shore region;
- Approximately 73 acres of park area distributed among five parks;
- A total of 12 new public shoreline access ways;

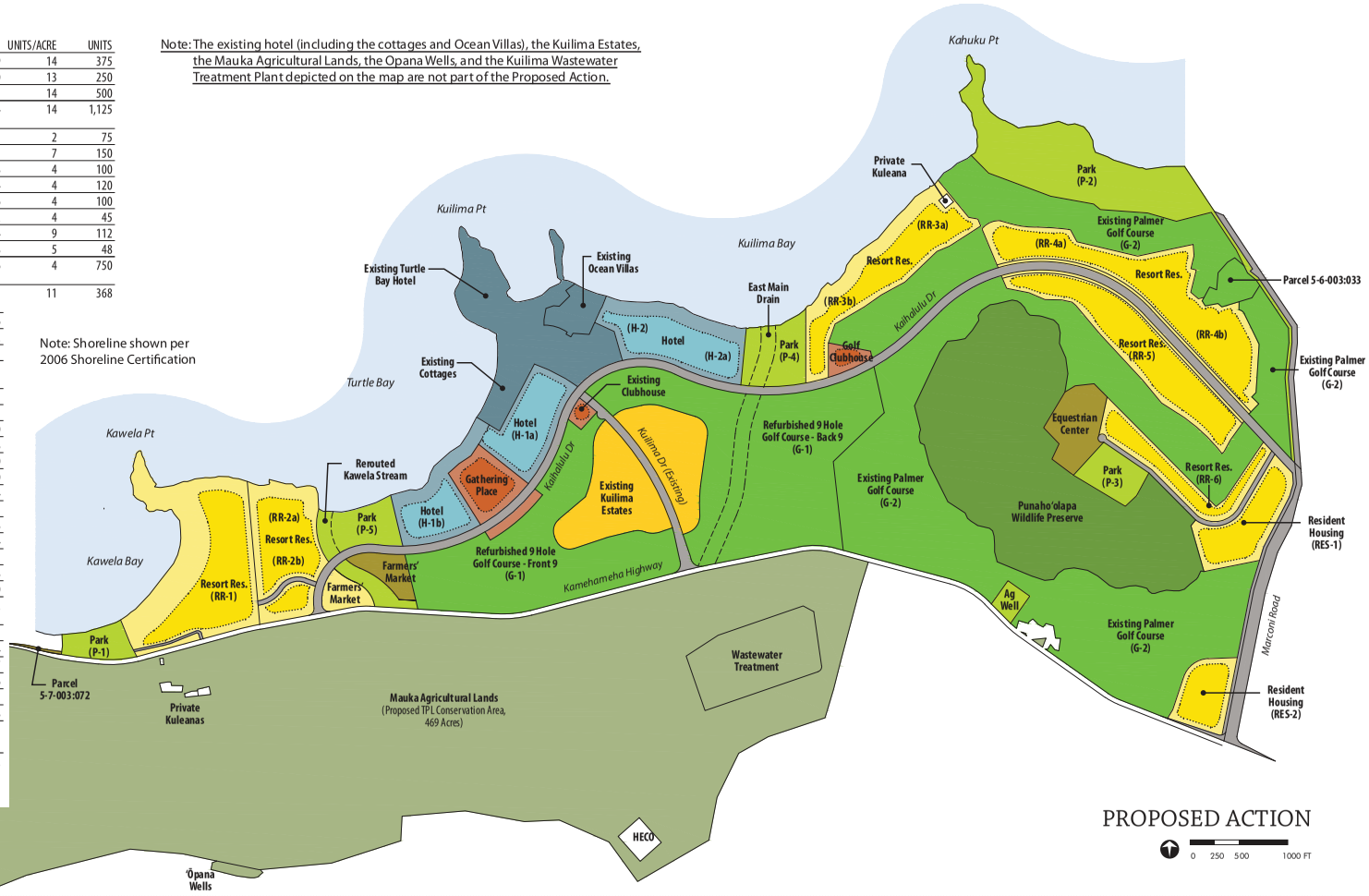
Figure ES-1:

Proposed Action

AREA	ACRES	UNITS/ACRE	UNITS
Hotel (H-1a, 1b)	25.9	14	375
Hotel (H-2, 2a)	19.0	13	250
Existing Turtle Bay Hotel	34.5	14	500
TOTAL HOTEL	79.4	14	1,125
Resort Residential (RR-1)	39.1	2	75
Resort Residential (RR-2a, 2b)	20.3	7	150
Resort Residential (RR-3a, 3b)	24.8	4	100
Resort Residential (RR-4a, 4b)	33.4	4	120
Resort Residential (RR-5)	25.6	4	100
Resort Residential (RR-6)	11.2	4	45
Resident Housing (RES-1)	12.4	9	112
Resident Housing (RES-2)	8.8	5	48
TOTAL RESIDENTIAL	175.6	4	750
Existing Kuilima Estates	33.1	11	368
Gathering Place (Piko)	9.6		
Existing Clubhouse	1.2		
New Clubhouse	2.3		
TOTAL OTHER	13.1		
Golf Course (G-1)	123.1		
Golf Course (G-2)	191.5		
Punahoolapa Wildlife Preserve	100.0		
Park (P-1)	4.8		
Park (P-2)	38.0		
Park (P-3) - Bird Sanctuary	6.0		
Park (P-4)	9.4		
Park (P-5)	11.3		
Equestrian Center	8.8		
Farmers' Market (east)	3.4		
Farmers' Market (west)	4.1		
Parcel 5-6-003:033	3.8		
AG Well (Lot 524)	2.0		
TOTAL OPEN SPACE	506.2		
Kuilima Drive (Existing)	4.5		
P-1 Access Road	0.4		
RR-1/2 Access Road	0.7		
Equestrian Road	2.6		
Marconi Road Expansion	11.3		
Kaihalulu Drive	24.8		
TOTAL ROADWAYS	44.3		
Parcel 5-7-003:072	0.2		
TOTAL SITE	**851.9**		

Note: The existing hotel (including the cottages and Ocean Villas), the Kuilima Estates, the Mauka Agricultural Lands, the Opana Wells, and the Kuilima Wastewater Treatment Plant depicted on the map are not part of the Proposed Action.

Note: Shoreline shown per 2006 Shoreline Certification



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TURTLE BAY RESORT ~~MASTER PLAN~~ EXPANSION

07.31.2012 |

- An approximate 100-acre Punahoʻolapa Marsh wildlife preserve;
- Shoreline setbacks in excess of minimum requirements and ranging from 150 feet to 300 feet and resulting in a combined total of approximately 42 acres of setback area;
- A new resort entrance near Kawela Bay and a new lateral roadway (tentatively named Kaihalulu Drive) extending the length of the resort generally parallel to the shoreline;
- Improvements to Marconi Road and the eventual signalization of all three resort's intersections with Kamehameha Highway (Kaihalulu, Kuilima and Marconi);
- The renovation of the Fazio Golf Course to be combined with the existing Palmer Golf Course to create a 27-hole golf complex, with a new Golf Clubhouse;
- A new Equestrian Center to replace the existing facility;
- A network of interior pedestrian paths and equestrian trails;
- A Farmers' Market; and
- A new low-density commercial resort center called The Gathering Place, which will also host guests and regional visitors.

Understanding the Property

The efforts that have been undertaken to produce this SEIS embrace the philosophy ~~concept~~ of *Tomorrow's Ahupuaʻa*. The SEIS presents new and updated studies of the resort property, including marine resource assessment; near shore water quality analysis; flora and fauna inventories; new social, economic, and cultural impact studies; a supplemental archaeological inventory survey; and report on a cultural approach to sustainability. Together, these new and updated studies form the basis for evaluating the probable impacts of the Proposed Action on the environment.

Summary of the Anticipated Impacts of the Proposed Action and Recommended Mitigation Measures

The following table summarizes the impacts discussed in the SEIS that would likely result from implementation of the Proposed Action. Significant beneficial and adverse impacts are indicated in boldface type. Wherever impacts are identified, measures to mitigate them are recommended. However, it should be noted that the Proposed Action itself is a highly mitigated alternative to implementing the full build out of the resort expansion as allowable under existing land use and zoning approvals.

Table ES-1: Summary of Impacts and Measures to Mitigate Them (Revised)

Notes: I = Identifiable Impact; SA = Significant Adverse; N = None or Not Significant; SB = Significant Beneficial

Subject Area	Nature of Potential Impact	Recommended Mitigation
The Natural Environment		
Topography	N	
Soils	I	Comply with regulatory standards, implement BMPs
Vegetation	I	Re-landscape areas with native plants where appropriate
Fauna	~~N~~I	Shield night lighting
Avifauna	**SA**	Employ BMPs for golf course operations, shield night lighting
Hawaiian Hoary Bats	N	
Groundwater	**I**	Use treated effluent to supplement irrigation demand thereby reducing need for non---potable water
Drainage	**SB**	Restore Kawela Stream alignment to improve water quality in Kawela Bay and address potential for flooding
Marine Water Quality	**SB**	Restore Kawela Stream to its original alignment to improve water quality in Kawela Bay
Marine Biota (general)	I	Employ a public education program to educate fishermen, address fishing practices, and consider the creation of a Marine Life Conservation District at Kawela Bay
Sea Turtles	I	Employ a public education program to increase awareness
Hawaiian Monk Seals	I	Employ a public education program to increase awareness
Views	I	Utilize setbacks and architectural design to minimize visual impacts of new development
Air Quality	N	
The Human Environment		
Traffic	**SA**	Provide traffic improvements at major intersections in accordance with DOT & DTS requirements and employ Transportation Demand Management (TDM) strategies in the resort community to reduce auto traffic. The developer will work in coordination with the State DOT to determine its fair share of contributions to regional traffic improvements that may result from implementing the Proposed Action
Noise	**SA**	Use walls, berms, or air conditioning to mitigate noise impacts on residences within 65 LDN noise contour at Kamehameha Highway
Archaeological Resources	**SA**	Implement treatments recommended in Supplemental Archaeological Inventory Survey upon its approval by SHPD
Cultural Resources	**SA**	Implement the cultural protocols ~~of~~related to *Tomorrow's Ahupua`a* including proposed Cultural & Natural Resource Management Plan

Agricultural Resources	N	Not applicable to SEIS Lands, but Turtle Bay Mauka Lands LLC, a separate entity related to the Applicant, is working with Trust for Public Lands to preserve 470 acres of agricultural land in perpetuity on mauka side of Kamehameha Highway
Population Growth	I	The Proposed Action mitigates population impacts
Employment and Wages	**SB**	8,746 new construction jobs through 2025, and 1,981 new direct and indirect operational jobs from 2025 on
Fiscal Effects	**SB**	$160 million in net revenue to State and $45 million in net revenue to City and County of Honolulu through 2025
Housing	**SB**	160 new Community Housing units
Education Facilities	N	
Health Care Facilities	N	
Recreation Facilities	**SB**	Proposed Action includes 5 new parks, 12 new public shoreline accesses and shoreline path connecting these areas
Public Safety Services	N	
Disaster Preparedness	N	
Wastewater	N	
Solid Waste	I	Offset increased volume with reuse/recycle program
Water Use	**SB**	At completion of the Proposed Action, the resort will require approximately 1.2 million gallons per day of potable water. However, the water will be provided by the resort's existing well system and nearly 800,000 gallons per day of excess water will be contributed to the Board of Water Supply's regional distribution system for the benefit of the residents of Ko`olau Loa
Utilities	I	Reduce electrical demand by constructing to LEED standards and implementing energy efficiency protocols

Cumulative and Secondary Impacts

Through 2025, the Proposed Action will create a cumulative total of 8,746 construction jobs. Of this total, 5,482 will be indirect and induced jobs, which are defined as jobs that are supported when construction firms buy materials and services locally. Wages generated from indirect and induced jobs are estimated to be $35.5 million annually from 2025 on. Wages resulting from off-site visitor spending are estimated at $18.4 million from 2025 on.

As the result of the Proposed Action, primary population growth in the Ko'olau Loa/North Shore (KNS) region is forecast to include 951 regional residents and 2,206 visitors by 2025. As nearly all the resort's future workers will likely come from the KNS region, the Proposed Action is not anticipated to generate significant secondary population growth. New household formation in the region is estimated to be between 83 and 167 households as the result of the Proposed Action.

The anticipated population growth is anticipated to generate from 49 to 123 new K-12 school enrollments to 2025, and 8 to 20 new preschool enrollments. It is estimated that the population increase will create demand for nine new acute care beds and one new emergency medical

services staff position by 2025, as well as 5 new police patrol officer positions and 3 fire operation positions. No new public safety facilities are forecast to be required.

The cumulative increase in traffic volume on Kamehameha Highway in the vicinity of the resort is forecast to increase about 64% by the year 2025 during the morning peak hour and by about 42% during the afternoon peak hour. However, this increase in traffic volume will not change the Level of Service (LOS) on Kamehameha Highway, which today is rated at "E", and will remain at "E" in 2025 when the Proposed Action is targeted for completion.

Alternatives Considered

An extensive evaluation of project alternatives resulted in the identification of three (3) reasonable alternative development plans for the proposed resort expansion:

- **Full-Build Out Alternative:** This alternative would entail expansion of the resort in compliance with existing land use and zoning approvals. Under this alternative, the resort is permitted to construct 2,500 new ~~h~~Hotel ~~u~~Units, 910 new ~~r~~Resort-~~r~~Residential ~~u~~Units, and 90 ~~affordable~~ Community ~~h~~Housing ~~u~~Units together with appurtenant infrastructure and amenities as provided for in a Unilateral Agreement that runs with the land. The alternative includes the existing golf courses and an equestrian facility.

- **Resort Residential Only Alternative**: This alternative limits expansion of the resort to 500 new ~~r~~Resort-~~r~~Residential ~~u~~Units, with no new hotel development.

- **Conservation Partner Alternative**: Under this alternative, most of the coastal areas in Ahupuaʻa O ʻŌpana-Kawela and Ahupuaʻa O Kahuku would be preserved in open space: development would be focused in Ahupuaʻa O Hanakaʻoe around the existing hotel and on property presently occupied by the Fazio Golf Course (which would be closed). Resort expansion would be limited to two (2) new hotels containing a total of 440 Hotel ~~u~~Units, 252 ~~r~~Resort-~~r~~Residential ~~u~~Units, and 48 ~~affordable~~ Community ~~h~~Housing ~~u~~Units, together with appurtenant infrastructure and amenities as allowable under law. Implementation of this alternative would require the participation of a third party to provide economic consideration to compensate for the legally entitled reduced development density.

Unresolved Issues

Seven unresolved issues have been identified at the time the Draft SEIS (DSEIS) is being published. They include the following:

Affordable Housing Program: At the time of the writing of the DSEIS, a specific program has not been prepared that details the manner in which the affordable housing program will be implemented in terms of financing options, restrictions on use, buy-back provisions, etc. Prior to the commencement of the Proposed Action, TBR plans to work with the Department of Planning and Permitting and Hawaii Housing, Finance, and Development Corporation to finalize an acceptable program.

Kuilima Wastewater Treatment Plan Upgrade: At the time of the writing of the DSEIS, TBR plans to upgrade the treatment process to improve the quality of wastewater effluent to R-1 quality so that it may be used within certain portions of the SEIS Lands for irrigation. Prior to the commencement of the Proposed Action, ~~TBR~~ Turtle Bay Wastewater Treatment LLC plans to determine the final feasibility and how best to implement this upgrade once volume capacity requirements correlate with proximate site development.

Conservation Easement: A conservation easement has been proposed to protect the long-term use of the resort's agricultural lands *mauka* of Kamehameha Highway. While these lands are not within the SEIS Lands, they are an integral part of the resort's philosophy ~~Comprehensive Plan and the concept~~ of *Tomorrow's Ahupua'a*. At the time of the writing of the DSEIS, Turtle Bay Mauka Lands LLC ~~TBR~~ has signed a Letter of Intent with the Trust for Public Lands ("TPL") concerning the creation of a conservation easement relative to certain agricultural lands situated outside the SEIS Lands, on the *mauka* side of Kamehameha Highway; however, there are a number of steps in this process which remain to be completed in order to close this transaction, including obtaining an appropriate appraisal of these *mauka* agricultural lands and finalizing the conservation easement document. TBR hopes ~~to close~~ the conservation easement transaction will close ~~with TPL by the end of the 1st quarter 2013 and in any event~~ prior to the commencement of the Proposed Action.

***Mauka* Storm Water Drainage Retention/Detention**: At the time of the writing of the DSEIS, TBR is working with its civil engineering team on a long-term storm water management plan including retention and detention strategies on the *mauka* agricultural lands owned by Turtle Bay Mauka Lands, LLC situated on the *mauka* side of Kamehameha Highway. Implementation of this long-term plan is intended to reduce runoff after significant storm events, some of which affect levels of near shore turbidity. However at this time it has not yet been determined whether these proposed plans are technically and or financially feasible or supported by regulatory agencies. Prior to the restoration of Kawela Stream to its West Main Drain alignment as contemplated in the Proposed Action, TBR plans to work through design, feasibility, and construction issues related to this long-term plan.

City and County Zoning District Boundary Amendments: At the time of the writing of the DSEIS, it has not been determined whether the implementation of the Proposed Action will require adjustments to be made to the boundary lines of any existing zoning district. If, and to the extent such adjustments do become necessary, TBR will apply for administrative zoning district boundary amendments.

Implementation of a Marine Life Conservation District at Kawela Bay: As presented in the DSEIS, the creation of an advisory council is recommended to assist the resort in addressing issues that will affect users of the coastal resources for recreational purposes. The resort's Unilateral Agreement requires that best efforts be made to promote the creation of a Marine Life Conservation District (MLCD) at Kawela. But to do so will require broad-based input from the community. Therefore the issues of if and how to implement a MLCD are not yet resolved. TBR plans to encourage community input prior to development of proximate parcels to Kawela Bay.

Critical Habitat for Hawaiian Monk Seals: At the time of the writing of the DSEIS, a proposal to designate all or a portion of waters of the main Hawaiian Islands as a critical habitat is under consideration by the National Marine Fisheries Service (NMFS). The potential impact that such a designation by the federal government may have upon the Resort is unknown and, therefore, the matter is unresolved. The NMFS has extended the deadline for comments on the proposal indefinitely and it is not known when the agency may eventually act on the proposal.

Compatibility with Land Use Plans and Policies

As it is implemented, the Proposed Action will be reasonably compatible with all existing land use plans and policies. Table ES-4 at the end of this Executive Summary summarizes how the Draft SEIS addresses the content requirements of Section 11-200, Hawaii Administrative Rules.

~~Figure~~ Table ES-2: Compatibility of the Proposed Action with Land Use Policies and Plans

Land Use Policy or Plan	Status
FEMA National Flood Insurance Program	Will conform
Hawaii State Plan (Chapter 226)	Compatible to applicable goals/objectives
State Functional Plans	Compatible to applicable goals/objectives
State Ocean Resources Management Plan	Compatible
State of Hawaii Water Plan	Compatible
Ko`olau Loa Watershed Management Plan	Compatible
State of Hawaii Historic Preservation Act	Will conform
O`ahu General Plan	Compatible
Ko`olau Loa Sustainable Communities Development Plan	Compatible
Revised Ko`olau Loa Sustainable Communities Development Plan	Compatible
Complete Streets	Compatible
Hawaii Coastal Zone Management Program	Compatible
Special Management Area Ordinance	Compatible
Hawaii Environmental Protection Act	Compatible
State of Hawaii Water Plan	Compatible
1987 Coastal Views Study	Compatible
North Shore Sustainable Communities Plan	Generally Compatible

Required Permits and/or Approvals

The SEIS Lands are contained within the State Urban District. No adjustments to the State Land Use district are anticipated.

~~The SEIS Lands were zoned for resort development in the mid-1980s. As discussed above, at the time of the writing of the DSEIS, it has not been determined whether the implementation of the Proposed Action will require adjustments to be made to the boundary lines of any existing zoning district. If, and to the extent such adjustments do become necessary, TBR will apply for administrative zoning district boundary amendments.~~

The SEIS Lands were zoned for resort development by the Honolulu City Council ~~in~~ on August 14, 1986, pursuant to Ordinance 86-99. The land uses presented in the Proposed Action are believed to be allowable under the previously granted zoning.

~~As discussed above, a~~ At the time ~~of the writing of the DSEIS~~ this Supplemental EIS is being prepared it has not been determined by the City and County of Honolulu whether the implementation of the Proposed Action will require adjustments to be made to the boundary lines of any existing zoning district. If, and to the extent such adjustments do become necessary, TBR will apply for administrative zoning district boundary amendments.

The Resort is operating under an existing Special Management Area (SMA) Use Permit granted by the Honolulu City Council in 1986 pursuant to Resolution No. 86-308. The Proposed Action may require a ~~minor~~ modification to the existing SMA Use Permit to address the fact that the Proposed Action represents a change to the resort's original master plan.

Development of the SEIS Lands will require a subdivision approval from the City's Department of Planning and Permitting.

Prior to any development in the vicinity of the coastal area, a Shoreline Certification must be approved by the State's Board of Land and Natural Resources.

Implementation of the Proposed Action will require a National Pollution Discharge Elimination System (N~~D~~PPDES) permit approval from the State Department of Health to grade property in excess of one (1) acre, and grading and building permits from the City and County of Honolulu's ~~Building~~ Department of Planning and Permitting.

Restoration activities at Punahoʻolapa Marsh will require approvals from the U. S. Army Corps of Engineers and the Hawaiʻi State Department of Health.

If the restoration of Kawela Stream to its original alignment is implemented as a measure to mitigate regional drainage impacts on the near shore waters of Kawela Bay, approvals from the U. S. Army Corps of Engineers, ~~and~~ the Hawai'i State Department of Health, and the Hawai'i State Board of Land and Natural Resources will be required.

Implementation of a Marine Life Conservation District will require a Conservation District Use Permit from the State's Board of Land and Natural Resources.

The implementation of improvements to the East and West Main Drains will result in a change to the flood boundaries at the resort. Any change to the flood boundaries requires a Letter of Map Revision from the Federal Emergency Management Agency (FEMA).

An amendment to the existing Joint Development Agreement ~~will~~ may also need to be approved by the City and County of Honolulu Department of Planning and Permitting. If required, it would be processed as a Conditional Use Permit (Minor).

Comparative Summary of Alternatives

Table ES-3 presents a comparative quantitative summary of the Proposed Action and the Alternatives. All information is projected from 2014 through the year 2025.

~~Figure~~ Table ES-3: Comparative Quantitative Summary of Proposed Action and Alternatives

	Proposed Action	Full Build-Out Alternative	Resort Residential Alternative	Conservation Partner Alternative
Total Construction Spending	$770 million	$1,370 million	$429 million	$370 million
Total Direct Construction Workforce	3,263	5,491	1,843	1,554
Total Indirect/Induced Jobs	5,482	9,225	3,096	2,611
On-Site Jobs at Build Out	1,539	4,598	91	963
Total Daytime Population	4,401	10,380	2,223	3,284
Total Statewide Tax Related Construction Revenue	$73 million	$125 million	$52 million	$35 million
Total County Tax Related Construction Revenue	$5 million	$8 million	$3 million	$2 million
Total Statewide Visitor Spending	$121 million	$855 million	$35 million	$66 million
Total County Visitor Spending	$5 million	$39 million	$1 million	$3 million
Total Real Property Tax Revenue	$50 million	$411 million	$31 million	$31 million
New Community Housing	160 units	90 units	46 units	48 units
Total Potable Water Use	~~1.2 mgd~~ 1,201,100 gpd	~~1.78 mgd~~ 1,787,200 gpd	~~691,000 gpd~~ 690,500 gpd	~~756 gpd~~ 756,400 gpd
Total Wastewater Generated	~~598,000 gpd~~ 598,406 gpd	~~886,000 gpd~~ 885,766 gpd	~~395,000 gpd~~ 395.210 gpd	~~405,000 gpd~~ 405,366 gpd

GLOSSARY:

TERMS, ABBREVIATIONS and ACRONYMS

1985 EIS	1985 Kuilima Revised Final Environmental Impact Statement.
AAQS	Ambient Air Quality Standards.
ACE	United States Army Corps of Engineers (also referred to as 'the Corps' or 'COE').
ACHP	Advisory Council on Historic Preservation.
ACS	American Community Survey (annual survey of a sample of the population). The ACS may be reported in annual, three-year, and five-year increments, with smaller areas reported for the longer periods. ACS data in this report comes from the 2006-2010 surveys. The ACS includes the "long-form" data sets that had been gathered from a sample of the population in the decennial census before 2010.
AIS	Archaeological Inventory Survey.
ALISH	Agricultural Lands of Importance to the State of Hawai'i; a mapping system used by the State to classify productivity in agricultural lands.
BCH	Belt Collins Hawaii.
BMP	Best Management Practices.
BPBM	Bernice Pauahi Bishop Museum.
BTP	Burial Treatment Plan.
BWS	Board of Water Supply, City and County of Honolulu.
BYUH	Brigham Young University – Hawaii.
CCH	City and County of Honolulu.
CDP	Census Designated Place.
Cfs	Cubic feet per second.
Chapter 343	Chapter of the Hawai'i Revised Statutes that addresses environmental assessment.
CIA	Cultural Impact Assessment.
Cm	Centimeter.
CNRMP	Cultural and Natural Resource Management Plan.
Community Housing	Housing units to built in compliance with the Unilateral Agreement to provide affordable housing opportunities at the resort.
Comprehensive Plan	Master Plan for the entire Turtle Bay Resort property, including lands located on the south side of Kamehameha Highway that are not part of the supplemental environmental impact statement.
CSH	Cultural Surveys Hawaii.
CT	Census Tract.
DI	Direct and indirect (in Input-Output Analysis).
DII	Direct, indirect and induced (in Input-Output Analysis).
dBA	A-weighted decibel, a unit of sound measurement.

DBEDT	Hawai'i State Department of Business, Economic Development and Tourism.
DLNR	Hawai'i State Department of Land and Natural Resources.
DNL	Day-night average sound level, also referred to as Ldn.
DOD	United States Department of Defense.
DOE	Hawai'i State Department of Education.
DOH	Hawai'i State Department of Health.
DOT	Hawai'i State Department of Transportation.
DPP	City and County of Honolulu Department of Planning and Permitting.
DRP	Data Recovery Plan.
EIS	Environmental Impact Statement.
Equestrian Center	The stables, corrals, and appurtenant facilities that will provide horse-related activities at the resort.
ESA	Endangered Species Act.
Golf Clubhouse	The clubhouse facility serving the Fazio and Palmer Golf Courses.
Gathering Place	A commercial area proposed to be used as an entertainment venue.
Farmer's Market	A commercial area proposed to used for the sale of farm produce and products.
HAR	Hawai'i Administrative Rules.
HECO	Hawaiian Electric Company.
HEPA	Hawai'i Environmental Protection Act
HFD	Honolulu Fire Department.
HPD	Honolulu Police Department.
HRS	Hawai'i Revised Statutes, as amended.
˚F	Degrees Fahrenheit.
FAA	Federal Aviation Administration.
FHA	Federal Housing Administration.
FEMA	Federal Emergency Management Agency.
FIT	Free and Independent Traveler, a term used in the hospitality industry to denote a visitor who is not part of group tour.
FP	Fibropapillomatosis, a debilitating tumor disease of the skin and internal organs of green sea turtles.
FT	Full-time (used for full-time resort residents, treated as Hawai'i residents).
GIS	Global Information System.
GPD	Gallons per day.
GPM	Gallons per minute.
GPS	Global Positioning System.
HUD	Federal Department of Housing and Urban Development.
KDC	Kuilima Development Company.
KNS	Ko'olau Loa/North Shore combined area (corresponding to the City's Development Plan Areas of the same names.
KNSA	Ko'olauloa North Shore Strategic Alliance.
KNSSPC	Kuilima/North Shore Strategy Planning Committee.

KSCP	Koʻolau Loa Sustainable Communities Plan.
Kuilima EIS	1985 Kuilima Revised Final Environmental Impact Statement, prepared for the Kuilima Resort Expansion project in 1985 by Group 70 (aka "1985 EIS").
Kuilima Estates	Kuilima Estates East and Kuilima Estates West.
Kuilima Hotel	The original hotel developed at Kuilima Resort, now known as the Turtle Bay Hotel.
KV or kV	Kilo-volt.
LCA	Land Commission Award, a land title originally granted by the Kingdom of Hawaiʻi.
LEED	Leadership in Energy and Environmental Design.
Lock-off feature	Shall mean an interior door within a Hotel Unit which can be locked to create a separate key on either side of the lock-off feature.
M	Meter
MGD	Million gallons per day.
MHI	Main Hawaiian Islands.
MLCD	Marine Life Conservation District.
MOA	Memorandum of Agreement.
MSL	Mean sea level.
MW	Mega-watt.
M/yr	Meters per year.
N	Nitrogen.
NMFS	National Marine Fisheries Service.
NWHI	Northwestern Hawaiian Islands.
NW-SE	Northwest-Southeast, refers to the directional alignment of an aircraft runway.
NTU	Nephelometric Turbidity Units, named after the device used to measure turbidity in water.
NWS	National Weather Service.
Oaktree Capit~~o~~al	The former owner of the Turtle Bay Resort.
OEQC	State of Hawaiʻi Office of Environmental Quality Control.
OHA	State of Hawaiʻi Office of Hawaiian Affairs.
OIBC	Oʻahu Island Burial Council.
OR&L	Oʻahu Railway and Land Company.
PCC	Polynesian Cultural Center.
PPM	Parts per million.
PM	Particulate matter.
Property	The term "the property" refers to all the lands owned by Turtle Bay Resort.
Proposed Action	The development activities within the SEIS Lands that are the subject of the SEIS.
PT	Part-time (used for part-time residents and second homeowners, treated as visitors to Hawaiʻi in economic analyses).

Resort Units — The "resort units" referred in the unilateral agreement, and which consist, collectively, of all "Community Housing Units", "Hotel Units" and "Resort Residential Units", as such terms are defined hereinbelow.

"Community Housing Units": Those Resort Units which may be offered for sale or lease to provide low-moderate income housing opportunities for residents living in the Ko`olau Loa and North Shore region, and which are to be situated upon any parcel labeled "RES" in Figures 3-1, 4-1, 4-2 and/or 4-3.

"Hotel Units": Those Resort Units which may be used as traditional hotel rooms, condominium units and/or timeshare units, and which are to be situated upon any parcel labeled "H" in Figures 3-1, 4-1, 4-2 and/or 4-3.

"Resort Residential Units": Those Resort Units which may be single-family, duplex, or low to moderate density multi-family units, and which are to be situated upon any parcel labeled "RR" in Figures 3-1, 4-1, 4-2 and/or 4-3.

Revised Master Plan — The current revision of the master plan first discussed in the 1985 EIS. The Revised Master Plan is distinguished from the Comprehensive Master Plan in that the former focuses on the existing hotel and the surrounding grounds that are used by resort guests and visitors, while the latter is an expanded version of the plan that also includes the agricultural lands on the *mauka* side of Kamehameha Highway, and Kuilima Estates.

SAIS — Supplemental Archaeological Inventory Survey.

RFEIS — Revised Final EIS – another term for the Kuilima EIS.

SCP — Sustainable Communities Plan. The City and County of Honolulu recognizes seven regional planning areas: two Development Plan areas and five SCP areas.

SCS — U. S. Soil Conservation Service.

SF — Square feet.

SIA — Socio-economic impact assessment.

SEIS — Supplemental environmental impact statement.

SEIS lands — Land area covered by the SEIS for Turtle Bay Resort; smaller than the TBR landholdings, but also including portions of right-of-way along Marconi Road (aka, the Project Area).

SEISPN — Supplemental Environmental Impact Statement Preparation Notice. For Turtle Bay, the SEISPN was prepared by Lee Sichter LLC and published via the Environmental Notice on August 23, 2011.

SHPD — State Historic Preservation Division of the State of Hawai'i Department of Land and Natural Resources.

SIHP — State Inventory of Historic Places.

SLUC — Hawai'i State Land Use Commission (also referred to as LUC).

SMA — Special Management Area.

SPS — Sewage pump station.

TBR	Turtle Bay Resort, LLC.
TBR Project Team	The staff of TBR and the consultants who were retained for the purpose of preparing the SEIS.
TheBus	Municipal bus service operated by the City and County of Honolulu.
The Resort	The Turtle Bay Resort.
TMK	Tax Map Key, the method of land mapping employed by the State of Hawaiʻi and the City and County of Honolulu for the purposes or real property assessment.
TP	Total phosphorus.
UA	Unilateral Agreement (an instrument of conditional approval signed by the developer, in connection with the approved zoning ordinance adopted by the City and County of Honolulu for the Kuilima Resort, now known as the Turtle Bay Resort. The Kuilima UA (No. 86-99) was recorded with the Bureau of Conveyance in September 1986, meaning that its requirements are tied to the land, regardless of who owns the property.
UIC	Underground injection control.
Ug/l	Micrograms per liter: equal to one millionth of a gram.
U.S.	United States.
USFWS	United States Fish & Wildlife Service.
USGS	United States Geological Survey.
VA	Federal Veterans Administration.
v/c	Volume-to-capacity ratio.
WCA	Waialua Community Association.
WW II	World War Two (also World War II).
WWTP	Wastewater Treatment Plant

GLOSSARY OF HAWAIIAN WORDS

ʻaʻama	a large, black, edible crab
ahu	alter
ahupuaʻa	land division usually extending from the uplands to the sea
ʻāina	land, earth; elder sibling; root meaning: that which feeds
ʻakiʻaki	seashore rush grass; a coarse grass growing on sandy beaches
ʻakoko	Endemic shrubs and trees with jointed stems, opposite leaves, and milky sap. Buds and leaves of one species were chewed for debility
akua	God, goddess, spirit, ghost, devil, image, idol, corpse
aliʻi	chief
ali ʻi ʻai moku	lower chief
ali ʻi nui	high chief
ʻamaʻama	striped mullet
ʻanae	mullet

ʻau or ʻaukai	swimming
ʻaumakua	family or personal gods, deified ancestors who might assume the shape of plants, animals, or other natural phenomena
ʻauwai	irrigation systems for the loʻi
ʻāweoweo	bigeye, glasseye fish
ʻEwa	place name west of Honolulu, used as a direction term
haʻahaʻa	humility
hala	pandanus; sin or fault
hālau	meeting house for hula instruction
hānai	traditional Hawaiian practice of adoption
Hanakaʻīlio	work [of] the dog
hāʻukeʻuke	an edible variety of sea urchin
Haumea	Earth
heʻe	octopus
heʻe nalu	to ride a surfboard; surfing
heʻe waʻa	canoe racing
heiau	pre-Christian place of worship, shrine; religious temples
heiheiau	ancient sport of competitive swimming
hīhīmanu	stingray
hilinaʻi	trustful
hōʻailona	symbol or sign
hōʻihi	respectful
honu	sea turtle
hoʻolapa	ridge
hoʻomau	continuity
ʻīlioholoikauaua	seal
iwi kūpuna	human burial remains; burials
kaha nalu	body surfing
kahawai	streams
kahu	spiritual guide
kahuna	priest
kahuna lāʻau lapaʻau	herbal medicine healer
Kahuku	the projection
kai	ocean
kaiaulu	local community
Kalakala	rough or craggy
kālai kiʻi	wood carving
kalo	taro
kamaʻāina	native born
kānaka	human being, man, person, individual; younger sibling
kānāwai	laws
kapu	laws or restrictions; prohibitions
Kawela	the heat

kinolau	body-form
kō	sugarcane
koa	a valuable lumber tree
koa haole	a common roadside shrub or small tree
konohiki	land manager
kukui	candlenut tree; large tree in the spurge family bearing nuts containing white, oily kernels which were formally used for light
kula	plains
kuleana	responsibility, privilege, obligation
kupuna	grandparent, ancestor, relative or close friend of grandparent's generation; ancestors
kūpuna	plural of *kupuna*; elders
lāʻau	medicine, medicinal drug, medication
lāʻau lapaʻau	herbal healing
lānai	porch
lapaʻau	herbal healing; medical practice; to treat with medicine, heal, cure
lauhala	pandanus leaves
lei	garland, wreath; necklace of flowers
limu	seaweed
loʻi	taro pond-fields
loʻi kalo	taro terraces
lūʻau	young taro tops; Hawaiian feast
mahalo	appreciation
maiʻa	banana
makahiki	ancient festival
makai	towards the ocean
mākia	purposeful
mālama	take care of, preserve, protect, save or maintain
mālama ʻāina	to care for the land
mālama i na iwi kupuna	care for ancestral remains/bones
mana	supernatural or divine power, miraculous power, spiritual power
manaʻo	thoughts or wisdom
maʻu	same as *ʻamaʻu*, a native genus of ferns
mauka	upland, towards the mountain
mauka-makai	upland to ocean
moku	regional; land district
mokupuni	islands
moʻolelo	stories
nā iwi	ancestral bones
nā kūpuna	plural of *kupuna*

naupaka kahakai	succulent shrub found on coasts
niu	coconut
noni	the Indian mulberry
noʻonoʻo	thoughtful
ʻohana	family, relative, kin group
ʻōhelo kai	a shrub
ʻōlelo	language; statement
ʻōlelo noʻeau	proverb, wise saying, traditional saying
ono	wahoo
ʻōʻō	digging stick
ʻoʻopu	general name for fishes included in the families Eleotridae, Gobiidae, and Blennidae
ʻopa	the squeeze
ʻōpelu	mackerel scad, a highly prized fish
paʻakai	sea salt
paeʻāina	archipelago
papa heʻe nalu	surboard
pāpio	a fish
pōhaku	rock, stone
pono	consistency, balanced, righteous
puaʻa	pig
pule	prayer, incantation, blessing, grace
Punamāno	shark spring
puna paʻakai	brackish spring
ʻuala	sweet potato
ʻuhane	spirit
ʻulaʻula	a native variety of taro
ʻulu	breadfruit
wai	fresh water
Wakiu	northwest wind sound
Wauke	paper mulberry
wiliwili	Hawaiian leguminous tree

DIACRITICAL GUIDE FOR PLACE NAMES

ʻEwa

Hanakaʻīlio

Hanakaʻoe

Hauʻula

Hawaiʻi

Kaʻaʻawa

Kāneʻohe

Koʻolau

Koʻolau Loa when referring to the location

Koʻolauloa when referring to Hawaiian Civic Club or Neighborhood Board

Ko ʻOlina

Lāʻie

Mokulēʻia

Oʻahu

ʻŌʻio

ʻŌpana

Punahoʻolapa

Pūpūkea

Waikīkī

~~Figure~~ Table ES-4: Content Checklist

SEIS Compliance	11-200-17 Content requirements for Draft EIS (applicable to SEIS per 11-200-28)		
	A	The Draft EIS shall contain at a minimum the information contained in this section (11-200-17)	
Exec. Summ.	B	Summary Sheet with the following	
Exec. Summ.		1	Brief description of the Proposed Action
Exec. Summ.		2	Significant beneficial/adverse/cumulative/secondary impacts
Exec. Summ.		3	Proposed mitigation measures
Exec. Summ.		4	Alternatives considered
Exec. Summ.		5	Unresolved issues
Exec. Summ.		6	Compatibility with land use plans/policies; listing of permits/approvals
TOC	C	Table of Contents	
Chap. One, Sec. A	D	Statement of Purpose/Need for the Proposed Action	
Chap. Three, Sec. B	E	Project Description with enough detail to evaluate environmental impacts	
Figures 1-6, 2-22 & 2-23		1	Detailed map (USGS topo, FIRM, or floodway boundary)
Chap. Two, Sec. A		2	Statement of objectives
Chap. Three, Sec. B		3	General description of action's characteristics:
Chap. Three, Sec. B.2, B.3 & B.4		a	technical
Chap Three, Sec. B.2, B.3 & B.4		b	social
Chap, Three & Sec. B.2, B.3 & B.4		c	environmetal
Chap. Three, Sec. B.10		4	Use of public funds or lands for the action
Chap. Three, Sec. B.11		5	Phasing and timing of the action
Chap. Three, Sec. B.2, B.3 & B.4		6	Summary technical data, diagrams etc. for evaluation of potential impacts
Chap. One, Sec. G & Chap. Two, Sec. B		7	Historic perspective
Chap. Four	F	Rigorous exploration and objective evaluation of alternatives	
Chap. Four, Sec. A.3.c		1	No action
Chap. Four, Sec. B.3		2	Different nature with similar benefits and different environmental impacts
Chap. Four, Sec. A		3	Alternate designs or details
Chap. Four, Sec. A.3.b		4	Postponing the action
Chap. Four, Sec. A.2		5	Alternative locations
Chap. Four, Sec. C		6	Comparative evaluation of benefits, costs, risks of reasonable alternatives
Chap. Two	G	Existing environmental setting	
Chap. Two		1	Local
Chap. Two, Sec. E.1, E.7 & E.8		3	Rare or unique environmental resources
Chap. Two, Sec. F.3.a		4	Related projects in area contributing to possible cumulative effect
Chap. Two, Sec. F.3.d		5	Area's population/growth characteristics & assumptions used to justify the action
Chap. Two, Sec. F.3.j(2) & j.(3)		6	Secondary population/growth characteristics
Chap. Six	H	Relationship of Proposed Action to land use plans, policies and controls	
Chap. Six		1	For conflicts, extent to which conflict has been reconciled and reasons for proceeding
Chap. Three, Sec. B.12		2	List of necessary approvals and status of each
Chap. Five	I	Statement of probable impacts	
Chap. Five		1	Consideration of all phases
Exec. Summ. & Chapter Five, Sec. B.6.c		2	Direct/indirect
Exec. Summ. & Chap. Five, Sec. D		3	Interrelationships and cumulative impacts of Action and other related projects
Chap. Five, Sec. D.		4	Secondary impacts
Chap. Five, Sec. B.6.a		5	Estimated population impacts
Chap. Five, Sec. B		6	Effects of population change
Chap. Five, Sec. A.5, A.6, A.9 & B.2		7	Direct or indirect sources of pollution
Chap. Five, Sec. G	J	Relationship between local short-term uses of environment and maintenance/enhancement of long-term productivity	
Chap. Six, Sec. C.1		1	Trade-offs/short-term & long-term gains/losses
Chap. Six, Sec. C.2		2	Extent to which Proposed Action forecloses future options
Chap. Six, Sec. C.3		3	Narrows range of beneficial uses
Chap. Six, Sec. C.4		4	Poses long-term risks to health and safety
Chap. Six, Sec. C.6		5	Environmentally signficant consequences
Chap. Five, Sec. F & Chap. Six, Sec. D.6	K	Irreversible/irretrievable commitments of resources	
Chap. Six, Sec. D.1		1	Unavoidable impacts
Chap. Six, Sec. D.2		2	Use of non-renewable resources
Chap. Six, Sec. D.3		3	Curtails range of benefical uses
Chap. Six, Sec. D.4		4	Possibility of environmental accidents resulting from any phase of Proposed Action
Chap. Six, Sec. D.5		5	Loss/destruction of natural/cultural resources
Chap. Five, Sec. E	L	All probable adverse environmental effects that cannot be avoided	
Chap. Five, Sec. G		1	Rationale for proceeding with Action, notwithstanding, adverse effects

SEIS Compliance	11-200-17 Content requirements for Draft EIS (applicable to SEIS per 11-200-28)		
Chap. Six, Sec. E		2	Other governmental policies that offset adverse environmental effects
Chap. Four, Sec. C		3	Ability of reasonable alternatives to achieve countervailing benefits to avoid adverse effects
Chap. Five	M	Mitigation measures	
Chap. Five		1	Basis for determining mitigations reduce impacts to insignificant levels
Chap. Five		2	Timing of mitigations/commitments to assuring mitigation
Chap. Six, Sec. F	N	1	Summarize unresolved issues
Chap. Six, Sec. F		2	How they will be resolved prior to implementing action or overridding reasons for proceeding without resolution
Chap. Eight	O	1	Consulted parties
Chap. Seven		2	Disclosure of preparers
Chap. Eight	P	1	Reproduction of all substantive comments and responses
Chap. Eight, Sec. B		2	List of parties consulted who had no comments

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CHAPTER ONE: Statement of Purpose and Need

A. **Purpose of the Proposed Action** 1-1
B. **Need for the Proposed Action** 1-2
C. **New Guiding Principles for Resort Development and Operation** 1-2
D. **The Landowner and The Accepting Authority** 1-5
E. **Definition of the Proposed Action** 1-6
F. **Elements of the Comprehensive Plan** 1-12
~~**F.**~~**G.** **Regional Setting** . . . . . ~~1-11~~ 1-17
~~**G.**~~**H.** **Contemporary Historical Perspective** . . . . . ~~1-12~~ 1-17

CHAPTER TWO: Environmental Setting

A. **Goal Statement and Objectives** 2-1
B. **Historical Setting** 2-2
C. **Hawaiian Traditions and the Natural Environment** . . . . . ~~2-4~~ 2-5
1. Traditional Land Tenure in Hawai‘i . . . . . ~~2-4~~ 2-6
2. Elements of the Ahupua‘a . . . . . ~~2-5~~ 2-6
D. **The Ahupua‘a of Turtle Bay Resort** . . . . . ~~2-5~~ 2-7
1. Ahupua‘a O ‘Ōpana-Kawela . . . . . ~~2-5~~ 2-7
a. Historic Context . . . . . ~~2-6~~ 2-7
b. Existing Conditions . . . . . ~~2-7~~ 2-8
c. Topography . . . . . ~~2-7~~ 2-9
2. Ahupua‘a O Hanaka‘oe . . . . . ~~2-7~~ 2-9
a. Historic Context . . . . . ~~2-8~~ 2-9
b. Existing Conditions . . . . . ~~2-8~~ 2-9
c. Topography . . . . . ~~2-8~~ 2-10
3. Ahupua‘a O Kahuku . . . . . ~~2-8~~ 2-10
a. Historic Context . . . . . ~~2-9~~ 2-10
b. Existing Conditions . . . . . ~~2-9~~ 2-11
c. Topography . . . . . ~~2-9~~ 2-11
E. **Contextual Natural Environment** . . . . . ~~2-9~~ 2-11
1. Marine Resources . . . . . ~~2-10~~ 2-11
a. Overview of Coastal Geology and Subsurface Hydrology . . . . . ~~2-10~~ 2-12
b. Oceanographic Overview: Coastal Waves, Tides and Currents . . . . . ~~2-12~~ 2-13
c. Overview of Water Quality . . . . . ~~2-13~~ 2-15
d. Site Specific Description of the Turtle Bay Resort's Marine Resources . . . . . ~~2-15~~ 2-18
[1] KAWELA BAY . . . . . ~~2-15~~ 2-18
[2] TURTLE BAY . . . . . ~~2-25~~ 2-32
[3] KUILIMA BAY . . . . . ~~2-34~~ 2-40
e. Presence of Sea Turtles . . . . . ~~2-40~~ 2-48
f. Presence of Monk Seals . . . . . ~~2-42~~ 2-50

2. Groundwater Resources . . . . . ~~2-44~~ 2-52
3. Regional Drainage . . . . . ~~2-45~~ 2-53
a. Ahupuaʻa O ʻŌpana Kawela . . . . . ~~2-46~~ 2-54
b. Ahupuaʻa O Hanakaʻoe . . . . . ~~2-46~~ 2-54
c. Ahupuaʻa O Kahuku . . . . . ~~2-47~~ 2-55
d. Technical Description . . . . . ~~2-48~~ 2-56
[1] EAST MAIN DRAIN SUBSYSTEM . . . . . ~~2-54~~ 2-62
[2] WEST MAIN DRAIN SUBSYSTEM . . . . . ~~2-54~~ 2-62
4. Climate . . . . . ~~2-55~~ 2-63
a. Existing Conditions . . . . . ~~2-55~~ 2-63
b. Climate Change . . . . . ~~2-55~~ 2-63
[1] SEA LEVEL RISE . . . . . ~~2-55~~ 2-63
[2] REDUCED PRECIPITATION . . . . . ~~2-56~~ 2-64
[3] INCREASED STORM INTENSITY . . . . . ~~2-57~~ 2-65
[4] OCEAN ACIDIFICATION . . . . . ~~2-58~~ 2-66
5. Soils . . . . . ~~2-58~~ 2-66
6. Agricultural Productivity . . . . . ~~2-60~~ 2-68
7. Terrestrial Vegetation . . . . . ~~2-60~~ 2-68
a. Historical Transformation . . . . . ~~2-61~~ 2-69
b. Existing conditions . . . . . ~~2-61~~ 2-69
c. Comparison of 1984 and 2011 Surveys . . . . . ~~2-63~~ 2-73
~~Table 2-7: Comparison of Flora Surveys at Turtle Bay Resort (1984 & 2011)~~ . . ~~2-64~~
8. Fauna . . . . . ~~2-64~~ 2-74
a. Avian Population . . . . . ~~2-65~~ 2-74
b. Existing Mammals . . . . . ~~2-65~~ 2-75
c. Stream Biota . . . . . ~~2-66~~ 2-76
~~Table 2-8: Kawela Stream Biota~~ . . . . . ~~2-67~~
F. Contextual Human Environment . . . . . ~~2-66~~ 2-76
1. Archaeological Resources . . . . . ~~2-66~~ 2-76
a. Previous Studies . . . . . ~~2-67~~ 2-76
b. Current Efforts . . . . . ~~2-69~~ 2-79
c. Subsurface Testing . . . . . ~~2-69~~ 2-79
d. Surface Survey . . . . . ~~2-78~~ 2-87
e. Findings . . . . . ~~2-78~~ 2-88
[1] SURFACE SURVEY FINDINGS . . . . . ~~2-78~~ 2-88
[2] SUBSURFACE SURVEY FINDINGS . . . . . ~~2-82~~ 2-92
[3] CONCLUSIONS . . . . . ~~2-82~~ 2-92
2. Cultural Resources . . . . . ~~2-108~~ 2-118
a. Archival Information . . . . . ~~2-108~~ 2-118
b. Oral History Interviews . . . . . ~~2-111~~ 2-121
c. Identified Traditional Cultural Resources . . . . . ~~2-112~~ 2-122
d. Iwi Kūpuna . . . . . ~~2-115~~ 2-125
e. Contemporary Cultural Use of the Land and Sea . . . . . ~~2-117~~ 2-127

3. Socio-Economic Conditions . . . . . ~~2-120~~ 2-130
a. Regional Setting . . . . . ~~2-120~~ 2-130
b. The KNS Regional Economy . . . . . ~~2-121~~ 2-131
c. Social Setting . . . . . ~~2-125~~ 2-135
d. Population Characteristics . . . . . ~~2-131~~ 2-140
e. Housing Characteristics . . . . . ~~2-133~~ 2-143
f. Health Services . . . . . ~~2-137~~ 2-147
g. Education Facilities . . . . . ~~2-138~~ 2-148
h. Recreation Facilities and Attractions . . . . . ~~2-139~~ 2-149
i. Community Issues and Concerns . . . . . ~~2-141~~ 2-151
j. Comparison of Current Socio-Economic Trends with Those Discussed in the 1985 Kuilima EIS . . . . . ~~2-147~~ 2-157
[1] THE SEIS LANDS AND THE RESORT . . . . . ~~2-147~~ 2-157
[2] REGIONAL ECONOMY . . . . . ~~2-147~~ 2-157
[3] POPULATIONS AND COMMUNITIES IN THE REGION . . . . . ~~2-148~~ 2-158
[4] HOUSING MARKET . . . . . ~~2-148~~ 2-158
[5] EMERGING TRENDS . . . . . ~~2-148~~ 2-158
4. Transportation . . . . . ~~2-149~~ 2-159
a. Vehicular Traffic . . . . . ~~2-149~~ 2-159
[1] KAMEHAMEHA HIGHWAY . . . . . ~~2-149~~ 2-159
[2] KUILIMA DRIVE . . . . . ~~2-152~~ 2-162
[3] MARCONI ROAD . . . . . ~~2-152~~ 2-162
[4] SERVICE ROADS . . . . . ~~2-153~~ 2-163
b. Parking . . . . . ~~2-153~~ 2-163
c. Pedestrians . . . . . ~~2-153~~ 2-163
[1] REGIONAL . . . . . ~~2-153~~ 2-163
[2] LOCAL . . . . . ~~2-153~~ 2-163
d. Bicyclists . . . . . ~~2-154~~ 2-164
e. Transit 2-164
~~e.~~*f. Previous Traffic Studies* . . . . . ~~2-154~~ 2-165
~~f.~~*g. Existing Traffic Conditions* . . . . . ~~2-155~~ 2-166
[1] METHODOLOGY . . . . . ~~2-155~~ 2-166
[2] EXISTING AM PEAK HOUR WEEK~~LY~~DAY TRAFFIC CONDITIONS . . . . . ~~2-156~~ 2-167
[3] EXISTING PM PEAK HOUR WEEK~~LY~~DAY TRAFFIC CONDITIONS . . . . . ~~2-157~~ 2-168
[4] EXISTING PEAK HOUR WEEKEND TRAFFIC CONDITIONS . . . . . ~~2-158~~ 2-168
[5] SUMMARY OF EXISTING TRAFFIC CONDITIONS . . . . . ~~2-158~~ 2-169
5. Air Quality . . . . . ~~2-159~~ 2-170
a. National and State Standards . . . . . ~~2-159~~ 2-170
b. Regional and Local Climatology . . . . . ~~2-161~~ 2-172
c. Existing Air Quality Conditions . . . . . ~~2-163~~ 2-174
6. Acoustic Environment . . . . . ~~2-165~~ 2-176
a. Methodology . . . . . ~~2-166~~ 2-177
b. Existing Conditions . . . . . ~~2-167~~ 2-178

7. Public Emergencies and First Responders . . . . . ~~2-169~~ 2-180
a. Public Safety Services and Facilities . . . . . ~~2-169~~ 2-180
[1] POLICE AND SECURITY . . . . . ~~2-169~~ 2-180
[2] FIRE PROTECTION . . . . . ~~2-169~~ 2-180
[3] EMERGENCY SERVICES . . . . . ~~2-169~~ 2-180
[4] EMERGENCY NOTIFICATION AND EVACUATION . . . . . ~~2-169~~ 2-181
b. Possibility of Environmental Accidents . . . . . ~~2-169~~ 2-181
c. Flooding . . . . . ~~2-170~~ 2-182
d. Tsunami . . . . . ~~2-172~~ 2-182
e. Volcanic Hazards . . . . . ~~2-172~~ 2-182
f. Earthquakes and Seismic Activity . . . . . ~~2-172~~ 2-184
g. Landslides, Rock-Falls and Subsidence . . . . . ~~2-173~~ 2-184
h. Severe Winds . . . . . ~~2-173~~ 2-185

CHAPTER THREE: Proposed Action

A. Overview of Market Demand 3-1
B. Description of the Proposed Action 3-3
1. Cultural Orientation 3-3
2. ~~Ahupuaʻa O ʻŌpana Kawela~~ Western Resort Area: Kawela Bay and Kawela Point . . . . ~~3-4~~ 3-6
a. ~~*Ahupuaʻa Orientations*~~ *Resort Residential* . . . . . ~~3-4~~ 3-7
b. ~~*Ahupuaʻa Elements*~~ *Park (P-1)* . . . . . ~~3-6~~ 3-8
c. Kawela Bay Marine Life Conservation District 3-8
~~[1] RESORT RESIDENTIAL~~ . . . . . ~~3-6~~
~~[2] PARK (P-1)~~ . . . . . ~~3-7~~
~~[3] KAWELA BAY MARINE LIFE CONSERVATION DISTRICT~~ . . . . . ~~3-7~~
3. ~~Ahupuaʻa O Hanakaʻoe~~ Central Resort Area: Kuilima Point . . . . . ~~3-7~~ 3-10
a. ~~*Ahupuaʻa Orientations*~~ *Hotel Facilities* . . . . . ~~3-8~~ 3-11
b. ~~*Ahupuaʻa Elements*~~ *The Gathering Place* . . . . . ~~3-8~~ 3-11
c. Farmers' Market 3-12
~~[1] HOTEL FACILITIES~~ . . . . . ~~3-8~~
~~[2] THE GATHERING PLACE~~ . . . . . ~~3-9~~
~~[3] FARMERS' MARKET~~ . . . . . ~~3-9~~
4. ~~Ahupuaʻa O Kahuku~~ Eastern Resort Area: Kahuku Point . . . . . ~~3-10~~ 3-13
a. ~~*Ahupuaʻa Orientations*~~ *Resort Residential* . . . . . ~~3-10~~ 3-14
b. ~~*Ahupuaʻa Elements*~~ *Community Housing* . . . . . ~~3-10~~ 3-14
c. Punahoʻolapa Marsh Preservation and Enhancement 3-14
~~[1] RESORT RESIDENTIAL~~ . . . . . ~~3-10~~
~~[2] COMMUNITY HOUSING~~ . . . . . ~~3-11~~
~~[3] PUNAHOʻOLAPA MARSH PRESERVATION AND ENHANCEMENT~~ . . . . . ~~3-11~~
5. Recreation Amenities . . . . . ~~3-11~~ 3-16
a. Parks and Pedestrian Access . . . . . ~~3-12~~ 3-16
b. Golf . . . . . ~~3-13~~ 3-17

c. Tennis . . . . . ~~3-13~~ 3-17
d. Equestrian Center . . . . . ~~3-13~~ 3-17
e. Open Space . . . . . ~~3-13~~ 3-19
6. Vehicular Circulation . . . . . ~~3-14~~ 3-19
7. Infrastructure and Utilities . . . . . ~~3-14~~ 3-20
a. Pedestrian & Bicycle Access . . . . . ~~3-14~~ 3.20
b. Drainage . . . . . ~~3-14~~ 3-20
c. Drinkable Water Storage and Transmission . . . . . ~~3-16~~ 3-22
[1] EXISTING POTABLE SYSTEM . . . . . ~~3-16~~ 3-22
[2] PROPOSED SYSTEM . . . . . ~~3-17~~ 3-23
d. Irrigation Water . . . . . ~~3-19~~ 3-24
[1] EXISTING ~~POTABLE~~ SYSTEM . . . . . ~~3-19~~ 3-24
[2] PROPOSED SYSTEM . . . . . ~~3-19~~ 3-25
e. Wastewater Collection and Treatment . . . . . ~~3-20~~ 3-25
[1] EXISTING ~~POTABLE~~ SYSTEM . . . . . ~~3-20~~ 3-25
[2] PROPOSED SYSTEM . . . . . ~~3-22~~ 3-28
f. Solid Waste Collection and Disposal & Recycling . . . . . ~~3-22~~ 3-29
[1] EXISTING ~~POTABLE~~ SYSTEM . . . . . ~~3-22~~ 3-29
[2] PROPOSED SYSTEM . . . . . ~~3-22~~ 3-29
g. Electrical and Telecommunication Services . . . . . ~~3-22~~ 3-29
[1] EXISTING ~~POTABLE~~ SYSTEM . . . . . ~~3-22~~ 3-29
[2] PROPOSED SYSTEM . . . . . ~~3-24~~ 3-30
8. Views . . . . . ~~3-24~~ 3-30
9. Construction and Funding Source . . . . . ~~3-25~~ 3-30
10. Use of Public Funds or Lands . . . . . ~~3-25~~ 3-30
11. Phasing and Timing . . . . . ~~3-25~~ 3-31
12. Necessary Approvals . . . . . ~~3-28~~ 3-34

CHAPTER FOUR: Alternatives

A. Alternate Site Plans and Uses 4-1
1. Height Alternatives 4-3
2. Alternate Locations 4-3
3. Alternate Implementation Strategies 4-3
a. Accelerated Implementation Strategies 4-3
b. Delaying Implementation 4-3
c. No Action Alternative 4-4
B. Alternate Development Plans 4-5
1. Full Build Out Alternative 4-5
2. Resort Residential Only Alternative 4-8
3. Conservation Partner Alternative 4-11
4. No Action Alternative 4-15

C. Comparative Evaluation of Reasonable Alternatives 4-15
1. Qualitative Comparison 4-15
2. Comparison of Environmental Effects . . . . . ~~4-17~~ 4-18
3. Quantitative Comparison . . . . . ~~4-18~~ 4-24
a. Construction Spending, Employment, and Wages . . . . . ~~4-18~~ 4-24
b. Population . . . . . ~~4-22~~ 4-28
c. Fiscal Effects . . . . . ~~4-24~~ 4-30
d. Housing . . . . . ~~4-28~~ 4-33
e. Public Safety . . . . . ~~4-28~~ 4-34
f. Education . . . . . ~~4-28~~ 4-34
g. Health . . . . . ~~4-29~~ 4-35
h. Recreation . . . . . ~~4-30~~ 4-35
i. Potable Water Use . . . . . ~~4-31~~ 4-37
j. Wastewater Demand . . . . . ~~4-31~~ 4-37
k. Summary . . . . . ~~4-32~~ 4-38

CHAPTER FIVE: Probable Impacts of the Proposed Action

A. Impacts to the Natural Environment 5-1
1. Topography 5-1
a. Impacts 5-1
b. Recommended Mitigation Measures 5-1
2. Soils . . . . . ~~5-1~~ 5-2
a. Impacts . . . . . ~~5-1~~ 5-2
b. Recommended Mitigation Measures 5-2
3. Terrestrial Vegetation 5-2
a. Impacts 5-2
b. Recommended Mitigation Measures 5-2 5-3
4. Terrestrial Fauna and Avifauna 5-3 5-4
a. Impacts 5-3 5-4
b. Recommended Mitigation Measures 5-4 5-5
5. Groundwater Resources 5-4 5-6
a. Impacts 5-4 5-6
b. Recommended Mitigation Measures 5-5 5-7
6. Surface Water and Drainage 5-5 5-7
a. Impacts 5-5 5-7
b. Recommended Mitigation Measures 5-5 5-8
[1] FAZIO AND PALMER GOLF COURSES 5-6 5-8
[2] EAST MAIN DRAIN 5-7 5-9
[3] WEST MAIN DRAIN 5-8 5-10
7. Marine Resources 5-9 5-11
a. Water Quality 5-9 5-11
[1] IMPACTS 5-9 5-11
[2] RECOMMENDED MITIGATION MEASURES 5-10 5-13

b. Marine Biota . . . . . ~~5-13~~ 5-15
[1] IMPACTS ON FISH AND CORAL . . . . . ~~5-13~~ 5-15
[2] RECOMMENDED MITIGATION MEASURES . . . . . ~~5-12~~ 5-16
[3] IMPACTS ON TURTLES . . . . . ~~5-12~~ 5-17
[4] RECOMMENDED MITIGATION MEASURES . . . . . ~~5-14~~ 5-18
[5] IMPACTS ON MONK SEALS . . . . . ~~5-15~~ 5-19
[6] RECOMMENDED MITIGATION MEASURES . . . . . ~~5-15~~ 5-20
8. Views . . . . . ~~5-16~~ 5-22
a. Impacts . . . . . ~~5-16~~ 5-22
b. Recommended Mitigation Measures . . . . . ~~5-17~~ 5-26
9. Air Quality . . . . . ~~5-17~~ 5-26
a. Short Term Impacts . . . . . ~~5-19~~ 5-27
[1] FUGITIVE DUST EMISSIONS . . . . . ~~5-19~~ 5-27
[2] CONSTRUCTION EQUIPMENT EXHAUST EMISSIONS . . . . . ~~5-19~~ 5-27
[3] SLOW-MOVING CONSTRUCTION EQUIPMENT . . . . . ~~5-20~~ 5-27
b. Longer Term Impacts . . . . . ~~5-20~~ 5-28
[1] TRAFFIC: PREDICTED WORST-CASE 1-HOUR CONCENTRATIONS . . . . . ~~5-20~~ 5-28
[2] TRAFFIC: PREDICTED WORST-CASE 8-HOUR CONCENTRATIONS . . . . . ~~5-22~~ 5-30
[3] POWER GENERATION: INDIRECT EMISSIONS . . . . . ~~5-23~~ 5-31
[4] SOLID WASTE DISPOSAL AT H-POWER FACILITY . . . . . ~~5-24~~ 5-32
c. Recommended Mitigation Measures . . . . . ~~5-25~~ 5-33
B. Impacts on the Human Environment . . . . . ~~5-26~~ 5-34
1. Traffic . . . . . ~~5-26~~ 5-34
a. Analysis of Future Conditions . . . . . ~~5-26~~ 5-34
[1] YEAR 2025 AM PEAK HOUR TRAFFIC WITHOUT THE PROPOSED ACTION . . . . . ~~5-29~~ 5-37
[2] YEAR 2025 PM PEAK HOUR TRAFFIC WITHOUT THE PROPOSED ACTION . . . . . ~~5-29~~ 5-37
[3] YEAR 2025 WEEKEND PEAK HOUR TRAFFIC WITHOUT THE PROPOSED ACTION . . . . . ~~5-30~~ 5-38
[4] TRAFFIC FACILITY IMPACTS WITH THE PROPOSED ACTION AND THE ALTERNATIVES . . . . . ~~5-31~~ 5-38
[5] YEAR 2025 AM PEAK HOUR TRAFFIC WITH THE PROPOSED ACTION . . . . . ~~5-31~~ 5-39
[6] YEAR 2025 PM PEAK HOUR TRAFFIC WITH THE PROPOSED ACTION . . . . . ~~5-31~~ 5-39
[7] YEAR 2025 WEEKEND PEAK HOUR TRAFFIC WITH THE PROPOSED ACTION . . . ~~5-32~~ 5-40
[8] YEAR 2025 WITH THE FULL BUILD-OUT ALTERNATIVE . . . . . ~~5-32~~ 5-40
[9] YEAR 2025 WITH THE RESORT RESIDENTIAL ALTERNATIVE . . . . . ~~5-32~~ 5-40
[10] YEAR 2025 WITH THE CONSERVATION PARTNER ALTERNATIVE . . . . . ~~5-32~~ 5-40
[11] ~~YEAR 2025~~ REGIONAL TRAFFIC IMPACTS . . . . . ~~5-32~~ 5-40
b. Recommended Mitigation Measures . . . . . ~~5-33~~ 5-41
2. Acoustic Environment . . . . . ~~5-39~~ 5-47
a. Impacts of Future Traffic Noise . . . . . ~~5-39~~ 5-47
b. Recommended Mitigation Measures . . . . . ~~5-43~~ 5-52
c. Impacts of Future Construction Noise . . . . . ~~5-44~~ 5-53
~~*b.*~~*d. Recommended Mitigation Measures* . . . . . ~~5-45~~ 5-54

3. Archaeological Resources . . . . . ~~5-45~~ 5-54
a. Impacts . . . . . ~~5-45~~ 5-54
b. Recommended Mitigation Measures . . . . . ~~5-45~~ 5-54
[1] ARCHAEOLOGICAL CONSULTATION . . . . . ~~5-46~~ 5-55
[2] SIGNIFICANCE ASSESSMENTS . . . . . ~~5-47~~ 5-56
[3] RECOMMENDED TREATMENTS . . . . . ~~5-48~~ 5-57
4. Cultural Resources . . . . . ~~5-50~~ 5-59
a. Impacts . . . . . ~~5-50~~ 5-64
[1] MARINE RESOURCES . . . . . ~~5-55~~ 5-64
[2] ARCHAEOLOGICAL RESOURCES . . . . . ~~5-59~~ 5-68
[3] IWI KŪPUNA . . . . . ~~5-59~~ 5-68
[4] SPIRITUAL CONNECTIONS TO THE LAND . . . . . ~~5-59~~ 5-68
[5] CONTEMPORARY USES OF LAND AND SEA . . . . . ~~5-59~~ 5-69
b. Recommended Mitigation Measures . . . . . ~~5-59~~ 5-69
5. Agricultural Resources . . . . . ~~5-62~~ 5-71
a. Impacts . . . . . ~~5-62~~ 5-71
b. Recommended Mitigation Measures . . . . . ~~5-62~~ 5-72
6. Socio-Economic Characteristics . . . . . ~~5-62~~ 5-73
a. Population Growth . . . . . ~~5-63~~ 5-73
b. Recommended Mitigation Measures . . . . . ~~5-64~~ 5-73
c. Employment and Wages . . . . . ~~5-64~~ 5-74
[1] CONSTRUCTION . . . . . ~~5-64~~ 5-74
[2] OPERATIONS . . . . . ~~5-65~~ 5-74
d. Recommended Mitigation Measures . . . . . ~~5-68~~ 5-78
e. Fiscal ~~Effects~~ Impacts . . . . . ~~5-68~~ 5-78
[1] REVENUES . . . . . ~~5-69~~ 5-79
[2] GOVERNMENT COSTS AND BENEFITS . . . . . ~~5-69~~ 5-79
f. Recommended Mitigation Measures . . . . . ~~5-70~~ 5-81
g. Housing Impacts . . . . . ~~5-70~~ 5-81
h. Recommended Mitigation Measures . . . . . ~~5-72~~ 5-84
i. Impacts to Education Facilities . . . . . ~~5-72~~ 5-84
j. Recommended Mitigation Measures . . . . . ~~5-74~~ 5-85
k. Impact to Health Care Facilities . . . . . ~~5-74~~ 5-86
l. Recommended Mitigation Measures . . . . . ~~5-75~~ 5-86
m. Impact to Recreational Amenities . . . . . ~~5-72~~ 5-86
[1] GOLF . . . . . ~~5-75~~ 5-87
[2] BEACH AND OCEAN ACTIVITIES . . . . . ~~5-76~~ 5-87
[3] OTHER ON-SITE ELEMENTS . . . . . ~~5-77~~ 5-88
[4] REGIONAL PARKS AND OTHER RECREATION SITES . . . . . ~~5-79~~ 5-90
n. Recommended Mitigation Measures . . . . . ~~5-79~~ 5-90
o. Public Services and Facilities . . . . . ~~5-80~~ 5-91
p. Recommended Mitigation Measures . . . . . ~~5-80~~ 5-91
7. Disaster Preparedness . . . . . ~~5-80~~ 5-92
a. Impacts of Coastal Inundation and Flooding . . . . . ~~5-80~~ 5-92

b. Recommended Mitigation Measures . . . . . ~~5-81~~ 5-92
c. Impact From Tropical Cyclones . . . . . ~~5-81~~ 5-92
d. Recommended Mitigation Measures . . . . . ~~5-81~~ 5-92
e. Impact of Earthquakes . . . . . ~~5-81~~ 5-93
f. Recommended Mitigation Measures . . . . . ~~5-82~~ 5-93
g. Impact of Severe Winds . . . . . ~~5-82~~ 5-93
h. Recommended Mitigation Measures . . . . . ~~5-82~~ 5-93
i. Climate Change . . . . . ~~5-82~~ 5-93
j. Recommended Mitigation Measures . . . . . ~~5-82~~ 5-93
8. Infrastructure . . . . . ~~5-82~~ 5-94
a. Impacts of Wastewater Collection and Treatment . . . . . ~~5-82~~ 5-94
b. Recommended Mitigation Measures . . . . . ~~5-84~~ 5-96
c. Solid Waste Collection and Disposal . . . . . ~~5-85~~ 5-97
d. Recommended Mitigation Measures . . . . . ~~5-87~~ 5-99
e. Water Use and Conservation . . . . . ~~5-87~~ 5-99
f. Recommended Mitigation Measures . . . . . ~~5-90~~ 5-102
g. Utilities . . . . . ~~5-90~~ 5-102
h. Recommended Mitigation Measures . . . . . ~~5-91~~ 5-103
i. Roadway Improvements 5-103

C. Impacts of the Environment on the Proposed Action . . . . . ~~5-91~~ 5-104

D. Secondary and Cumulative Impacts . . . . . ~~5-92~~ 5-104

E. Probable Adverse Environmental Impacts That Cannot Be Avoided and Mitigation Measures Proposed to Minimize Impact . . . . . ~~5-93~~ 5-106
1. Traffic . . . . . ~~5-93~~ 5-106
2. Drainage . . . . . ~~5-93~~ 5-107
3. Dust Generation . . . . . ~~5-93~~ 5-107
4. Construction Noise . . . . . ~~5-94~~ 5-107
5. Water Consumption . . . . . ~~5-94~~ 5-108
6. Non-Renewable Resource Consumption . . . . . ~~5-94~~ 5-108
7. Cultural Resources . . . . . ~~5-93~~ 5-108

F. Any Irreversible and Irretrievable Commitments of Resources . . . . . ~~5-94~~ 5-109

G. The Relationship Between Local Short-Term Uses of Man's Environment and the Maintenance and Enhancement of Long-Term Productivity . . . . . ~~5-95~~ 5-110

CHAPTER SIX: Contextual Issues

A. Relationship to Land Use Policies and Controls 6-1
1. FEMA National Flood Insurance Program 6-1
2. Hawai'i State Land Use Law (Chapter 205, HRS) 6-1
3. Hawai'i State Plan (Chapter 226, HRS) . . . . . ~~6-2~~ 6-4
a. Goals, Objectives and Policies . . . . . ~~6-2~~ 6-4
b. Recently Enacted Legislation Amending the Hawai'i State Plan . . . . . ~~6-29~~ 6-32

4. State Functional Plans . . . . . ~~6-31~~ 6-34
a. State Agricultural Functional Plan (1991) . . . . . ~~6-31~~ 6-34
b. State Conservation Functional Plan (1991) . . . . . ~~6-31~~ 6-34
c. State Educational Functional Plan (1989) . . . . . ~~6-32~~ 6-35
d. State Higher Education Functional Plan (1984) . . . . . ~~6-32~~ 6-35
e. State Employment Functional Plan (1990) . . . . . ~~6-32~~ 6-35
f. State Energy Functional Plan (1991) . . . . . ~~6-33~~ 6-36
g. State Health Functional Plan (1989) . . . . . ~~6-34~~ 6-37
h. State Historic Preservation Functional Plan (1991) . . . . . ~~6-34~~ 6-37
i. State Housing Functional Plan (1990) . . . . . ~~6-34~~ 6-37
j. State Human Services Functional Plan (1989) . . . . . ~~6-35~~ 6-38
k. State Recreation Functional Plan (1991) . . . . . ~~6-35~~ 6-38
l. State Tourism Functional Plan (1991) . . . . . ~~6-35~~ 6-38
m. State Transportation Functional Plan (1991) . . . . . ~~6-36~~ 6-39
n. State Water Resources Development Functional Plan (1984) . . . . . ~~6-36~~ 6-39
5. State Ocean Resources Management Plan . . . . . ~~6-36~~ 6-39
6. State of Hawai‘i Water Plan . . . . . ~~6-39~~ 6-43
7. Ko‘olau Loa Watershed Management Plan . . . . . ~~6-40~~ 6-45
8. State of Hawai‘i Historic Preservation Act (Chapter 6E, HRS) . . . . . ~~6-43~~ 6-48
9. General Plan for the City and County of Honolulu . . . . . ~~6-44~~ 6-49
10. Ko‘olau Loa Sustainable Communities Plan . . . . . ~~6-53~~ 6-60
11. Revised Ko‘olau Loa Sustainable Communities Plan . . . . . ~~6-54~~ 6-101
12. ~~Complete Streets~~ North Shore Sustainable Communities Plan . . . . . ~~6-57~~ 6-123
~~**12.**~~ **13.** Complete Streets . . . . . ~~6-57~~ 6-125
~~**13.**~~ **14.** Hawai‘i CZM Program and Special Management Area . . . . . ~~6-57~~ 6-126
a. Coastal Zone Management . . . . . ~~6-58~~ 6-126
b. Special Management Area . . . . . ~~6-60~~ 6-128
~~**14.**~~ **15.** State of Hawai‘i Environmental Protection Act (Chapter 343, HRS) . . . . . ~~6-62~~ 6-131
16. Land Use Ordinance (LUO) 6-134

B. Contributing to the Regional and Island Economy . . . . . ~~6-65~~ 6-134

C. Relationship to Short-Term Uses and Long-Term Productivity . . . . . ~~6-65~~ 6-134
1. Trades Offs: Short-Term and Long-Term Gains and Losses . . . . . ~~6-66~~ 6-134
2. Extent to Which the Proposed Action Forecloses Future Options . . . . . ~~6-66~~ 6-135
3. How the Proposed Action Narrows the Range of Beneficial Uses . . . . . ~~6-67~~ 6-136
4. Long-Term Risks to Health and Safety . . . . . ~~6-67~~ 6-136
5. Culturally Significant Consequences . . . . . ~~6-67~~ 6-136
6. Environmentally Significant Consequences . . . . . ~~6-67~~ 6-136
7. Potential Harm to the Environment . . . . . ~~6-67~~ 6-136

D. Irreversible and ~~the~~ Irretrievable Commitments of Resources . . . . . ~~6-68~~ 6-137
1. Unavoidable Impacts and Probable Adverse Effects . . . . . ~~6-68~~ 6-137
2. Use of Non-Renewable Resources . . . . . ~~6-68~~ 6-138
3. Curtailment of the Range of Beneficial Uses . . . . . ~~6-68~~ 6-139
4. Possibility of Environmental Accidents . . . . . ~~6-68~~ 6-139

5. Loss and/or Destruction of Natural and Cultural Resources . . . . . ~~6-69~~ 6-139
6. Addressing the Irretrievable and Irreversible Loss of Resources . . . . . ~~6-69~~ 6-139
E. **Government Policies that Offset Identified Adverse Impacts** . . . . . ~~6-69~~ 6-140
F. **Unresolved Issues** . . . . . ~~6-69~~ 6-140

CHAPTER SEVEN: Document Preparation and References

CHAPTER EIGHT: Public Outreach – see Volume Two

A. **Community Engagement Process** . . . . . ~~1-1~~ 8-1
B. **SEISPN Comments** . . . . . ~~1-2~~ 8-5
C. **Draft SEIS Distribution** . . . . . ~~1-2~~ 8-10
D. **Comments on Draft SEIS**. 8-12

LIST OF FIGURES

Figure	Title	Page	
1-1	Turtle Bay Resort Ahupuaʻa	1-4	
1-2	Turtle Bay Property Map	1-6	
1-3	Scope of Comprehensive Plan (revised)	1-7	
1-4	SEIS Lands	1-8	
1-5	TBR Comprehensive Plan (revised)	1-10	
1-6	Regional Map	1-12	
1-7	Existing Zoning Map	1-14	
1-8	Existing Land Uses	1-15	
1-9	Recent History of the Property	1-16	
2-1	Large channel through the reef near the West Main Drain	~~2-11~~	2-12
2-2	Project Coastline Showing Dominant Wave Directions	~~2-12~~	2-14
2-3	~~Interpolated Current During Ebb Tide~~ Summary of Near Shore Water Sampling Events (1989-1994 / 2000-2001 / 2006-2011) (new)	~~2-16~~	2-17
2-4	~~Interpolated Current During Flood Tide~~ Bathymetry of Kawela Bay (new)	~~2-16~~	2-19
2-5	~~Salinity Profile in Kawela Bay~~ Fine Scale Bathymetry of Inner Kawela Bay (new)	~~2-17~~	2-20
~~2-3~~ 2-6	~~Location of Water Quality Sampling Stations in Kawela Bay since 1989~~ Interpolated Current During Ebb Tide	~~2-18~~	2-21

~~2-4~~ 2-7	~~Graphics of Average Annualized Data (Kawela Bay)~~ Interpolated Current During Flood Tide	2-21	
~~2-5~~ 2-8	~~Representative Photographs from Three Transects within Kawela Bay~~ Salinity Profiles in Kawela Bay	~~2-24~~	2-22
~~2-6~~ 2-9	~~Turtle Bay Bathymetry~~ Locations of water quality sampling stations in Kawela Bay since 1989	~~2-26~~	2-24
~~2-7~~ 2-10	~~West Main Drain Outlet to Turtle Bay~~ Graphs of averaged annualized data (Kawela Bay)	~~2-28~~	2-26
2-11	~~Water Current Circulation in Turtle Bay~~ Principal Habitat Zones in Kawela Bay (new)	~~2-29~~	2-28
~~2-8~~ 2-12	~~Turtle Bay Water Quality Sampling Locations~~ Representative Photographs from three transects within Kawela Bay	2-30	
~~2-9~~ 2-13	~~Annualized Average Data from Turtle Bay~~ Turtle Bay Bathymetry (revised)	~~2-31~~	2-33
~~2-10~~ 2-14	~~Data Visualization Graphic from Turtle Bay, June 2002~~ West Main Drain Outlet ~~(above)~~ to Turtle Bay and Culvert under Kamehameha Highway	~~2-32~~	2-35
~~2-11~~ 2-15	~~Relation Between Salinity and Nitrate plus Nitrite in Turtle Bay~~ Water current circulation in Turtle Bay	~~2-33~~	2-37
~~2-12~~ 2-16	~~Location of Water Quality Samples in Kuilima Bay~~ Turtle Bay water quality sample locations	~~2-35~~	2-38
~~2-13~~ 2-17	~~Graphic Display of Water Quality Data for Kuilima Bay~~ Annualized average data from Turtle Bay	~~2-37~~	2-39
~~2-14~~ 2-18	~~Water Quality Interpretive Graphic from Kuilima Bay~~ Data visualization graphic from Turtle Bay, June 2002	~~2-38~~	2-40
~~2-15~~ 2-19	~~Green Sea Turtle~~ Relation between Salinity and nitrate plus nitrite in Turtle Bay	2-41	
~~2-16~~ 2-20	~~Hawaiian Monk Seal~~ Location of Water Quality Samples in Kuilima Bay	~~2-43~~	2-42
~~2-17~~ 2-21	~~Existing Drainage Plan and Breaks in the Sand Dune~~ Graphic display of water quality data from Kuilima Bay	~~2-49~~	2-44
~~2-18~~ 2-22	~~Existing FEMA Flood Insurance Rate Map, Part 1 of 2~~ Water quality interpretive graphic from Kuilima Bay	~~2-50~~	2-45
2-23	~~Existing FEMA Flood Insurance Rate Map, Part 2 of 2~~ Bathymetry of Kuilima Bay showing location of ʻŌʻio Stream and transect locations (new)	~~2-51~~	2-46
~~2-19~~ 2-24	~~Existing Riverine Flood Map~~ Green Sea Turtle	~~2-52~~	2-49

~~2-20~~	2-25	~~Proposed Riverine Flood Map~~ Hawaiian Monk Seal	2-53	2-51
~~2-21~~	2-26	~~Distribution of Soils within the Project Area~~ Existing Drainage Plan and Breaks in the Sand Dunes/Sheet Flows	2-59	2-57
~~2-22~~	2-27	~~Aerial View of Project Area Showing Test Areas~~ Existing FEMA Flood Insurance Rate Map, Part 1 of 2 (revised)	~~2-70~~	2-58
~~2-23~~	2-28	~~Extent of Mechanical Flailing~~ Existing FEMA Flood Insurance Rate Map, Part 2 of 2 (revised)	~~2-71~~	2-59
~~2-24~~	2-29	~~Distribution of Soils Within the Project Area~~ Existing Riverine Flood Map	~~2-73~~	2-60
~~2-25~~	2-30	~~Aerial View of TBR Property Showing Former Extent of Sugar Cane Fields~~ Proposed Riverine Flood Map	~~2-79~~	2-61
~~2-26~~	2-31	~~Surface Sites and Test Areas Showing Extent of Kahuku Army Airfield Complex~~ Distribution of soils within the project area	~~2-80~~	2-67
Photo 1		View of the shore showing sand and limestone substrata	2-71	
Photo 2		Northeast corner of the SEIS lands showing the coastal Strand vegetation zone	2-72	
~~2-27~~	2-32	~~Summary of Identified Sites~~ Aerial view of project area showing Test Areas	~~2-83~~	2-80
~~2-28~~	2-33	~~Pre-1800 Chronology of Occupation with Project Area~~ Extent of mechanical flailing	~~2-87~~	2-81
~~2-29~~	2-34	~~Prehistoric Sites~~ Distribution of soils within the project area	~~2-89~~	2-83
~~2-30~~	2-35	~~Land Commission Awards within Project Area~~ Aerial view of TBR property showing former extent of sugarcane fields	~~2-90~~	2-89
~~2-31~~	2-36	~~Areas of Increased Potential for Encountering Cultural Deposits in Test Areas B-D~~ Surface sites and Test Areas showing extent of Kahuku Army Airfield complex	~~2-94~~	2-90
~~2-32~~	2-37	~~Mid-1800s to Early 1900s Sites~~ ~~Summary of Identified sites~~ Location of sites identified during SAIS Fieldwork	~~2-96~~	2-93
~~2-33~~	2-38	~~World War II and Marconi Station Sites~~ Pre-1800 chronology of occupation within project area	2-97	
~~2-34~~	2-39	~~Site 7299 Wall~~ Prehistoric Sites	2-99	
~~2-35~~	2-40	~~August 20, 1942 Photograph of Kahuku Army Airfield~~ Land commission awards within project area	2-100	
~~2-36~~	2-41	~~Site 7279 Plan Map~~ Areas of increased potential for encountering cultural deposits in Test Areas B-D	~~2-102~~	2-104

~~2-37~~	2-42	~~Site 7279 Concrete Block~~ Mid 1800s to early 1900s sites	~~2-102~~	2-106
~~2-38~~	2-43	~~Site 7279 Showing Metal Strip~~ World War II and Marconi Station sites	~~2-102~~	2-107
~~2-39~~	2-44	~~Site 7279 Concrete Mound with Inscription~~ Site 7299 wall	~~2-102~~	2-109
~~2-40~~	2-45	~~Site 7279 Concrete Mound with Inscription~~ August 20, 1942 photograph of Kahuku Army Airfield	~~2-102~~	2-110
~~2-41~~	2-46	~~1932 U.S. Coast Guard Geodetic Survey Map~~ Site 7279 plan map	~~2-103~~	2-112
~~2-42~~	2-47	~~Transmitting Aerials of Marconi Telegraph Communication Station~~ Site 7279 concrete block	~~2-103~~	2-112
~~2-43~~	2-48	~~Site 7280 Concrete Structure~~ Site 7279 showing metal strap	~~2-103~~	2-112
~~2-44~~	2-49	~~Composite Map of Kahuku Army Airfield~~ Site 7279 concrete mound with inscription	~~2-104~~	2-112
~~2-45~~	2-50	~~Disturbed Areas Previous Use/Development Activities Plan~~ Site 7279 concrete mound with inscription	~~2-105~~	2-112
~~2-46~~	2-51	~~Site 7287 Displaced Concrete Structure Remnant~~ 1932 U.S. Coast and Geodetic survey map	~~2-107~~	2-113
~~2-47~~	2-52	~~Site 7278 Plan Map~~ Transmitting aerials at Marconi Telegraph Communication Station	~~2-107~~	2-113
~~2-48~~	2-53	~~Site 7278 Concrete Structure~~ Site 7280 Concrete Structure	~~2-107~~	2-113
~~2-49~~	2-54	~~Site 7278 Blown Out Corner of Concrete Structure~~ Composite map of Kahuku Army Airfield	~~2-108~~	2-114
~~2-50~~	2-55	~~Main Cantonment of Kahuku Army Airfield~~ Disturbed Areas, Previous Use/Development Activities Plan	~~2-109~~	2-115
~~2-51~~	2-56	~~Surface of Test Area A~~ Site 7287 displaced concrete structure remnant	~~2-110~~	2-117
~~2-52~~	2-57	~~Site 7267 Bus~~ Site 7278 plan map	~~2-110~~	2-117
~~2-53~~	2-58	~~Honolulu Rapid Transit Company Brochure~~ Site 7278 concrete structure	~~2-110~~	2-117
~~2-54~~	2-59	~~Site 7267 License Plate~~ Site 7278 blown out corner of concrete structure	~~2-110~~	2-118
~~2-55~~	2-60	~~Regional Map~~ Main cantonment of Kahuku Army Airfield	~~2-121~~	2-119
~~2-56~~	2-61	~~Zip Code Tabulation Area~~ Surface of Test Area A	~~2-122~~	2-120
~~2-57~~	2-62	~~Average Annual Sales Prices, Single Family Homes, KNS Area and O'ahu~~ Site 7267 bus	~~2-136~~	2-120
~~2-58~~	2-63	~~Regional Traffic Study~~ Honolulu Rapid Transit Company brochure	~~2-150~~	2-120
~~2-59~~	2-64	~~FIRM Map~~ Site 7267 license plate	~~2-171~~	2-120
~~2-60~~	2-65	Regional Map	~~2-121~~	2-131
~~2-61~~	2-66	Zip Code Tabulation Areas	~~2-133~~	2-132

~~2-62~~ 2-67	Average Annual Sales Prices, Single Family Homes, KNS Area and O'ahu	~~2-136~~	2-146
~~2-63~~ 2-68	Regional Traffic Study	~~2-150~~	2-160
~~2-64~~ 2-69	FIRM Map	~~2-171~~	2-183
3-1	Proposed Action	3-5	
3-2	Proposed Action – Open Space	3-15	
3-3	Wailee Wells	3-18	
3-4	Water Master Plan, Proposed Water System	3-21	
3-5	Sewer Master Plan, Proposed System	~~3-23~~	3-27
4-1	Full Build-Out Alternative	4-7	
4-2	Resort Residential Alternative	4-9	
4-3	Conservation Partner Alternative	4-13	
5-1	Proposed ~~View: Kawela~~ Aerial View of Turtle Bay	~~5-16~~	5-22
5-2	Proposed View: Entry	~~5-17~~	5-23
5-3	Proposed View: Kahuku	~~5-18~~	5-24
5-4	Proposed View: Typical Residential	~~5-18~~	5-24
5-5	Receptor Locations Where Future Traffic Noise Levels Were Calculated	~~5-42~~	5-51
5-6	Anticipated Range of Construction Noise Levels vs. Distance	~~5-44~~	5-53
5-7	Available Work Hours Under DOH Permit Procedures for Construction Noise	~~5-46~~	5-55
5-8	Marine and Terrestrial Resources in Turtle Bay Resort - Proposed Action	~~5-51~~	5-60
5-9	Marine and Terrestrial Resources in Turtle Bay Resort - Full Build-Out	~~5-52~~	5-61
5-10	Marine and Terrestrial Resources in Turtle Bay Resort - Resort Residential	~~5-53~~	5-62
5-11	Marine and Terrestrial Resources in Turtle Bay Resort - Existing Footprint	~~5-54~~	5-63

LIST OF TABLES

Table	Title	Page
1-1	SEIS Lands' Tax Map Key Numbers	1-9

2-1	Hawai'i State Water Quality Standards Applicable to Project Shoreline	~~2-14~~	2-16
2-2	Benthic substrate and benthic biota survey results from Kawela Bay, 2011 (revised to improve clarity)	~~2-22~~	2-29
2-3	Results of fish surveys from three transects in Kawela Bay, 2011	~~2-23~~	2-31
2-4	Summary of water quality from three surveys over 22 years at Kawela Bay	~~2-30~~	2-36
2-5	Summary of water quality from three surveys over 22 years at Kuilima Bay	~~2-36~~	2-43
2-6	Benthic survey results from Kuilima Bay, 2011	~~2-40~~	2-48
2-7	Comparison of Flora Surveys at Turtle Bay Resort (1984 & 2011)	~~2-64~~	2-74
2-8	Kawela Stream Biota	~~2-67~~	2-77
2-9	Summary of identified sites	~~2-81~~	2-91
2-10	SAIS identified and relocated sites	~~2-84~~	2-94
2-11	Previously identified sites	~~2-85~~	2-95
2-12	Summary of burials identified in ~~Turtle Bay~~ TBR Property	~~2-92~~	2-102
2-13	Persons Consulted for the Cultural Impact Assessment	~~2-113~~	2-123
2-14	Cultural Resources Identified at the Turtle Bay Resort Property	~~2-114~~	2-124
2-15	Burials Identified in the SAIS for Turtle Bay Resort	~~2-117~~	2-127
2-16	Employment Patterns by Zip Code of Establishment, 2009	~~2-122~~	2-132
2-17	Industry and Class of Worker, 2006-2010	~~2-123~~	2-133
2-18	Selected Population Characteristics, 2006-2010	~~2-129~~	2-139
2-19	Population Trends, 1980-2010	~~2-130~~	2-140
2-20	Selected Population Characteristics, 2011	~~2-132~~	2-142
2-21	School Population Characteristics, 2011	~~2-133~~	2-143
2-22	Housing and Occupancy, 1980-2010	~~2-134~~	2-144
2-23	Households and Household Size, 2010	~~2-136~~	2-146
2-24	Enrollment in KNS Public Schools, September 2011	~~2-138~~	2-148
2-25	Persons Interviewed for this Report	~~2-140~~	2-150
2-26	Transportation Options for Resort Guests	~~2-151~~	2-161
2-27	Comparison of Existing PM Peak Hour Traffic Volumes; 1985 & 2011	~~2-159~~	2-170
2-28	Summary of State of Hawai'i and National Ambient Air Quality Standards	~~2-160~~	2-171
2-29	Annual Summaries of Air Quality Measurements for Monitoring Stations Nearest Turtle Bay Resort Expansion	~~2-164~~	2-175

2-30	Existing and CY 2025 Distances to 65, 70, and 75 DNL Contours	~~2-168~~	2-179
3-1	Proposed Action Phasing Plan	~~3-27~~	3-32
4-1	Full Build-Out Alternative	4-6	
4-2	Resort Residential Alternative	4-10	
4-3	Conservation Partner Alternative	4-14	
4-4	Comparative Evaluation of Alternatives to SEIS Key Objectives (Qualitative) (revised)	4-16	
4-5	Comparison of Environmental Effects Among Alternatives (revised)	~~4-17~~	4-18
4-6	Construction Plans, Development Alternatives	~~4-18~~	4-24
4-7	Construction-Related Employment and Wages, Proposed Action and Development Alternatives	~~4-19~~	4-25
4-8	On-Site Employment and Wage Impacts, Proposed Action and Development Alternatives	~~4-20~~	4-26
4-9	Off-Site Employment and Wage Impacts Associated with Visitor Spending, Proposed Action and Development Alternatives	~~4-21~~	4-27
4-10	New On-Site Population, Proposed Action and Development Alternatives	~~4-22~~	4-28
4-11	Regional Population Associated with Proposed Action and Development Alternatives, 2025	~~4-23~~	4-29
4-12	Government Revenues Associated with Construction, Proposed Action and Development Alternatives	~~4-24~~	4-30
4-13	Government Revenues Associated with Visitor Spending, Proposed Action and Development Alternatives	~~4-25~~	4-31
4-14	Increased Property Tax Revenues for the City and County of Honolulu, Proposed Action and Development Alternatives	~~4-26~~	4-32
4-15	Revenue-Cost Summary, Proposed Action and Development Alternatives, through 2025	~~4-27~~	4-33
4-16	Potential New Public School Enrollment, Proposed Action and Development Alternatives, to 2025	~~4-29~~	4-35
4-17	Potential New Preschool Enrollment, Proposed Action and Development Alternatives, to 2025	~~4-30~~	4-36
4-18	Comparison of Potable Water Use	~~4-31~~	4-37
4-19	Comparison of Wastewater Generation	~~4-31~~	4-37
4-20	Comparative Quantitative Summary of Proposed Action and Development Alternatives	~~4-32~~	4-38

5-1	Estimated Worst-Case 1-Hour Carbon Monoxide Concentrations Along Roadways Near Turtle Bay Resort Expansion Project (parts per million)	~~5-21~~	5-29
5-2	Estimated Worst Case 8-Hour Carbon Monoxide Concentrations Along Roadways Near Turtle Bay Resort Expansion Project (parts per million)	~~5-23~~	5-31
5-3	Estimated Annual Electrical Demand for Turtle Bay Resort Expansion Project	~~5-24~~	5-32
5-4	Estimated Indirect Air Pollution Emissions from Turtle Bay Resort Expansion Project Electrical Demand	~~5-24~~	5-32
5-5	Estimated Annual Solid Waste Disposal Demand for Turtle Bay Resort Expansion Project	~~5-25~~	5-33
5-6	Estimated Indirect Air Pollution Emissions from Turtle Bay Resort Expansion Project Solid Waste Disposal	~~5-25~~	5-33
5-7	Summary of 2012 TIAR Volume/Capacity Analysis	~~5-34~~	5-42
5-8	Summary of Shuttle Van/Bus Alternatives	~~5-36~~	5-44
5-9	Calculations of Project and Non-Project Traffic Noise Contributions (CY 2025) (PM Peak Hour LEQ or DNL)	~~5-40~~	5-48
5-10	Predicted Traffic Noise Levels at Various Receptor Locations (4.92 ft. High Receptor, 2025 DNL, with Proposed Action)	~~5-41~~	5-49
5-11	Site Significance Assessments and Recommended Treatments	~~5-49~~	5-58
5-12	Impact Summary for Marine and Terrestrial Resources	~~5-56~~	5-65
5-13	Population at Turtle Bay Resort, with Proposed Action	~~5-63~~	5-72
5-14	Employment and Wages Associated with the Proposed ~~Action~~ Project	~~5-65~~	5-75
5-15	Increased Real Property Revenues with Proposed Action (revised - enlarged for clarity)	~~5-69~~	5-80
5-16	Major Housing Effects Associated with Proposed Action KNS Region	~~5-71~~	5-82
5-17	Potential New Public School Enrollment, Proposed Action, to 2025	~~5-73~~	5-83
5-18	Potential New Preschool Enrollment, Proposed Action, to 2025	~~5-74~~	5-85
5-19	Summary of Projected Wastewater Demand	~~5-83~~	5-94
5-20	New Pump Station Service Areas	~~5-84~~	5-96

5-21	Comparison of Solid Waste ~~Generators~~ Generation – 1985 EIS Estimate and Proposed Action	~~5-87~~	5-99
5-22	Potable Water Demand Criteria	~~5-88~~	5-100
5-23	Potable Water Demand for the Proposed Action	~~5-89~~	5-101
6-1	Hawai‘i State Planning Act Part ~~I~~ I	~~6-3~~	6-5
6-2	Hawai‘i State Planning Act Part ~~3~~ III	~~6-21~~	6-23

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CHAPTER ONE: Statement of Purpose and Need

A. **Purpose of the Proposed Action** 1-1
B. **Need for the Proposed Action**. 1-2
C. **New Guiding Principles for Resort Development and Operation** 1-2
D. **The Landowner and The Accepting Authority** 1-5
E. **Definition of the Proposed Action**. 1-6
F. **Elements of the Comprehensive Plan** 1-12
~~**F.**~~**G.** **Regional Setting**. . . . . ~~1-11~~ 1-17
~~**G.**~~**H.** **Contemporary Historical Perspective**. . . . . ~~1-12~~ 1-17

LIST OF FIGURES

Figure	Title	Page
1-1	Turtle Bay Resort Ahupuaʻa	1-4
1-2	Turtle Bay Property Map	1-6
1-3	Scope of Comprehensive Plan (revised)	1-7
1-4	SEIS Lands	1-8
1-5	TBR Comprehensive Plan (revised)	1-10
1-6	Regional Map	1-12
1-7	Existing Zoning Map	1-14
1-8	Existing Land Uses	1-15
1-9	Recent History of the Property	1-16

LIST OF TABLES

Table	Title	Page
1-1	SEIS Lands' Tax Map Key Numbers	1-9

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CHAPTER ONE:

STATEMENT OF PURPOSE AND NEED

A. Purpose of the Proposed Action

The purpose of the Proposed Action is to expand facilities and operations at the Resort in compliance with land use approvals and permits previously granted for the resort. The proposed expansion of the Resort will provide new and much needed employment opportunities to the Koʻolau Loa/North Shore (KNS) region. It will contribute to the strengthening of the visitor industry on the island of Oʻahu, as envisioned in the Hawaiʻi State Plan and the Oʻahu General Plan. It will provide significant new tax revenues to the State of Hawaiʻi and the City and County of Honolulu.

The Proposed Action is presented in this document in accordance with the requirements of Hawaiʻi's Environmental Protection Act ("HEPA"), Chapter 343 of Hawaii Revised Statutes as amended ("HRS"), and Chapter 11-200, Hawaii Administrative Rules ("HAR"), the rules governing the Office of Environmental Quality Control ("OEQC").

This Supplemental Environmental Impact Statement (SEIS) is intended to supplement the environmental impact statement (EIS) that was approved by the City and County of Honolulu's Department of Land Utilization in 1985 for the Kuilima Resort Expansion project (*Revised Final Environmental Impact Statement, Kuilima Resort Expansion, 7 October, 1985*; hereinafter "the 1985 EIS).

As set forth in Section 11-200-28, HAR:

> ***"The contents of the supplemental statement shall be the same as required by [these rules] the EIS and may incorporate by reference unchanged material from the same; however, in addition, it shall fully document the proposed changes from the original EIS, including changes in ambient conditions or available information that have a bearing on a proposed action or its impacts, the positive and negative aspects of these changes, and shall comply with the content requirements of section 11-200-16 as they relate to the changes."***

This SEIS updates the 1985 EIS to disclose proposed changes to the action described in the 1985 EIS, as well as changes to the environment since 1985. In those instances where there have been no substantive or significant changes, the SEIS employs the term "Incorporated by Reference" to alert the reader. The 1985 EIS can be viewed on line at:

http://oeqc.doh.hawaii.gov/Shared%20Documents/EA_and_EIS_Online_Library/Oahu/1980s/1985-10-OA-REIS-KUILIMA-RESORT-EXPANSION-VOL-I.pdf

The SEIS also presents new subject matter that was not presented in the 1985 EIS (primarily due to changes in governmental laws and regulations). For example, in 1985 a Cultural Impact Assessment (CIA) was not specifically required, however in 2000, Act 50 Hawai'i Session Laws was adopted which set forth guidelines for the consideration of impacts of a proposed action on cultural resources. Thus, the SEIS contains an extensive CIA, including ethnographic interviews of cultural practitioners, *mo'olelo* or stories of the area, and archival research documenting the historic uses of the area.

B. Need for the Proposed Action

The Proposed Action will provide new employment opportunities to the KNS region. In so doing, it will improve the quality of life of area residents by creating well-paying construction and operational jobs, new affordable housing opportunities, and by reducing the need for workers to commute to Honolulu for work. The expansion of the Resort as envisioned in the Proposed Action will improve economic vitality in the region by stimulating new business growth while maintaining a rural character on the majority of the resort. It will provide much needed tax revenues to the State and to the City and County of Honolulu, without requiring substantial public investment in facilities, infrastructure, or public services. It will also improve the sustainability of resort operations in a culturally sensitive manner.

The Proposed Action includes the development of new ~~h~~Hotel ~~u~~Units, ~~r~~Resort ~~r~~Residential ~~u~~Units, ~~c~~Community ~~h~~Housing ~~u~~Units, and appurtenant facilities and infrastructure to support them. Hotel units are planned to be developed as time-share units and the ~~r~~Residential ~~u~~Units are planned to be sold to individual buyers.

The real estate markets and buyer's perception of value have undergone significant changes since the original EIS for the Resort was completed in 1985. As such, the highest and best development opportunity for resort residential and hospitality development at the Resort has changed significantly. TBR's market analyst/consultant concludes that the Full Build-Out Alternative of the Resort envisioned in 1985 is currently NOT a financially viable scenario due to changes in market conditions. The density of development and the total number of units in the Full Build Out ~~scenario~~ Alternative were predicated upon creating sufficient mass for the development to create economies of scale. But comparable projects completed elsewhere in Hawai'i since 1985 have demonstrated that success can be achieved at a reduced scale.

The Proposed Action will create a palate of resort unit densities, unit types, and visitor attractions and amenities to achieve the optimal balance of economic, social, and cultural vitality for the resort, while maintaining the rural character of the resort coastline for the enjoyment of the resort's guests and the community at large.

C. New Guiding Principals for Resort Development and Operation

The Hawaiian cultural renaissance that began in the 1970s with a renewed interest in Hawaiian language, music, and dance has successfully merged with contemporary land use policy during the past decade. Today, a growing interest in sustainability has heightened public awareness of the applicability of traditional Hawaiian land use and cultural practices to modern economic

activities. This has led to the TBR project team's exploration of the *ahupuaʻa* natural resources management system to provide a basis for the master planning process.

> ***"In traditional Hawaiian life, an ahupuaʻa[1], or land division, was a complete ecological and economic production system that provided all the resources to sustain the community living within its boundaries. Ahupuaʻa boundaries were the natural geographic formations such as mountain ridges, gulches, and streams, and ahupuʻa were typically wedge-shaped, extending from the top of the mountain into the outer edge of the ocean reef. Fish and marine resources were harvested from the ocean, kalo (taro) and ʻuala (sweet potato) were raised in the lowlands, and upland areas provided trees and other forest products.***
>
> ***The ahupuaʻa concept is a holistic approach to land management that recognizes the connections between land-based and marine-based natural resources and the dependent relationships between ecological functions. Resources were managed for the collective good of all living within the ahupuaʻa, based on the principal that activities in one part of the ahupuaʻa affected all other parts. The ahupuaʻa concept is used as the organizing basis for land use planning and natural resource management in Koʻolau Loa." (Koʻolau Loa Sustainable Communities Plan, Public Review Draft, October 2010)***

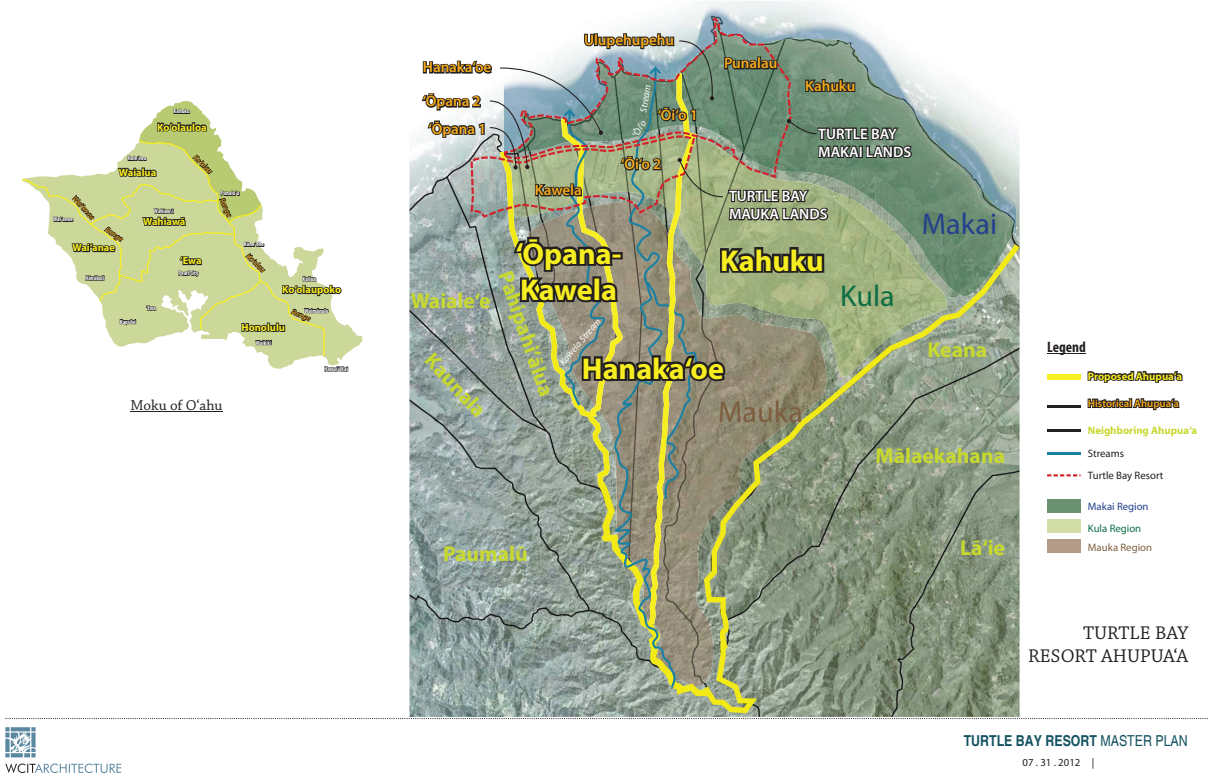
This SEIS, and the Proposed Action it presents, embrace the spirit, meaning, and intent of the *Ahupuaʻa* concept. To that end, an innovative approach has been developed to guide the proposed expansion of the facilities and amenities at the Resort: *Nana I Mua, Nana I Hope* – Looking Forward, Looking Back.

The Resort properties include portions of seven *ahupuaʻa* (in order from west to east): ʻŌpana, Kawela, Hanakaʻoe, ʻŌʻio, ʻUlupehupehu, Punaluʻu, and Kahuku. See Figure 1-1. Exploring the history of these *ahupuaʻa* has renewed an understanding that the qualities inherent to them are still relevant and can be translated to guide the decisions affecting the long-term responsible use and management of the land into the future. This new understanding has led to the formulation of ~~the project team's concept~~ a guiding philosophy for the expansion of the Turtle Bay Resort called *Tomorrow's Ahupuaʻa*, which has become the guide for this planning process. *Tomorrow's Ahupuaʻa* strives to learn from the traditions, values, and aspirations of the host culture to develop a sustainable community platform that celebrates the balance of its environmental, socio-political, economic, and cultural resources. The project team looks to the wisdom of the past to provide sound guidelines to build a common sense approach to a new more balanced future.

The efforts that have been undertaken to produce this SEIS are informed by the ~~concept~~ philosophy of *Tomorrow's Ahupuaʻa*. The SEIS presents new studies of the Resort, including a Cultural Impact Assessment (CIA) and a Supplemental Archaeological Inventory Survey (SAIS).

[1]Note: A glossary of Hawaiian words and terms is provided after the Table of Contents of the SEIS.

Figure 1-1: Turtle Bay Resort Ahupua'a



Between 1977 and 2006, no less than 21 separate reports have been prepared documenting the archaeological resources at the Resort. Nearly 30 years of work has culminated in an approval by the State Historic Preservation Division of the Department of Land and Natural Resources of an Archaeological Mitigation Plan in 2007. However, the resort owner, Turtle Bay Resort, LLC (TBR), voluntarily elected to prepare the SAIS, in part due to community concerns over potential *iwi kūpuna* (human remains) in areas designated for new development, but more importantly because it was the right thing to do. To that end, the SAIS was conducted to supplement the previous archaeological work. The land use plan presented in this SEIS is based upon an exhaustive subsurface investigation of the Resort to determine the presence of any cultural resources.

Tomorrow's Ahupua'a honors the important aspects of the traditional *ahupua'a*; understanding and maintaining lands from *mauka* to *makai*; recognizing and stewarding the unique elements and resources of each *ahupua'a* in order to strive for a path towards higher sustainability; and creating a management framework inspired by the traditional *ahupua'a* to care for the natural and cultural resources. ~~The~~ *Tomorrow's Ahupua'a* ~~concept~~ is a dynamic and evolving ~~planning approach~~ philosophy that is summarized in the document, *A Cultural Approach to Sustainability*, which is presented as Appendix A of this SEIS.

As a conceptual framework, *Tomorrow's Ahupua'a*, has led to the formulation of a revised master plan for the Turtle Bay Lands~~, called the Comprehensive Plan~~. ~~The Comprehensive Plan~~

Tomorrow's Ahupuaʻa is intended to guide design of the proposed expansion of the resort, its approach to sustainability and environmental stewardship, and the resort's future day-to-day operations.

In 2011, Hawaiʻi's Governor signed into law Act 181 amending Chapter 226, HRS (The Hawaii State Plan) to add a new definition for 'Sustainability' and provide new priority guidelines and principles to promote sustainability. Under state law,

"Sustainability means achieving the following:

- ***Respect of the culture character, beauty, and history of the State's island communities;***
- ***Striking a balance between economic, social, community, and environmental priorities and***
- ***Meeting the needs of the present without compromising the ability of future generations to meet their own needs.***

~~The Comprehensive Plan and the~~ *Tomorrow's Ahupuaʻa* ~~concept~~ incorporates this definition into their core principals.

D. The Landowner and The Accepting Authority

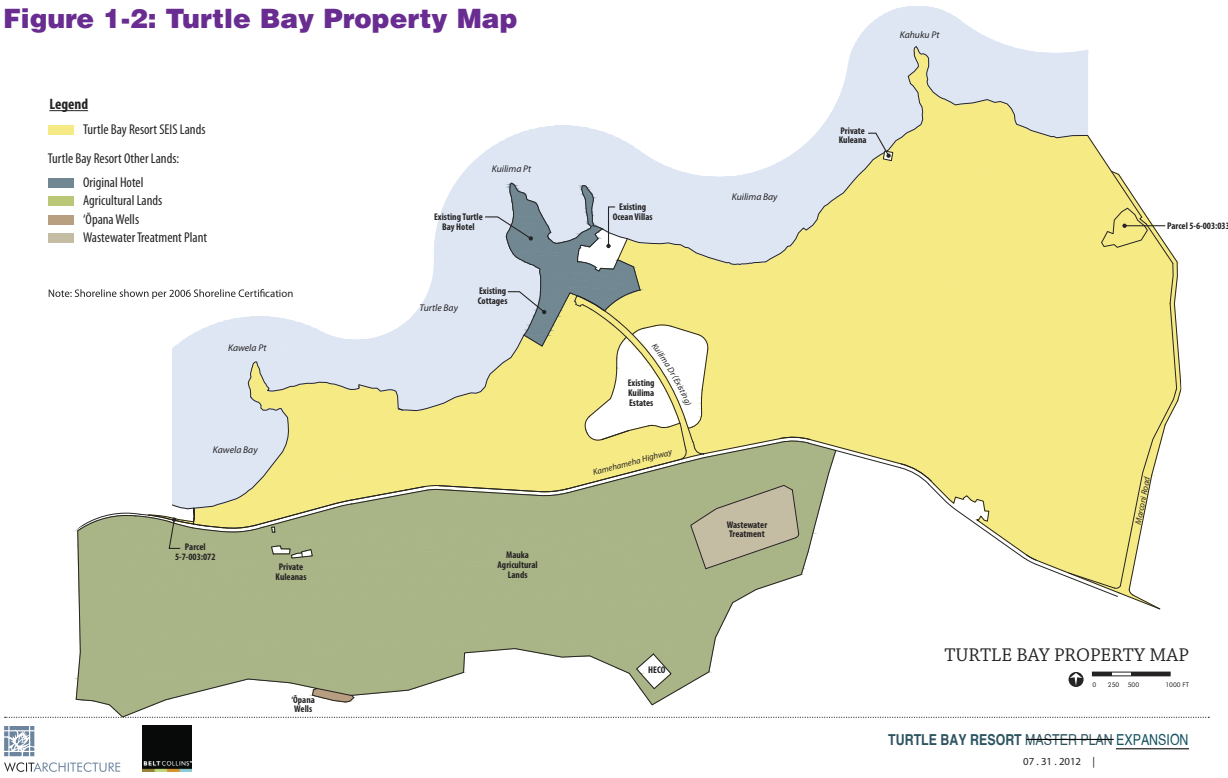
TBR and its related companies are the current owners of approximately 1,300 acres of land on the northern tip of Oʻahu roughly situated between Kawela Bay and Kahuku Point, both *mauka* and *makai* of Kamehameha Highway. These lands shall hereafter be referred to as the "Turtle Bay Property". See Figure 1-2. The Turtle Bay Property includes the Turtle Bay Hotel, two golf courses (Palmer Course and Fazio Course) operated as Turtle Bay Golf along with the remaining undeveloped land and land under agricultural use. The existing development *makai* of Kamehameha Highway that includes the existing hotel and its ancillary facilities, together with the golf courses, are commonly referred to as the Resort. TBR is the owner of the Turtle Bay Hotel and the property within the resort identified in this SEIS for resort expansion. Turtle Bay Mauka Lands, LLC, a separate (although related) entity from TBR is the owner of the approximate 468 acres of agricultural land on the *mauka* side of Kamehameha Highway. Turtle Bay Wastewater Treatment, LLC, a separate (although related) entity from TBR is the owner of the Kuilima Wastewater Treatment Plant situated within the *mauka* agricultural lands

TBR and or its successors will be the applicant of record for any development related approvals or permits required in the foreseeable future for the Turtle Bay Property and is ultimately responsible for the content of this SEIS.

TBR is generally responsible for the overall management of the Resort and assets. The day-to-day management of the Turtle Bay Hotel has been contracted to Benchmark Management LLC.

The Accepting Authority for the SEIS is the City and County of Honolulu's Department of Planning and Permitting (DPP). Pursuant to Chapter 343, HRS, the Accepting Authority

Figure 1-2: Turtle Bay Property Map



must determine whether the Final SEIS complies with the requirements of the law. That determination is not a judgment on the merits of the Proposed Action. Rather, it is a judgment as to whether or not the SEIS fulfills the content and process requirements specified in Section 11-200 HAR, and whether or not all substantive comments received have been adequately addressed by the applicant.

E. Definition of the Proposed Action

TBR has for the past two (2) years engaged in the master planning process to develop a new master plan for the Turtle Bay Lands. The new plan, hereinafter referred to as the Comprehensive Plan, is discussed in this SEIS document. The term "Proposed Action" refers to the proposed expansion of the Resort, guided by the Comprehensive Plan and the *Tomorrow's Ahupua'a* ~~concept~~ philosophy, and discussed in the SEIS. Formulation of the Comprehensive Plan represents the latest milestone in a process that began approximately 25 years ago when the then-owners of the Turtle Bay Hotel decided to seek land use approvals for the expansion of the Resort from a single hotel to a visitor destination area with multiple hotels and visitor-related amenities. The 1985 EIS was subsequently prepared and published to disclose the anticipated impacts of the proposed expansion. As an expansion project, the project proposed in the 1985 EIS did not include the facilities that had already been built: the hotel and adjacent beach cabanas (some of the Cabanas are now known as the Ocean Villas), or the neighboring Kuilima Estate West and East condominiums.

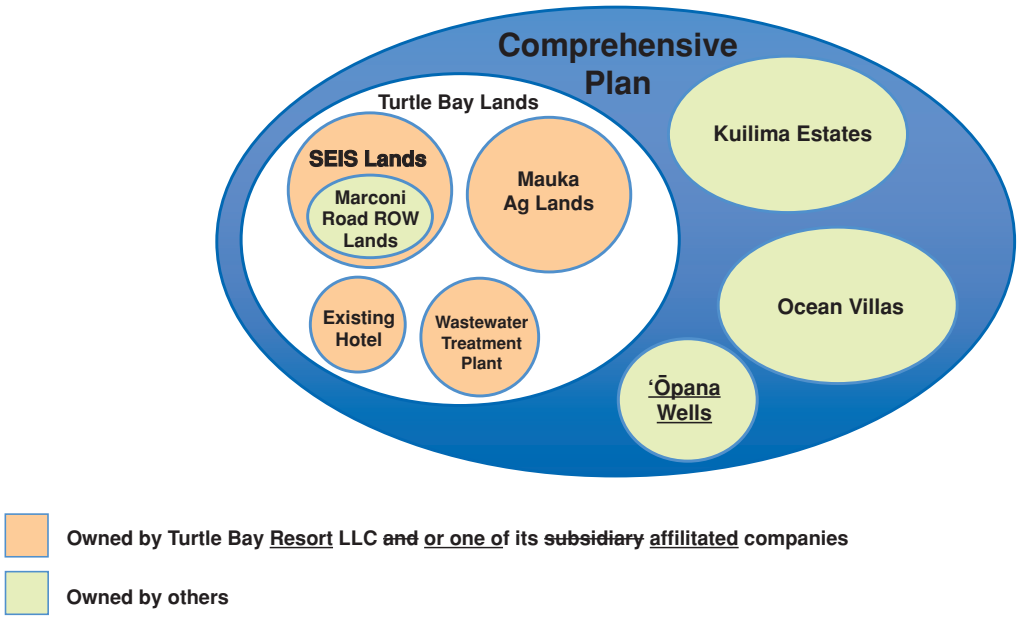
Subsequent to the completion of the 1985 EIS, land use approvals for the proposed expansion

were granted by the State Land Use Commission and the Honolulu City Council between 1986 and 1988, allowing the addition of 3,000 new resort hotel units distributed among five (5) new hotel sites and 1,000 new resort-residential units among three (3) new resort-residential sites.

During the ensuing years, ownership of the Turtle Bay Lands changed hands a number of times, additional properties were acquired, and the cyclical nature of the economy thwarted the subsequent owners' efforts to implement the approved expansion plan (a more detailed explanation of the ~~resort's~~ property's history is provided ~~below in Section G~~ in Chapter Two Section B). Eventually, a legal challenge to a proposed subdivision of the property by TBR's predecessor, Kuilima Resort Company, led to a decision by the Hawai'i State Supreme Court that the 1985 EIS was no longer valid and that a Supplemental EIS was needed to be prepared.

Given this determination, the current owner decided to actively engage the community and government agencies and revisit the original expansion plan. As discussed above, an extensive community outreach program and application of *Tomorrow's Ahupua'a* guidelines have resulted in a substantial revision to the plan. ~~The scope of the resulting Comprehensive Plan is much broader and affects more property than was discussed in the 1985 EIS. Thus, it is important that the reader understands the following: because this SEIS document is intended to supplement the 1985 EIS, it focuses on that portion of the Turtle Bay Lands that were discussed in the 1985 EIS, and, as a result, only a portion of the entire Comprehensive Plan.~~ The existing Turtle Bay Hotel (including the cottages and the Ocean Villas) and Kuilima Estates are fully developed and no further development actions are planned with respect to these elements of the Resort. However, they will be periodically renovated as required by their owners. Accordingly, these elements are excluded from the Proposed Action and this SEIS. The Proposed Action affects all other lands

Figure 1-3: Scope of Comprehensive Plan (revised)



owned by TBR on the *makai* side of Kamehameha Highway, including certain lands owned by third parties adjacent to the Marconi Road right-of-way (ROW). The lands affected by the Proposed Action are referred to herein as the "SEIS Lands". The Proposed Action does not affect any lands located on the *mauka* side of Kamehameha Highway including the agricultural lands owned by Turtle Bay Mauka Lands LLC (sometimes referred to as the Mauka Agricultural Lands), the ʻŌpana Wells, or the Kuilima Wastewater Treatment Plant. The agricultural lands will continue to be cultivated by individual lessees. The ʻŌpana Wells will continue to be operated to provide the resort with potable water. At some point in the future, the third ʻŌpana Well will be placed into operation. The Kuilima Wastewater Treatment Plant will continue to operate as the resort's wastewater treatment plant. Periodic maintenance to the facility, including its potential upgrade to allow the effluent to be treated to an R1 level of water quality may occur in the future.

~~For example, because the existing hotel, the Kuilima Estates, and the Ocean Villas were excluded from the original 1985 EIS, they are not included in the scope of the SEIS. Similarly, because the resort property in 1985 included neither the agricultural lands on the *mauka* side of Kamehameha Highway, nor the ʻŌpana wells that were subsequently developed on the *mauka* side of Kamehameha Highway, these *mauka* properties are also excluded from the SEIS. The 1985 EIS did, however, contemplate the inclusion of Marconi Road as a new access road for the resort. For that reason, and despite the fact that some of the lots that make up the~~

Figure 1-4: SEIS Lands

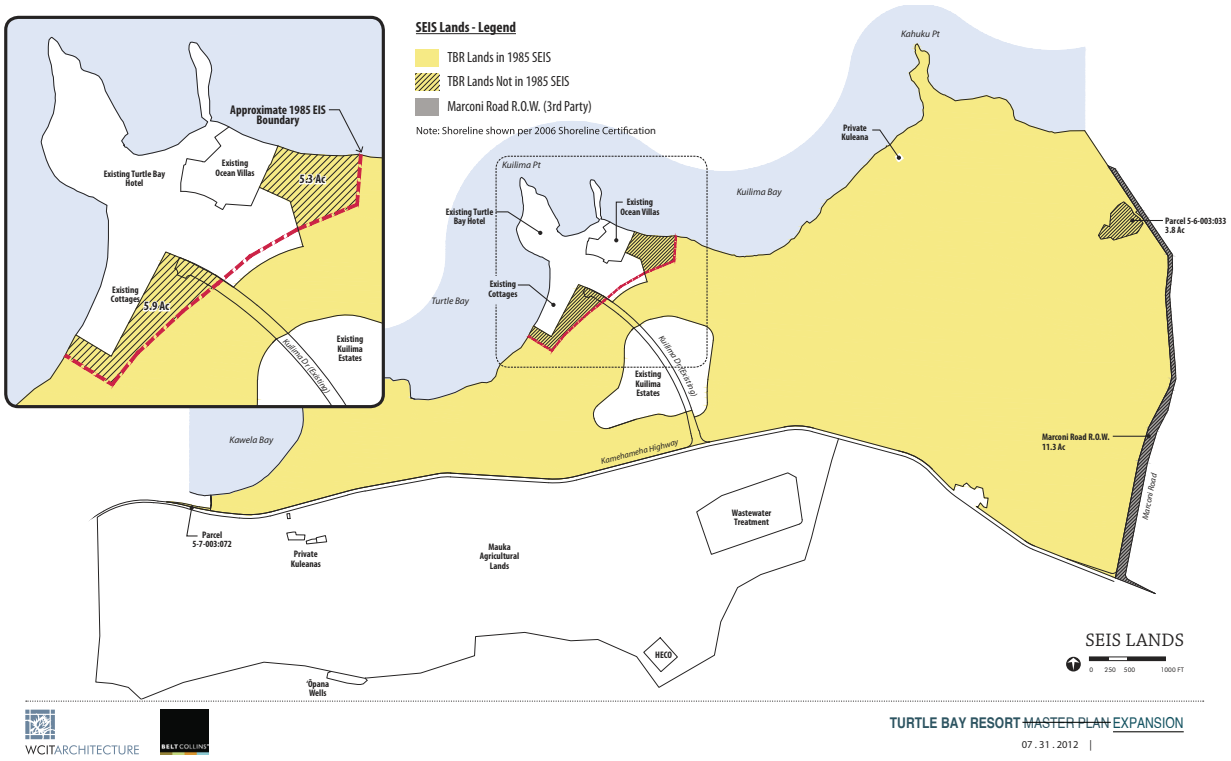


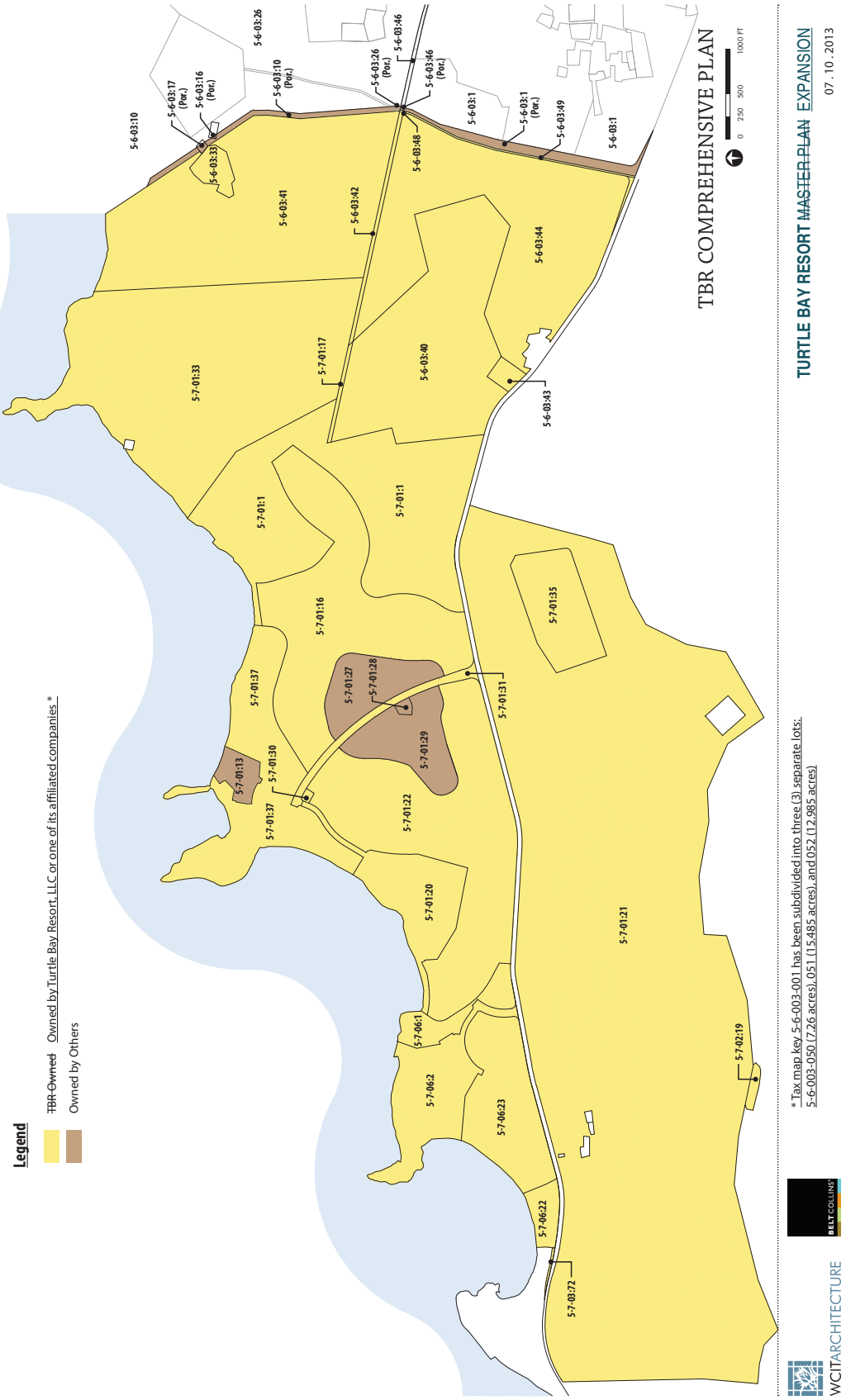
Table 1-1 presents a listing of the tax map parcels included in the SEIS Lands. Figure 1-5 on the next page presents a map of the tax map parcels.

Table 1-1: SEIS Lands' Tax Map Key Numbers

TMK	Parcels	Acreage	Owner	Description
(1) 5-6-003:	~~001~~	~~Por. of 35.730~~	~~Estate of J. Campbell~~	~~Por. of Marconi Rd ROW~~
	010	Por. of 74.824	Makai Ranch, LLC	Por. of Marconi Rd ROW
	016	Por. of 0.275	Makai Ranch, LLC	Por. of Marconi Rd ROW
	017	Por. of 0.239	Makai Ranch, LLC	Por. of Marconi Rd ROW
	026	Por. of 165.077	OBR, LLC	Por. of Marconi Rd ROW
	033	3.917	Turtle Bay Resort, LLC	Por. of Palmer Course
	040	77.048	Turtle Bay Resort, LLC	Por. of Palmer Course
	041	110.087	Turtle Bay Resort, LLC	Por. of Palmer Course
	042	2.421	Turtle Bay Resort, LLC	Por. of OR&L railroad
	044	89.907	Turtle Bay Resort, LLC	Por. of Palmer Course
	046	2.190	OBR, LLC	Por. of Marconi Rd ROW
	048	0.018	Makai Ranch LLC	Segment of Marconi Road
	049	1.235	~~Makai Ranch LLC &~~ OBR, LLC & Marconi Point, LLC	Segment of Marconi Road
	50*	7.26	James Campbell Company LLC	Por. of Marconi Rd ROW
	51*	15.485	United States of America	Por. of Marconi Rd ROW
	52*	12.985	United States of America	Por. of Marconi Rod ROW
(1) 5-7-001:	001	90.898	Turtle Bay Resort, LLC	Por. of Palmer Course
	016	72.777	Turtle Bay Resort, LLC	H4 + Por. of Fazio/Palmer
	017	1.035	Turtle Bay Resort. LLC	OR&L ROW + Por. Palmer
	020	26.653	Turtle Bay Resort, LLC	H3 + Por. of Fazio
	022	83.333	Turtle Bay Resort, LLC	Por. of Fazio
	030	0.310	Turtle Bay Resort, LLC	Golf Clubhouse
	031	5.185	Turtle Bay Resort, LLC	Kuilima Drive
	033	132.039	Turtle Bay Resort, LLC	Por. H5, P2, RR1-3, Palmer & Marsh
(1) 5-7-003:	072	0.200	Turtle Bay Resort, LLC	Remnant @ Kawela near Kamehameha Highway
(1) 5-7-006:	001	8.493	Turtle Bay Resort, LLC	Por. Kawela
	002	25.690	Turtle Bay Resort, LLC	H2 & Kaihalulu Dr. ROW
	022	4.800	Turtle Bay Resort, LLC	P-1 site
	023	30.100	Turtle Bay Resort, LLC	H1 site

* formerly part of parcel (1)5-6-003:001. This roadway subdivision ocurred after publication of the DSEIS

Figure 1-5: TBR Comprehensive Plan (revised)



~~Marconi Road right-of-way (ROW) are owned by others, the SEIS includes the Marconi Road ROW. Collectively, all the properties addressed in the SEIS are hereinafter referred to as the "SEIS Lands".~~

Figure 1-3 illustrates the scope of the Comprehensive Plan and the place of the SEIS Lands within it. Figure 1-4 ~~below~~, depicts the extent of the SEIS lands.

As illustrated by Figure 1-3, while the Comprehensive Plan addresses all the components of the Resort, including those owned by the resort and those owned by other individuals or entities, the lands covered in the SEIS constitute only a portion of the entire resort. Therefore, for the purposes of the SEIS, the Proposed Action is the development of new land uses, activities, and facilities proposed as part of the Comprehensive Plan *within the SEIS Lands*. ~~The SEIS Lands include the lands owned by the resort and proposed for resort expansion as well as the Marconi Road right-of-way that is not owned by the resort. The Comprehensive Plan provides the context in which resort expansion will be implemented. As discussed in Section C above, the Comprehensive Plan presents a dramatic new approach for both the expansion and the day-to-day operation of the Resort.~~

The total acreage of the SEIS Lands is 767.714 acres. However, this total requires some explanation:

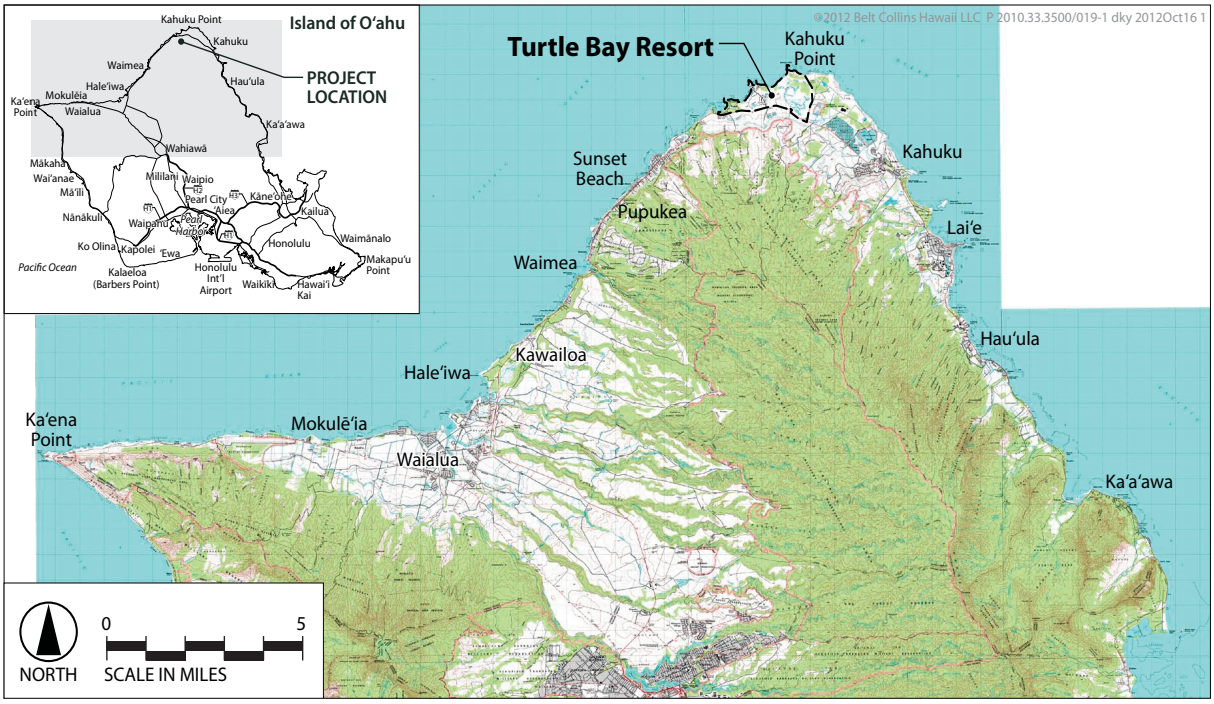
1. The acreages pertaining to Marconi Road presented in the table above represent the total acreage of each parcel. But only a portion of TMK 5-6-003 parcels 1, 10, 16, 17, 26, and 46 are located within the Marconi Road right-of-way. The total acreage of the Marconi Road right-of-way is approximately 11.300 acres, but a metes and bounds survey of each affected parcel has not yet been done in order to allocate the area of each parcel contained within the right-of-way.

2. The total area of the resort (excluding the Marconi Road right-of-way) is approximately 858.672 acres. However, the metes and bounds survey applied to the 2006 shoreline survey of the same area totals 840.567 acres; approximately 18.105 acres less than what the City's Tax Map Keys indicate. The difference is attributed to coastal erosion and mapping error over the past several decades.

3. When the acreage associated with the existing hotel and the Kuilima Estates is removed from the 840.567 acres discussed above, the net area is approximately 756.414 acres. The total acreage of the SEIS Lands is determined by adding the Marconi Road right-of-way (11.300 acres) to the net acreage, for a total of approximately 767.714 acres.

Thus, for the purposes of the SEIS, the total acreage of the Resort is considered to be approximately 840 acres, and the total acreage of the SEIS Lands within the Resort is approximately 768 acres.

Figure 1-6: Regional Map



F. Elements of the Comprehensive Plan

As depicted in Figure 1-3, the Comprehensive Plan for the Turtle Bay Resort is an overarching plan for future development and operations of the resort. As such, it must address the interrelationship of all aspects of the resort. It includes elements that constitute the Proposed Action, as well as elements that are discussed in this SEIS, but are not part of the Proposed Action. Following is a description of the Comprehensive Plan elements that are not part of the Proposed Action, but are referenced in the SEIS. These elements are not phases or increments of the Proposed Action, nor are they necessary precedents for the Proposed Action.

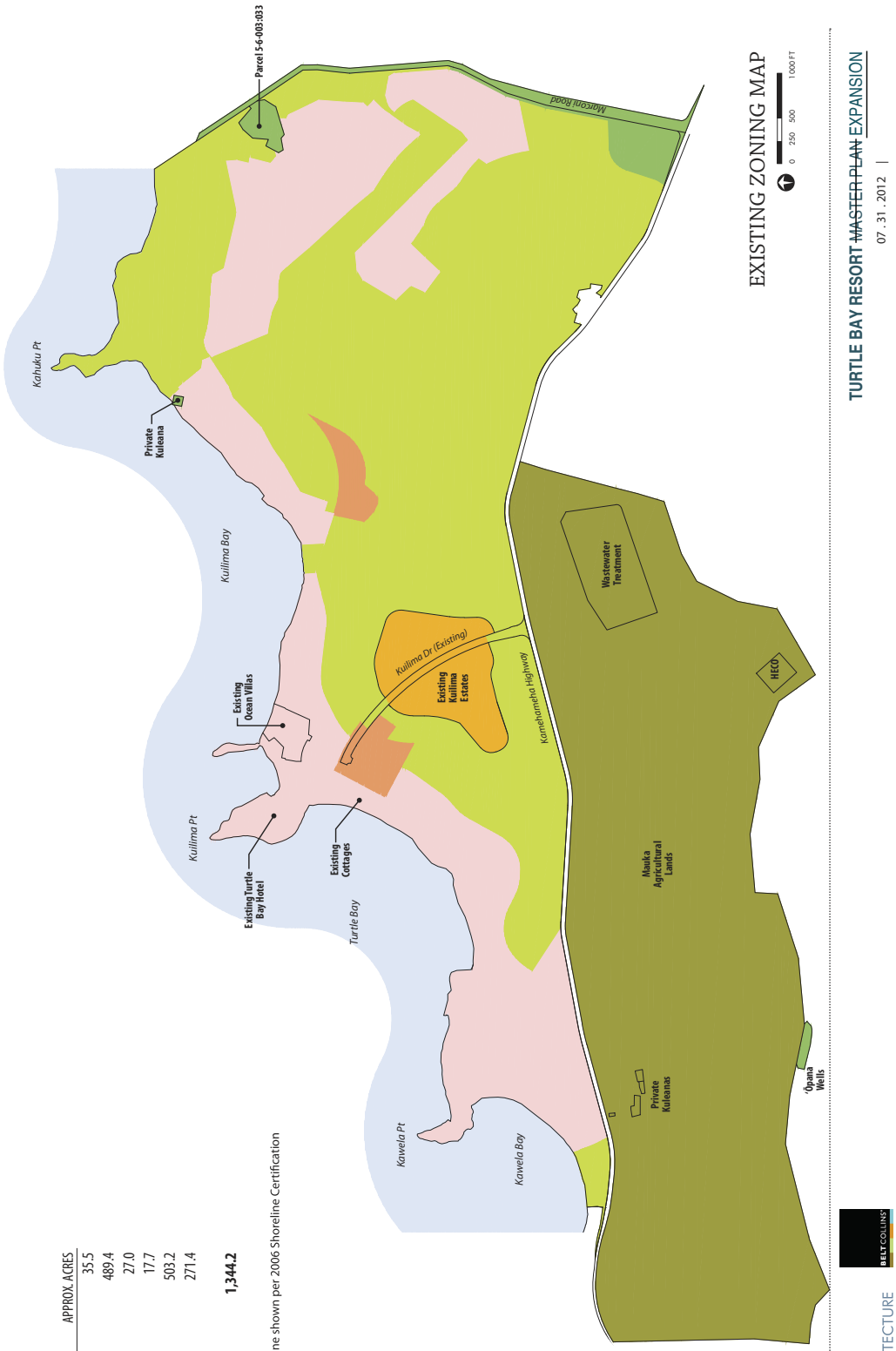
Turtle Bay Hotel: Turtle Bay Resort is responsible for the existing 500 unit hotel, which includes the main hotel structure, the adjacent cottages, the hotel parking lot, tennis courts and accessory uses, and the management of some of the Ocean Villas (units owned individually by others). The hotel property is identified as tax map key 5-7-001: 037; the Ocean Villas condominium project is identified as tax map key 5-7-001:013. The Comprehensive Plan addresses the planned renovation of the Turtle Bay Hotel that began in 2012 and will continue through 2013. It should be noted that the planned renovations do not trigger an environmental assessment pursuant to Chapter 343, Hawaii Revised Statutes, as amended, because such work is considered to be exempt under Section 11-200-8(1), (2), (6), and (7), Hawaii Administrative Rules.

Kuilima Estates East and Kuilima Estates West: The Kuilima Estates include 368 units in multiple one and two story structures that are individually owned, as well as the common areas, parking lots, sidewalks, and accessory uses surrounding them. Kuilima Estates East and Kuilima Estates West each have their own Community Association, which is responsible for the upkeep of their common areas. Individual condominium owners are responsible for the upkeep and maintenance of their own units. While the Turtle Bay Resort has no control over the Kuilima Estates, the presence of the condominium properties within the general resort area is acknowledged in the Comprehensive Plan and each Community Association will participate in contributing to resort common area expenses which they benefit from. Because Turtle Bay Resort owns Kuilima Drive, the access road that links the condominium unit properties to Kamehameha Highway, it must keep the Kuilima Estates informed of any maintenance and operational issues related to Kuilima Drive. (Note: As depicted in Figure 1-4, Kuilima Drive is part of the SEIS Lands.) Maintenance, upkeep, and renovations to the condominium properties and common areas do not trigger an environmental assessment pursuant to Chapter 343, Hawaii Revised Statutes as amended because such work is considered to be exempt under Section 11-200-8(1), (2), (6), and (7), Hawaii Administrative Rules.

***Mauka* Agricultural Lands:** The *mauka* agricultural lands consist of approximately 468 acres of property, owned by Turtle Bay Mauka Lands, LLC ("TBML") and situated on the *mauka* side of Kamehameha Highway. TBML is a separate but related entity to Turtle Bay Resort, LLC. Portions of the *mauka* agricultural lands are leased to individual tenants for the purpose of farming. As part of the Comprehensive Plan, TBML is presently near completing recording a Conservation Easement over the *mauka* agricultural lands for the purpose of retaining them in agricultural use for perpetuity. Ongoing maintenance and upkeep of the *mauka* agricultural lands do not trigger an environmental assessment pursuant to Chapter 343, Hawaii Revised Statutes as amended because such work is considered to be exempt under Section 11-200-8(1), (2), (6), and (7), Hawaii Administrative Rules.

Kuilima Wastewater Treatment Plant: The Wastewater Treatment Plant ("WWTP") consists of a 21-acre property situated *mauka* of the resort. It is bounded by the *mauka* agricultural lands. The property is identified as tax map key 5-7-001:035 and is owned by Turtle Bay Wastewater Treatment, LLC and operated by Aqua Engineers, a third party Federal and State certified Wastewater Treatment Operator. The treatment plant consists of head works that remove solids and grit from sewage pumped uphill from the resort; four large outdoor aerated lagoons, lined to prevent percolation of wastewater, where sludge settles out of the sewage; a chlorine tank where the effluent from the lagoons is chlorinated; an effluent filtration and pump station which pumps the treated effluent back to the resort for reuse as an irrigation supplement on the Palmer Golf Course; and injection wells that are used for the disposal of treated effluent during emergencies (such as a system breakdown or electrical shortage), as required by the State Department of Health. The WWTP was approved by the State Department of Health and constructed in the early 1990s in anticipation of the approved resort expansion that was the subject of the 1985 Revised Final Environmental Impact Statement. Ongoing maintenance and upkeep of the WWTP does not trigger an environmental assessment pursuant to Chapter

Figure 1-7: Existing Zoning Map



Zoning

AREA	APPROX. ACRES
A-1	35.5
AG-1	489.4
AG-2	27.0
B-1	17.7
P-2	503.2
RESORT	271.4
TOTAL SITE	**1,344.2**

Note: Shoreline shown per 2006 Shoreline Certification

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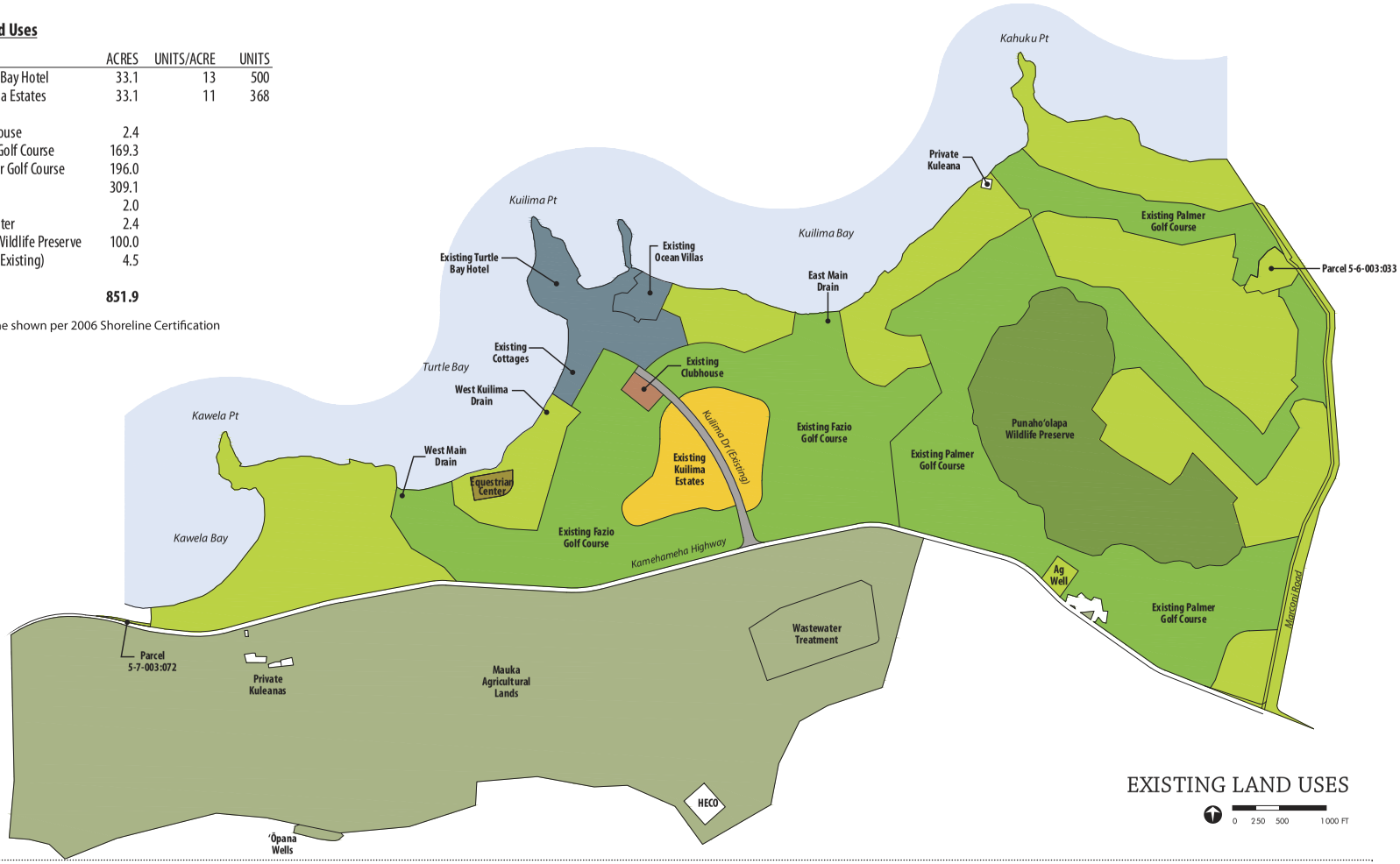
Figure 1-8: Existing Land Uses

Existing Land Uses

AREA	ACRES	UNITS/ACRE	UNITS
Existing Turtle Bay Hotel	33.1	13	500
Existing Kuilima Estates	33.1	11	368
Existing Clubhouse	2.4		
Existing Fazio Golf Course	169.3		
Existing Palmer Golf Course	196.0		
Open Space	309.1		
Ag Well	2.0		
Equestrian Center	2.4		
Punahoolapa Wildlife Preserve	100.0		
Kuilima Drive (Existing)	4.5		
TOTAL SITE	**851.9**		

Note: Shoreline shown per 2006 Shoreline Certification



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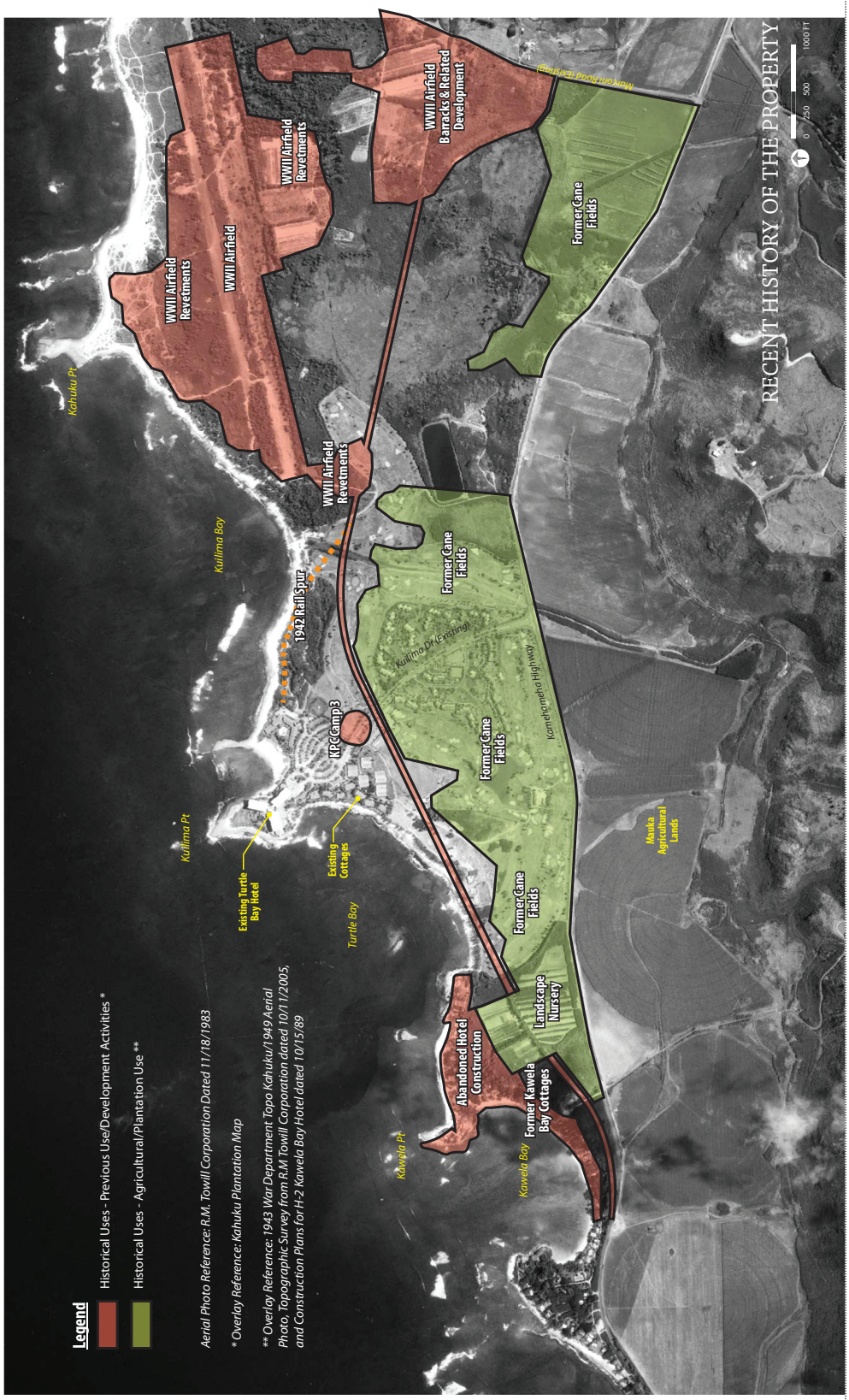
TURTLE BAY RESORT ~~MASTER PLAN~~ EXPANSION

07.31.2012 |

Figure 1-9: Recent History of the Property



TURTLE BAY RESORT ~~MASTER PLAN~~ EXPANSION

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343, Hawaii Revised Statutes as amended because such work is considered to be exempt under Section 11-200-8(1), (2), (6), and (7), Hawaii Administrative Rules. No further expansion of the WWTP is required as the result of the Proposed Action or any of the development alternatives discussed in the SEIS. The Comprehensive Plan addresses the ongoing operations of the WWTP as well as the planning for linking the Proposed Action's gravity sewer lines, pump stations, and force main to the WWTP.

McKenzie Kuleana Property Access: As depicted on Figure 1-5, a small *kuleana* property is situated along the coastline of Kuilima Bay within tax map key 5-7-001:033, approximately 1,000 feet west of Kahuku Point. While the property is not part of the Comprehensive Plan, Turtle Bay Resort is obligated and committed to continue to provide access to this property for its owners. The Comprehensive Plan will ensure that the property rights of the owners continue to be respected during implementation of the Proposed Action or a development alternative and that access to the property is provided.

~~F.~~ G. Regional Setting

The Resort is situated at the northern most point of the island of Oʻahu and is accessed by Kamehameha Highway (FAP 83). The Resort lands are generally located on a broad coastal plain extending seaward from the foothills that constitute the northern terminus of the Koʻolau mountain range. See Figure 1-6.

The Resort is located at the far western end of the Koʻolau Loa Sustainable Communities Plan (SCP) area, approximately one mile east of the SCP's western boundary. To the east of the Resort, the nearest communities are Kahuku Village (3.8 miles), Lāʻie (6.2 miles), Hauʻula (9 miles), Punaluʻu (10.9 miles), Kaʻaʻawa (15.7 miles), and Kāneʻohe (29.6 miles). To the west, the nearest communities are Sunset Beach (4.3 miles), Pūpūkea (4.9 miles), Haleʻiwa (12.3 miles), Waialua (14.8 miles), and Wahiawa (21.2 miles). The Resort is approximately 42.9 miles from Honolulu (via the shortest route across the Central Oʻahu plateau).

Three (3) bays generally front the Resort, which extends from Kawela Stream east to Marconi Road: Kawela Bay to the west, Turtle Bay in the center, and Kuilima Bay (sometimes called Kaihalulu Bay) to the east. Kawela Point separates Kawela Bay from Turtle Bay. Kuilima Point separates Turtle Bay from Kuilima Bay and is the location of the existing Turtle Bay Hotel. Kahuku Point marks the eastern end of Kuilima Bay. The shoreline to the southeast of Kahuku Point is known as Hanakaʻīlio Beach and extends just over a mile to Kalaeuila Point, which is situated a few hundred free to the east of the Turtle Bay Lands' eastern property boundary. See Figure 1-2.

~~G.~~ H. Contemporary Historical Perspective

With the general exception of the beaches *makai* of the sand dunes fronting the bays, the SEIS Lands can be generally characterized as a developed area that has been subjected to periodic development and redevelopment since the late 1700s. The first written descriptions of the

area date back to 1779 when Captain Charles Clerke and Lieutenant James King of the HMS Resolution described the area of Kahuku Point as fine and fertile and occupied by a large village. [Beaglehole: 1967] Subsequent to the decline of the Hawaiian population, the SEIS Lands were converted to a sheep and cattle ranch.

In 1873, records indicate that Kahuku Ranch included all of the SEIS Lands and scattered remains of the ranch have been found in the vicinity of Punahoʻolapa Marsh. [Rechtman: 2009] By the 1880s the land was transformed from cattle ranching to sugar cane cultivation.

In 1889, construction of the Oahu Railway and Land Company's railroad linking Kahuku to other parts of Oʻahu began. The rail line was officially opened in 1899 and its right-of-way eventually crossed the SEIS Lands, passing through a portion of Punahoʻolapa Marsh.

The coastal plains around Kahuku Point were again dramatically transformed during the course of World War II. Land modification activities included the construction of concrete bunkers, asphalt runways, and large soil/sand revetments along with barracks and numerous other buildings. After the war, beach cottages were constructed along the shoreline, especially in the area of Kawela Bay and Kawela Point. The portions of the SEIS Lands cultivated in cane eventually turned fallow with the closure of the Oahu Sugar Company.

In 1972, the current Turtle Bay Hotel was opened by Kuilima Development Company ("KDC") as Kuilima Resort together with an 18-hole golf course, and followed shortly thereafter by two (2) condominium townhouse projects, Kuilima Estates East and Kuilima Estates West (together "Kuilima Estates"). In 1977, the Mayor of Honolulu approved the Oʻahu General Plan that provided, in part, that lands surrounding Kuilima Resort and Kuilima Estates, and extending generally from Kawela Bay to Kahuku Point on Oʻahu's North Shore, be designated as a 'Resort Area' for 'intensive resort and residential development'.

On October 30, 1985, the City and County of Honolulu's Department of Land Utilization (the predecessor to the current Department of Planning and Permitting), acting as the Accepting Agency, approved a Revised Final Environmental Impact Statement (the "1985 EIS") for the expansion of Kuilima Resort, as it was then known. As mentioned above, the 1985 EIS did not include the hotel that existed at that time, the area immediately surrounding it including the site of the beachfront cabanas including those that were replaced by Ocean Villas, or Kuilima Estates.

A 236-acre portion of the Turtle Bay Lands, then leased by KDC, was reclassified in 1986 from the State Agricultural District to the State Urban District. In 1986, KDC executed a Unilateral Agreement with the City and County (and other parties including the Estate of James Campbell) with respect to a portion of the Turtle Bay Lands (the "Unilateral Agreement"), and the City and County then rezoned portions of the Turtle Bay Lands to A-1 (Low Density Apartment), B-1 (Neighborhood Business) and Resort. See Figure 1-7. Among many other terms and conditions, the Unilateral Agreement provided that a total of 4,000 units could be developed on the lands subject to the Unilateral Agreement. This total included the existing Kuilima Resort at the time

(500 units), but excluded Kuilima Estates (368 units). The Unilateral Agreement was amended in 1988 to add Kuilima Estates and additional portions of the Turtle Bay Lands. The Unilateral Agreement is presented in the SEIS as an attachment (Appendix B).

In the late-1980s, the residential cottages along Kawela Point and the eastern half of Kawela Bay were demolished, structural fill was brought in, and construction of the foundations for a new multi-story hotel structure began. The structure was never completed, but underground utilities and numerous concrete piles remain today. At that time the 18-hole Palmer Golf Course was built and the Fazio Golf Course was reduced to 9-holes. Punahoʻolapa Marsh was enhanced by the construction of a moat around much of its perimeter. The original wastewater treatment plant was decommissioned after a more modern facility was constructed *mauka* of Kamehameha Highway. In 2001, the Fazio Golf Course was reinstated back into an 18-hole golf course. In 2008, Kuilima Drive was widened. Figure 1-8 depicts the existing land uses at the Resort.

In 2006, Kuilima Resort Company ("KRC"), the successor in interest to KDC, received tentative approval from the City and County for a bulk lot subdivision impacting approximately 700 acres of lands subject to the Unilateral Agreement.

Figure 1-9 illustrates the extent of previous disturbances on the SEIS Lands.

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CHAPTER TWO: Environmental Setting

A. Goal Statement and Objectives 2-1

B. Historical Setting 2-2

C. Hawaiian Traditions and the Natural Environment . . . . . ~~2-4~~ 2-5

1. Traditional Land Tenure in Hawai'i . . . . . ~~2-4~~ 2-6

2. Elements of the Ahupua'a . . . . . ~~2-5~~ 2-6

D. The Ahupua'a of Turtle Bay Resort . . . . . ~~2-5~~ 2-7

1. Ahupua'a O 'Ōpana-Kawela . . . . . ~~2-5~~ 2-7

a. Historic Context . . . . . ~~2-6~~ 2-7

b. Existing Conditions . . . . . ~~2-7~~ 2-8

c. Topography . . . . . ~~2-7~~ 2-9

2. Ahupua'a O Hanaka'oe . . . . . ~~2-7~~ 2-9

a. Historic Context . . . . . ~~2-8~~ 2-9

b. Existing Conditions . . . . . ~~2-8~~ 2-9

c. Topography . . . . . ~~2-8~~ 2-10

3. Ahupua'a O Kahuku . . . . . ~~2-8~~ 2-10

a. Historic Context . . . . . ~~2-9~~ 2-10

b. Existing Conditions . . . . . ~~2-9~~ 2-11

c. Topography . . . . . ~~2-9~~ 2-11

E. Contextual Natural Environment . . . . . ~~2-9~~ 2-11

1. Marine Resources . . . . . ~~2-10~~ 2-11

a. Overview of Coastal Geology and Subsurface Hydrology . . . . . ~~2-10~~ 2-12

b. Oceanographic Overview: Coastal Waves, Tides and Currents . . . . . ~~2-12~~ 2-13

c. Overview of Water Quality . . . . . ~~2-13~~ 2-15

d. Site Specific Description of the Turtle Bay Resort's Marine Resources . . . . . ~~2-15~~ 2-18

[1] KAWELA BAY . . . . . ~~2-15~~ 2-18

[2] TURTLE BAY . . . . . ~~2-25~~ 2-32

[3] KUILIMA BAY . . . . . ~~2-34~~ 2-40

e. Presence of Sea Turtles . . . . . ~~2-40~~ 2-48

f. Presence of Monk Seals . . . . . ~~2-42~~ 2-50

2. Groundwater Resources . . . . . ~~2-44~~ 2-52

3. Regional Drainage . . . . . ~~2-45~~ 2-53

a. Ahupua'a O 'Ōpana Kawela . . . . . ~~2-46~~ 2-54

b. Ahupua'a O Hanaka'oe . . . . . ~~2-46~~ 2-54

c. Ahupua'a O Kahuku . . . . . ~~2-47~~ 2-55

d. Technical Description . . . . . ~~2-48~~ 2-56

[1] EAST MAIN DRAIN SUBSYSTEM . . . . . ~~2-54~~ 2-62

[2] WEST MAIN DRAIN SUBSYSTEM . . . . . ~~2-54~~ 2-62

4. Climate . . . . . ~~2-55~~ 2-63

a. Existing Conditions . . . . . ~~2-55~~ 2-63

b. Climate Change . . . . . ~~2-55~~ 2-63

[1] SEA LEVEL RISE . . . . . ~~2-55~~ 2-63

[2] REDUCED PRECIPITATION . . . . . ~~2-56~~ 2-64
[3] INCREASED STORM INTENSITY . . . . . ~~2-57~~ 2-65
[4] OCEAN ACIDIFICATION . . . . . ~~2-58~~ 2-66
5. Soils . . . . . ~~2-58~~ 2-66
6. Agricultural Productivity . . . . . ~~2-60~~ 2-68
7. Terrestrial Vegetation . . . . . ~~2-60~~ 2-68
a. Historical Transformation . . . . . ~~2-61~~ 2-69
b. Existing conditions . . . . . ~~2-61~~ 2-69
c. Comparison of 1984 and 2011 Surveys . . . . . ~~2-63~~ 2-73
~~Table 2-7: Comparison of Flora Surveys at Turtle Bay Resort (1984 & 2011)~~ . . ~~2-64~~
8. Fauna . . . . . ~~2-64~~ 2-74
a. Avian Population . . . . . ~~2-65~~ 2-74
b. Existing Mammals . . . . . ~~2-65~~ 2-75
c. Stream Biota . . . . . ~~2-66~~ 2-76
~~Table 2-8: Kawela Stream Biota~~ . . . . . ~~2-67~~
F. Contextual Human Environment . . . . . ~~2-66~~ 2-76
1. Archaeological Resources . . . . . ~~2-66~~ 2-76
a. Previous Studies . . . . . ~~2-67~~ 2-76
b. Current Efforts . . . . . ~~2-69~~ 2-79
c. Subsurface Testing . . . . . ~~2-69~~ 2-79
d. Surface Survey . . . . . ~~2-78~~ 2-87
e. Findings . . . . . ~~2-78~~ 2-88
[1] SURFACE SURVEY FINDINGS . . . . . ~~2-78~~ 2-88
[2] SUBSURFACE SURVEY FINDINGS . . . . . ~~2-82~~ 2-92
[3] CONCLUSIONS . . . . . ~~2-82~~ 2-92
2. Cultural Resources . . . . . ~~2-108~~ 2-118
a. Archival Information . . . . . ~~2-108~~ 2-118
b. Oral History Interviews . . . . . ~~2-111~~ 2-121
c. Identified Traditional Cultural Resources . . . . . ~~2-112~~ 2-122
d. Iwi Kūpuna . . . . . ~~2-115~~ 2-125
e. Contemporary Cultural Use of the Land and Sea . . . . . ~~2-117~~ 2-127
3. Socio-Economic Conditions . . . . . ~~2-120~~ 2-130
a. Regional Setting . . . . . ~~2-120~~ 2-130
b. The KNS Regional Economy . . . . . ~~2-121~~ 2-131
c. Social Setting . . . . . ~~2-125~~ 2-135
d. Population Characteristics . . . . . ~~2-131~~ 2-140
e. Housing Characteristics . . . . . ~~2-133~~ 2-143
f. Health Services . . . . . ~~2-137~~ 2-147
g. Education Facilities . . . . . ~~2-138~~ 2-148
h. Recreation Facilities and Attractions . . . . . ~~2-139~~ 2-149
i. Community Issues and Concerns . . . . . ~~2-141~~ 2-151

j. Comparison of Current Socio-Economic Trends with Those Discussed in the 1985 Kuilima EIS . . . . . ~~2-147~~ 2-157
[1] THE SEIS LANDS AND THE RESORT . . . . . ~~2-147~~ 2-157
[2] REGIONAL ECONOMY . . . . . ~~2-147~~ 2-157
[3] POPULATIONS AND COMMUNITIES IN THE REGION . . . . . ~~2-148~~ 2-158
[4] HOUSING MARKET . . . . . ~~2-148~~ 2-158
[5] EMERGING TRENDS . . . . . ~~2-148~~ 2-158
4. Transportation . . . . . ~~2-149~~ 2-159
a. Vehicular Traffic . . . . . ~~2-149~~ 2-159
[1] KAMEHAMEHA HIGHWAY . . . . . ~~2-149~~ 2-159
[2] KUILIMA DRIVE . . . . . ~~2-152~~ 2-162
[3] MARCONI ROAD . . . . . ~~2-152~~ 2-162
[4] SERVICE ROADS. . . . . ~~2-153~~ 2-163
b. Parking . . . . . ~~2-153~~ 2-163
c. Pedestrians . . . . . ~~2-153~~ 2-163
[1] REGIONAL . . . . . ~~2-153~~ 2-163
[2] LOCAL . . . . . ~~2-153~~ 2-163
d. Bicyclists . . . . . ~~2-154~~ 2-164
e. Transit 2-164
~~*e.*~~*f. Previous Traffic Studies* . . . . . ~~2-154~~ 2-165
~~*f.*~~*g. Existing Traffic Conditions* . . . . . ~~2-155~~ 2-166
[1] METHODOLOGY . . . . . ~~2-155~~ 2-166
[2] EXISTING AM PEAK HOUR WEEK~~LY~~DAY TRAFFIC CONDITIONS . . . . . ~~2-156~~ 2-167
[3] EXISTING PM PEAK HOUR WEEK~~LY~~DAY TRAFFIC CONDITIONS . . . . . ~~2-157~~ 2-168
[4] EXISTING PEAK HOUR WEEKEND TRAFFIC CONDITIONS . . . . . ~~2-158~~ 2-168
[5] SUMMARY OF EXISTING TRAFFIC CONDITIONS. . . . . ~~2-158~~ 2-169
5. Air Quality . . . . . ~~2-159~~ 2-170
a. National and State Standards . . . . . ~~2-159~~ 2-170
b. Regional and Local Climatology . . . . . ~~2-161~~ 2-172
c. Existing Air Quality Conditions . . . . . ~~2-163~~ 2-174
6. Acoustic Environment . . . . . ~~2-165~~ 2-176
a. Methodology . . . . . ~~2-166~~ 2-177
b. Existing Conditions. . . . . ~~2-167~~ 2-178
7. Public Emergencies and First Responders . . . . . ~~2-169~~ 2-180
a. Public Safety Services and Facilities . . . . . ~~2-169~~ 2-180
[1] POLICE AND SECURITY . . . . . ~~2-169~~ 2-180
[2] FIRE PROTECTION . . . . . ~~2-169~~ 2-180
[3] EMERGENCY SERVICES. . . . . ~~2-169~~ 2-180
[4] EMERGENCY NOTIFICATION AND EVACUATION . . . . . ~~2-169~~ 2-181
b. Possibility of Environmental Accidents . . . . . ~~2-169~~ 2-181
c. Flooding . . . . . ~~2-170~~ 2-182
d. Tsunami. . . . . ~~2-172~~ 2-182
e. Volcanic Hazards . . . . . ~~2-172~~ 2-182

f. Earthquakes and Seismic Activity . . . . . ~~2-172~~ 2-184
g. Landslides, Rock-Falls and Subsidence . . . . . ~~2-173~~ 2-184
h. Severe Winds . . . . . ~~2-173~~ 2-185

LIST OF FIGURES

Figure	Title	Page	
2-1	Large channel through the reef near the West Main Drain	~~2-11~~	2-12
2-2	Project Coastline Showing Dominant Wave Directions	~~2-12~~	2-14
2-3	~~Interpolated Current During Ebb Tide~~ Summary of Near Shore Water Sampling Events (1989-1994 / 2000-2001 / 2006-2011) (new)	~~2-16~~	2-17
2-4	~~Interpolated Current During Flood Tide~~ Bathymetry of Kawela Bay (new)	~~2-16~~	2-19
2-5	~~Salinity Profile in Kawela Bay~~ Fine Scale Bathymetry of Inner Kawela Bay (new)	~~2-17~~	2-20
~~2-3~~ 2-6	~~Location of Water Quality Sampling Stations in Kawela Bay since 1989~~ Interpolated Current During Ebb Tide	~~2-18~~	2-21
~~2-4~~ 2-7	~~Graphics of Average Annualized Data (Kawela Bay)~~ Interpolated Current During Flood Tide	2-21	
~~2-5~~ 2-8	~~Representative Photographs from Three Transects within Kawela Bay~~ Salinity Profiles in Kawela Bay	~~2-24~~	2-22
~~2-6~~ 2-9	~~Turtle Bay Bathymetry~~ Locations of water quality sampling stations in Kawela Bay since 1989	~~2-26~~	2-24
~~2-7~~ 2-10	~~West Main Drain Outlet to Turtle Bay~~ Graphs of averaged annualized data (Kawela Bay)	~~2-28~~	2-26
2-11	~~Water Current Circulation in Turtle Bay~~ Principal Habitat Zones in Kawela Bay (new)	~~2-29~~	2-28
~~2-8~~ 2-12	~~Turtle Bay Water Quality Sampling Locations~~ Representative Photographs from three transects within Kawela Bay	2-30	
~~2-9~~ 2-13	~~Annualized Average Data from Turtle Bay~~ Turtle Bay Bathymetry (revised)	~~2-31~~	2-33
~~2-10~~ 2-14	~~Data Visualization Graphic from Turtle Bay, June 2002~~ West Main Drain Outlet ~~(above)~~ to Turtle Bay and Culvert under Kamehameha Highway	~~2-32~~	2-35
~~2-11~~ 2-15	~~Relation Between Salinity and Nitrate plus Nitrite in Turtle Bay~~ Water current circulation in Turtle Bay	~~2-33~~	2-37
~~2-12~~ 2-16	~~Location of Water Quality Samples in Kuilima Bay~~ Turtle Bay water quality sample locations	~~2-35~~	2-38

~~2-13~~	2-17	~~Graphic Display of Water Quality Data for Kuilima Bay~~ Annualized average data from Turtle Bay	~~2-37~~	2-39
~~2-14~~	2-18	~~Water Quality Interpretive Graphic from Kuilima Bay~~ Data visualization graphic from Turtle Bay, June 2002	~~2-38~~	2-40
~~2-15~~	2-19	~~Green Sea Turtle~~ Relation between Salinity and nitrate plus nitrite in Turtle Bay	2-41	
~~2-16~~	2-20	~~Hawaiian Monk Seal~~ Location of Water Quality Samples in Kuilima Bay	~~2-43~~	2-42
~~2-17~~	2-21	~~Existing Drainage Plan and Breaks in the Sand Dune~~ Graphic display of water quality data from Kuilima Bay	~~2-49~~	2-44
~~2-18~~	2-22	~~Existing FEMA Flood Insurance Rate Map, Part 1 of 2~~ Water quality interpretive graphic from Kuilima Bay	~~2-50~~	2-45
2-23		~~Existing FEMA Flood Insurance Rate Map, Part 2 of 2~~ Bathymetry of Kuilima Bay showing location of ʻŌʻio Stream and transect locations (new)	~~2-51~~	2-46
~~2-19~~	2-24	~~Existing Riverine Flood Map~~ Green Sea Turtle	~~2-52~~	2-49
~~2-20~~	2-25	~~Proposed Riverine Flood Map~~ Hawaiian Monk Seal	2-53	2-51
~~2-21~~	2-26	~~Distribution of Soils within the Project Area~~ Existing Drainage Plan and Breaks in the Sand Dunes/Sheet Flows	2-59	2-57
~~2-22~~	2-27	~~Aerial View of Project Area Showing Test Areas~~ Existing FEMA Flood Insurance Rate Map, Part 1 of 2 (revised)	~~2-70~~	2-58
~~2-23~~	2-28	~~Extent of Mechanical Flailing~~ Existing FEMA Flood Insurance Rate Map, Part 2 of 2 (revised)	~~2-71~~	2-59
~~2-24~~	2-29	~~Distribution of Soils Within the Project Area~~ Existing Riverine Flood Map	~~2-73~~	2-60
~~2-25~~	2-30	~~Aerial View of TBR Property Showing Former Extent of Sugar Cane Fields~~ Proposed Riverine Flood Map	~~2-79~~	2-61
~~2-26~~	2-31	~~Surface Sites and Test Areas Showing Extent of Kahuku Army Airfield Complex~~ Distribution of soils within the project area	~~2-80~~	2-67
Photo 1		View of the shore showing sand and limestone substrata	2-71	
Photo 2		Northeast corner of the SEIS lands showing the coastal Strand vegetation zone	2-72	
~~2-27~~	2-32	~~Summary of Identified Sites~~ Aerial view of project area showing Test Areas	~~2-83~~	2-80
~~2-28~~	2-33	~~Pre-1800 Chronology of Occupation with Project Area~~ Extent of mechanical flailing	~~2-87~~	2-81

~~2-29~~	2-34	~~Prehistoric Sites~~ Distribution of soils within the project area	~~2-89~~	2-83
~~2-30~~	2-35	~~Land Commission Awards within Project Area~~ Aerial view of TBR property showing former extent of sugarcane fields	~~2-90~~	2-89
~~2-31~~	2-36	~~Areas of Increased Potential for Encountering Cultural Deposits in Test Areas B-D~~ Surface sites and Test Areas showing extent of Kahuku Army Airfield complex	~~2-94~~	2-90
~~2-32~~	2-37	~~Mid-1800s to Early 1900s Sites~~ ~~Summary of Identified sites~~ Location of sites identified during SAIS Fieldwork	~~2-96~~	2-93
~~2-33~~	2-38	~~World War II and Marconi Station Sites~~ Pre-1800 chronology of occupation within project area	2-97	
~~2-34~~	2-39	~~Site 7299 Wall~~ Prehistoric Sites	2-99	
~~2-35~~	2-40	~~August 20, 1942 Photograph of Kahuku Army Airfield~~ Land commission awards within project area	2-100	
~~2-36~~	2-41	~~Site 7279 Plan Map~~ Areas of increased potential for encountering cultural deposits in Test Areas B-D	~~2-102~~	2-104
~~2-37~~	2-42	~~Site 7279 Concrete Block~~ Mid 1800s to early 1900s sites	~~2-102~~	2-106
~~2-38~~	2-43	~~Site 7279 Showing Metal Strip~~ World War II and Marconi Station sites	~~2-102~~	2-107
~~2-39~~	2-44	~~Site 7279 Concrete Mound with Inscription~~ Site 7299 wall	~~2-102~~	2-109
~~2-40~~	2-45	~~Site 7279 Concrete Mound with Inscription~~ August 20, 1942 photograph of Kahuku Army Airfield	~~2-102~~	2-110
~~2-41~~	2-46	~~1932 U.S. Coast Guard Geodetic Survey Map~~ Site 7279 plan map	~~2-103~~	2-112
~~2-42~~	2-47	~~Transmitting Aerials of Marconi Telegraph Communication Station~~ Site 7279 concrete block	~~2-103~~	2-112
~~2-43~~	2-48	~~Site 7280 Concrete Structure~~ Site 7279 showing metal strap	~~2-103~~	2-112
~~2-44~~	2-49	~~Composite Map of Kahuku Army Airfield~~ Site 7279 concrete mound with inscription	~~2-104~~	2-112
~~2-45~~	2-50	~~Disturbed Areas Previous Use/Development Activities Plan~~ Site 7279 concrete mound with inscription	~~2-105~~	2-112
~~2-46~~	2-51	~~Site 7287 Displaced Concrete Structure Remnant~~ 1932 U.S. Coast and Geodetic survey map	~~2-107~~	2-113
~~2-47~~	2-52	~~Site 7278 Plan Map~~ Transmitting aerials at Marconi Telegraph Communication Station	~~2-107~~	2-113
~~2-48~~	2-53	~~Site 7278 Concrete Structure~~ Site 7280 Concrete Structure	~~2-107~~	2-113
~~2-49~~	2-54	~~Site 7278 Blown Out Corner of Concrete Structure~~ Composite map of Kahuku Army Airfield	~~2-108~~	2-114

~~2-50~~	2-55	~~Main Cantonment of Kahuku Army Airfield~~ Disturbed Areas, Previous Use/Development Activities Plan	~~2-109~~	2-115
~~2-51~~	2-56	~~Surface of Test Area A~~ Site 7287 displaced concrete structure remnant	~~2-110~~	2-117
~~2-52~~	2-57	~~Site 7267 Bus~~ Site 7278 plan map	~~2-110~~	2-117
~~2-53~~	2-58	~~Honolulu Rapid Transit Company Brochure~~ Site 7278 concrete structure	~~2-110~~	2-117
~~2-54~~	2-59	~~Site 7267 License Plate~~ Site 7278 blown out corner of concrete structure	~~2-110~~	2-118
~~2-55~~	2-60	~~Regional Map~~ Main cantonment of Kahuku Army Airfield	~~2-121~~	2-119
~~2-56~~	2-61	~~Zip Code Tabulation Area~~ Surface of Test Area A	~~2-122~~	2-120
~~2-57~~	2-62	~~Average Annual Sales Prices, Single Family Homes, KNS Area and O'ahu~~ Site 7267 bus	~~2-136~~	2-120
~~2-58~~	2-63	~~Regional Traffic Study~~ Honolulu Rapid Transit Company brochure	~~2-150~~	2-120
~~2-59~~	2-64	~~FIRM Map~~ Site 7267 license plate	~~2-171~~	2-120
~~2-60~~	2-65	Regional Map	~~2-121~~	2-131
~~2-61~~	2-66	Zip Code Tabulation Areas	~~2-133~~	2-132
~~2-62~~	2-67	Average Annual Sales Prices, Single Family Homes, KNS Area and O'ahu	~~2-136~~	2-146
~~2-63~~	2-68	Regional Traffic Study	~~2-150~~	2-160
~~2-64~~	2-69	FIRM Map	~~2-171~~	2-183

LIST OF TABLES

Table	Title	Page	
2-1	Hawai'i State Water Quality Standards Applicable to Project Shoreline	~~2-14~~	2-16
2-2	Benthic substrate and benthic biota survey results from Kawela Bay, 2011 (revised to improve clarity)	~~2-22~~	2-29
2-3	Results of fish surveys from three transects in Kawela Bay, 2011	~~2-23~~	2-31
2-4	Summary of water quality from three surveys over 22 years at Kawela Bay	~~2-30~~	2-36
2-5	Summary of water quality from three surveys over 22 years at Kuilima Bay	~~2-36~~	2-43
2-6	Benthic survey results from Kuilima Bay, 2011	~~2-40~~	2-48
2-7	Comparison of Flora Surveys at Turtle Bay Resort (1984 & 2011)	~~2-64~~	2-74

2-8	Kawela Stream Biota	~~2-67~~	2-77
2-9	Summary of identified sites	~~2-81~~	2-91
2-10	SAIS identified and relocated sites	~~2-84~~	2-94
2-11	Previously identified sites	~~2-85~~	2-95
2-12	Summary of burials identified in ~~Turtle Bay~~ TBR Property	~~2-92~~	2-102
2-13	Persons Consulted for the Cultural Impact Assessment	~~2-113~~	2-123
2-14	Cultural Resources Identified at the Turtle Bay Resort Property	~~2-114~~	2-124
2-15	Burials Identified in the SAIS for Turtle Bay Resort	~~2-117~~	2-127
2-16	Employment Patterns by Zip Code of Establishment, 2009	~~2-122~~	2-132
2-17	Industry and Class of Worker, 2006-2010	~~2-123~~	2-133
2-18	Selected Population Characteristics, 2006-2010	~~2-129~~	2-139
2-19	Population Trends, 1980-2010	~~2-130~~	2-140
2-20	Selected Population Characteristics, 2011	~~2-132~~	2-142
2-21	School Population Characteristics, 2011	~~2-133~~	2-143
2-22	Housing and Occupancy, 1980-2010	~~2-134~~	2-144
2-23	Households and Household Size, 2010	~~2-136~~	2-146
2-24	Enrollment in KNS Public Schools, September 2011	~~2-138~~	2-148
2-25	Persons Interviewed for this Report	~~2-140~~	2-150
2-26	Transportation Options for Resort Guests	~~2-151~~	2-161
2-27	Comparison of Existing PM Peak Hour Traffic Volumes; 1985 & 2011	~~2-159~~	2-170
2-28	Summary of State of Hawai‘i and National Ambient Air Quality Standards	~~2-160~~	2-171
2-29	Annual Summaries of Air Quality Measurements for Monitoring Stations Nearest Turtle Bay Resort Expansion	~~2-164~~	2-175
2-30	Existing and CY 2025 Distances to 65, 70, and 75 DNL Contours	~~2-168~~	2-179

CHAPTER TWO:

ENVIRONMENTAL SETTING

A. Goal Statement and Objectives

The Goal of the ~~Comprehensive Plan for the Resort~~ Proposed Action is to develop and manage the Turtle Bay Property in a holistic manner drawing inspiration from the traditional *ahupuaʻa* model of sustainability and respect for the environmental, cultural, social, and economic elements.

The expanded Resort will be developed and managed in a manner sensitive to its unique location on the northern tip of Oʻahu. Many people are drawn to the recreational, scenic, cultural and social experience of Koʻolau Loa and the North Shore. The Resort will provide a limited number of quality accommodations and resort homes for those wanting to stay a few days or much longer.

The ~~proposed expansion of the Resort, as set forth in the Comprehensive Plan for Turtle Bay, and described in the SEIS as the~~ Proposed Action will be guided by a series of overarching development objectives.

I ***Manage design, development, construction, and operations sustainably in a manner that embodies the spirit of long-established traditional ahupuaʻa system of planning and proactive resource management.***

II ***Integrate the Resort into the fabric and daily activities of the local community.***

III ***Create a balance of economic, social and cultural vitality while maintaining the rural character of the Resort's coastal area by focusing critical development mass within the ahupuaʻa of Hanakaʻoe (around the existing hotel).***

IV ***Operate the Resort as a place that will be equally welcoming to residents from neighboring communities as to visitors from afar.***

V ***Provide enhanced access to the shoreline for residents, visitors and residents from nearby communities, and cultural practitioners including fishermen and gatherers, by the provision of additional parks, shoreline access points and a shoreline trail interconnecting them.***

VI ***Enhance and protect the environment with specific attention to Punahoʻolapa Marsh, Kawela Bay, and the Agricultural lands.***

VII ***Ensure the long-term preservation of the Agricultural Lands through the implementation of a conservation easement on the Agricultural Lands.***

VIII ***Assist with local housing needs by providing additional housing units affordable to members of the local community beyond what is presently required.***

B. Historical Setting

The following discussion is derived from archival research conducted for the Resort by Haun and Associates (see Appendix C), and over 30 years of archaeological inventories conducted within the Turtle Bay property.

It is known that in late prehistory the Kahuku Point vicinity was well populated and extensively cultivated. There were permanent residences scattered along the coast. Larger settlements were present in areas such as Kahuku and Kawela Bay where sheltered ocean access was available. Temporary habitation probably associated with agricultural activity and natural resource use occurred in inland overhangs, caves, and walled shelters. Fishponds were present in sheltered areas and salt was collected from depressions along the shore. Fishing shrines and rock formations of legendary and probably ritual significance were scattered along the coast.

Heiau were sited on prominent topographic features overlooking the coast. Sand dunes and cliff face caves were used for burial. Agricultural use included cultivation of taro in pond fields wherever topographically suitable locations could be provided with sufficient freshwater. The abundance of fresh water around Punahoʻolapa Marsh provided ideal conditions for wet taro cultivation with minimal labor investment compared to pond field development of stream drainages. Dry-land gardens were present around the coastal residences and on the lower volcanic slopes. Upland areas were also cultivated. Food remains from archaeological excavations include dog, pig, birds, and a wide variety of fish and marine invertebrates, documenting technologies for fishing, collecting, hunting, and animal husbandry. Radiocarbon dates for the area indicate settlement by at least the A.D. 1000s to 1200s with the most intensive use occurring after A.D. 1400.

Observations of Captain George Vancouver in the mid 1790s and early 1800s missionary censuses suggest depopulation affected the region shortly after European contact (Nakamura -1981). Some depopulation undoubtedly occurred as a result of introduced diseases following the onset of more frequent visits by whalers and missionaries in the early 1800s. However, the disparity in the initial descriptions of a flourishing well-cultivated settlement at Kahuku from Captain Cook's expedition in 1779 and those from Vancouver's fifteen years later in 1794 of a much diminished state of cultivation and population probably predates the onset of disease-inducted population decline. Captain King, who reported the observations during Vancouver's expedition, conjectured that the decline was the result of internal warfare. According to Haun & Associates, another explanation might be that the region was struck by a tsunami. While this would have resulted in a dramatic decline in cultivation of the coastal plain, the effects would

rapidly diminish, allowing the area to return to a high level of settlement and cultivation as indicated by mid-Nineteen Century land claim testimony.

More than 100 Land Court Award (LCA) claims were awarded in the mid-1800s in the area spanning the region from Kawela to Kahuku. Thirty-five LCA claims with at least 24 house lots were awarded in the project area. The LCA testimonies refer to numerous *lo'i* and cultivated plots of bananas, sweet potatoes, *wauke*, sugar cane, bitter melon, *noni* and an orange tree. Other named plants are *hala* groves and *koa* trees for canoes. A brackish spring and a fishery also are mentioned in the testimonies.

Charles Hopkins purchased 8,000 acres at Kahuku in 1850-1851 from Kamehameha III and established the Kahuku Ranch. Forests were cleared for pasture for free-ranging herds of sheep and cattle, which soon plagued the small Hawaiian farms that were scattered throughout the area, eventually displacing many of the farmers.

By 1856, a carriage road had been completed between Honolulu and Kahuku. The ranch changed ownership several times during the 1860s and 1870s. By 1873 the ranch consisted of 15,000 acres including the lands of Kaunala, Pahipahi'āula, 'Ōpana 1 and 2, Kawela, Hanaka'oe, Ōi'o, Ulupehupehu, Punalau, Kahuku, Mālaekahana, Keana, and part of Lā'ie. In 1874, the ranch was sold to Julius Richardson, who then sold it to James Campbell in 1876 by which time it encompassed nearly 25,000 acres with 3,000 head of cattle and herds of sheep and horses. In 1889, most of the ranch was leased to Benjamin Franklin Dillingham who chartered the Oahu Railway and Land Company (OR&L) railroad in the same year. Dillingham then subleased the lands to James Castle who chartered Kahuku Plantation Company in 1890.

The Kahuku Plantation began commercial production of sugarcane relying on water from springs, streams and rain for irrigation, but these sources were soon considered insufficient and artesian wells were drilled to augment the irrigation water supply. The first sugarcane crop from 2,800 cultivated acres was harvested in 1892. By 1899, the OR&L railroad line extended from Honolulu to Kahuku to get the cane to market. By the early 1900s there were train stations at Kawela and Kahuku Ranch. Marconi Station was located at Punamanō Marsh. By 1935, 4,490 acres were cultivated in sugarcane and the plantation employed over 1,100 workers. A plantation camp was established on the Resort property to house plantation workers by at least 1932.

In addition to sugarcane, pineapples were also cultivated beginning in the 1930s at Kahuku Plantation and on lands leased by the OR&L including small tracts leased to Japanese farmers. When the farmers' leases expired Kahuku Plantation leased large tracts of land to the California Packing Corporation (CPC), driving out the smaller farmers. The CPC became Del Monte Corporation in 1967.

The U.S. Army established Kahuku Army Airfield in the area in 1942. The airfield encompassed runways, taxiways, revetments, bunkers, emplacements, barracks and support facilities. The facility served as an auxiliary field used for flight training and coastal defense. Use of the airfield was short-lived and military use ended shortly after the end of World War II (September, 1945).

The April 1946 tsunami devastated much of the facility shortly after the Army abandoned it. Subsequent use of the airfield runways included civilian aircraft and auto racing.

~~Sugarcane cultivation continued until 1971 when the Resort and golf course were constructed. Some inland portions of the property continued to be used for vegetable farming until the late 1980s. Private beach cottages lined the east shores of Kawela Bay until 1990 when the parcels were acquired and the area was cleared and preliminary construction for a hotel at Kawela Bay began, but was abandoned in 1991.~~

In the late 1960s, as the last crops of sugar cane were being planted on a portion of the property by Kahuku Plantation, the landowner, the Trustees under the will of the Estate of James Campbell, deceased (Campbell Estate), together with INSON, a joint venture made up of the Del E. Webb Corporation and PIC Realty, Prudential Insurance Company of America's real estate investment arm, planned and obtained the necessary Detailed Land Use Map (DLUM) changes for a major destination resort containing hotels, resort condominiums, recreational facilities, and residential units. In 1969, INSON signed an agreement with Campbell Estate to build a 500-room hotel, 368 townhouse-type condominium units and an 18-hole golf course at Kuilima Point. In 1971, Alexander & Baldwin closed its sugar mill at Kahuku and ceased sugar cane cultivation in the area. Construction of the existing Turtle Bay Hotel was completed in 1972 by INSON.

Between 1972 and 1976, the hotel was managed by the Del E. Webb Corporation. Although Prudential Insurance Company of America (hereinafter referred to as Prudential) was the primary financial investor in the project, the Del E. Webb Corporation was the active partner in the development venture.

In 1976, Kuilima Development Company (KDC), a wholly owned subsidiary of Prudential purchased the interest of Del E. Webb Corporation and took full control of the project, contracting the Hyatt Corporation of America to manage the hotel and golf course.

On February 2, 1977, the Oahu General Plan was approved by the Mayor of the City and County of Honolulu as the official general plan for the City and County of Honolulu. One of the policies presented in the General Plan stated: "Provide for the orderly growth of the resort industry by designating appropriate areas of the Island for resort use, including but not limited to Waikiki, Queen's Beach, West Beach, Kuilima, and Makaha." The Detailed Land Use Map (DLUM) reflected the City and County's recognition of Kuilima Resort as a resort area by designating most of the property within the State Urban land use district for intensive resort and residential development.

In 1983, KDC exercised an option in its contract with Hyatt and awarded management of the hotel to the Hilton Hotel Corporation. With this change in management, KDC also initiated an upgrading program involving the existing hotel, golf course, tennis courts, and entry drive. At the same time, the company began a re-evaluation of the resort plan for the remainder of the undeveloped property that had been leased or purchased from Campbell Estate in 1970. The property was renamed the Turtle Bay Resort.

On May 29, 1985, a Development Plan Land Use Amendment that allowed a 3,500-unit expansion of the resort was approved by the Mayor. A change of zone application and a Special Management Area Use permit for the proposed expansion were subsequently approved by the Honolulu City Council and signed by the Mayor.

Some inland portions of the property continued to be used for vegetable farming until the late 1980s.

In 1988, KDC assigned its leashold interest to the Kuilima Resort Company (KRC), a subsidiary of Asahi Jyuken.

Private beach cottages lined the east shores of Kawela Bay until 1990 when the parcels were acquired by KRC, the area was cleared, and preliminary construction for a hotel at Kawela Bay, as envisioned in the expansion plan approved by the City, began. Construction of the Kawela Bay hotel was abandoned in 1991 as the result of the downturn in the Japanese economy. KRC obtained approvals started construction in late 1980s and completed the construction of the Palmer Golf Course in 1991 and also the replacement of the Kuilima Cabanas with 57 Ocean Villas in 2005/2006.

In 1998 developer Bill Mills and certain affiliated companies and affiliates of Oaktree Capital Management, LLC bought KRC. In December 1998, the Campbell Estate conveyed the leased fee interest to KRC. In 2001 affiliates of Oaktree Capital Management LLC, acquired full control of the KRC and Turtle Bay Resort.

Turtle Bay Resort, LLC (TBR) took over as new owners as of February 2010 and appointed Replay Resorts, Inc. (Replay) as their asset/ development managers.

C. Hawaiian Traditions and the Natural Environment

To help achieve Objective I, the proposed expansion of the Resort draws its inspiration from the host Hawaiian culture.

Hawaiian traditions include a spiritual and familial relationship with the natural environment and the resources that sustained life in these islands. Every aspect of nature was believed to be alive, and every form of nature was a *Kinolau* (body-form) of one of the numerous Hawaiian gods, deities, or other creative forces. The land, ocean, rain, and winds all were manifestations of the gods and they were revered for both their spiritual qualities as well as their physical ability to provide life-sustaining resources.

In a reciprocal relationship that is central to most aspects of traditional Hawaiian culture, man cared for nature (and its associated gods), and nature and the gods provided for man. Land, in particular, was revered as if a nurturing elder sibling because of its ability to sustain life. Land's supremacy over man is affirmed in the traditional Hawaiian saying, *He ali'i ka 'aina, He kauwa ke kanaka*: The land is a chief, Man is a servant.

C. 1. Traditional Land Tenure in Hawai‘i

Hawai‘i is the most isolated landmass on Earth. Over 2,200 miles from the nearest populated area, Hawai‘i is a remote outpost in the middle of the world's largest ocean. Approximately 2000 years ago, voyagers from central Pacific islands arrived on these shores. Archaeological evidence suggests that the descendants of these original settlers navigated back and forth between Hawai‘i and their home islands until about 500 years ago. At about the same time, the great chief Umi-a-liloa divided the largest of the Hawaiian Islands into the four political regions that remain today as the four counties of the State of Hawai‘i: Kaua‘i, O‘ahu, Maui, and Hawai‘i. These four *mokupuni* (islands) were further divided into *moku* (districts) and subdivided into *ahupua‘a*.

Each land division was governed by an *ali‘i* (chief) of a particular rank. Islands were governed by *ali‘i nui* (high chief); *moku* were governed by *ali‘i ‘ai moku* (lower chief); and *ahupua‘a* were governed by *ali‘i ‘ai ahupua‘a*. Land in ancient Hawai‘i was controlled by these chiefs who held them in trust for all of the people, a central principle of early (pre-1846) land tenure in Hawai‘i was the *kuleana* (privilege and responsibility) of these chiefs to care for and employ the resources of the land in a *pono* (balanced) manner.

C. 2. Elements of the Ahupua‘a

Of the three major land divisions, the *ahupua‘a* was particularly important because it represented the scale at which land and its natural resources were most efficiently employed in order to sustain a pre-Western contact population of up to a million people.

The term, *ahupua‘a*, was derived from the words *ahu* (alter) and *pua‘a* (pig). A stone alter was erected and topped by a carved image of a pig's head. These *ahu* served as a gathering area for the collection of tribute as well as a boundary marker between neighboring *ahupua‘a*. They were often placed at the intersection of the *ahupua‘a* boundary and the walking path that ran around most islands.

Ahupua‘a contained nearly all the resources Hawaiians needed to survive. Through a system of *kapu* (prohibitions) and *kānāwai* (laws), the *ahupua‘a* was managed by the *konohiki* (agent of the *ali‘i ‘aiahupua‘a*) who was responsible for the day-to-day operations of the district and combining its natural and human resources in a manner that best served the land, the people it fed, and the chief who governed it.

Although *ahupua‘a* varied in size between hundreds and thousands of acres, in most instances they were complete lands sections defined by valleys with boundaries extending from the mountains out into the ocean. Their regions included *mauka* (upland), *kula* (plains), and *makai* (ocean) areas. Fresh water, animal and fish protein, wild and cultivated food and fiber crops, as well as building and tool materials were available in most *ahupua‘a* making them largely self-sustaining. Use of these resources was the exclusive privilege of those residing within the *ahupua‘a*, although trade between *ahupua‘a* was common enough that regular markets were established in some areas.

D. The Ahupuaʻa of Turtle Bay Resort

The owners and stewards of the Resort believe the elements and orientations of the traditional *ahupuaʻa* can be employed as a guide to contemporary land use and development. *Tomorrow's Ahupuaʻa* is a ~~concept~~ philosophy developed by the project team that incorporates many of these attributes along with modern best practices to serve as a framework for the implementation of the ~~Resort Comprehensive Master Planning process~~ Proposed Action and operating principles. (See Appendix A)

The ~~Resort Comprehensive Master Planning Process~~ Proposed Action encompasses eight small *ahupuaʻa* that, over time, have been consolidated into three large *ahupuaʻa*. The Turtle Bay Property includes the *makai* and *kula* lands of Ahupuaʻa O ʻŌpana-Kawela and Ahupuaʻa O Hanakaʻoe, and a portion of the *makai* lands of Ahupuaʻa O Kahuku. Following is a general description of these three *ahupuaʻa* which contain portions of the SEIS Lands. ~~(Chapter Three of the SEIS presents a description of the Proposed Action using the same format; elements of the Proposed Action are described according to the *ahupuaʻa* in which they are located.)~~

D. 1. Ahupuaʻa O ʻOpana-Kawela

The portion of the SEIS Lands contained within Ahupuaʻa O ʻŌpana-Kawela consists of approximately 63 acres situated *makai* of Kamehameha Highway, extending from the eastern end of Honokawela Drive east to the Resort's West Main Drain, a distance of approximately 4,700 feet or roughly nine tenths of a mile as measured along the coastline. At the Resort's western boundary, the property extends inland from the shoreline approximately 200 feet to Kamehameha Highway. At the eastern boundary of the *ahupua*ʻa, the property extends approximately 1,125 feet from the shoreline to Kamehameha Highway. See Figure 1-1.

The property generally fronts the eastern half of Kawela Bay and the western third of Turtle Bay. The headlands known as Kawela Point constitute the extreme eastern point of Kawela Bay and are situated about midway along the lateral extent of the ʻŌpana-Kawela shoreline.

Kawela Bay is a roughly symmetrical horseshoe-shaped bay with a wide sandy beach. The eastern half of the *ahupuaʻa* shoreline consists of calcareous sediments chemically bound together into shelves of what is commonly referred to as beach rock. Portions of the beach rock are covered with sand while other areas are exposed. Kawela Bay is somewhat unique among the three bays that front the SEIS Lands in that the embayment is formed through a break in the beach rock shoreline. Both headlands that jut out into the ocean on the west and east sides of the bay are faced with beach rock shorelines. But the sand beach between the headlands is deep and not perched upon a hard substructure as are the other beaches along the property shoreline.

D.1. a. Historic Context

According to Pukui, *ʻŌpana*, which is perhaps related to *ʻopa* translates as "the squeeze". *Kawela* is translated as "the heat" which is also the name used to describe the coastal portions of the land bordering Kawela to the west. The shoreline at Kawela was referred to as *Wakiu* meaning "northwest wind sound" (Clark 1977: 132). A fishpond of the same name was reportedly once located inland from this beach.

Kahuku and Kawela were designated as Crown Lands of King Kamehameha III during the Great *Mahele* of 1846 that reorganized land tenure throughout the Hawaiian Islands. As presented in the Cultural Impact Assessment prepared for the SEIS (Appendix D), of the thirty-five land commission awards (LCA) resulting from the *Mahele* that are located within the boundaries of the SEIS Lands, eleven are located in Kawela. House lots are mentioned in twenty-four of the thirty-five claims. There are thirty-six *lo'i* (pond-fields) described in the claims with three claims specifically mentioning *kalo* (taro). Testimonies refer to cultivated bananas, sweet potatoes, *wauke*, sugar cane, bitter melon, *noni*, and orange tree. Other named plants are *Pandanus* trees or *hala* groves and *koa* trees cultivated for canoes. One claim mentions a *puna pa'akai* or brackish spring and on mentions a fishery.

Specific pre-historic settlement patterns at 'Ōpana-Kawela are unknown, but *'olelo* cited in Appendix D suggest the Kewela Bay supported a resident population. Land Court Awards granted in the mid-1800s provide greater insight. As presented in the Appendix D, eight Land Court Awards (LCA) were awarded within the SEIS Lands contained within `Ōpana-Kawela and another seven were granted in the same region, but on properties outside of the SEIS Lands. (Appendix D, Pacific Legacy 2012: Table 1)

In the early 1850s, 8,000 acres at Kahuku, including Kawela and the remainder of the SEIS Lands, were purchased from Kamehameha III and converted to a sheep and cattle ranch that was named Kahuku Ranch. The ranching venture had immediate adverse impacts on the landscape.

As discussed earlier, in 1889 Benjamin Franklin Dillingham chartered the O'ahu Railroad and Land Company (OR&L) and leased the Kahuku lands for the cultivation of sugarcane. By 1899, the railroad line extended from Honolulu around the west side of O'ahu to Kahuku. A 1906 train schedule indicates the train ran from the Waimea Station to Kahuku in 24 minutes with no stops. A 1930 USGS map depicts the railroad extending through the Resort property with stations at Kawela and Kahuku Ranch. A 1932 USGS map shows sugarcane fields extending to the coast and a line of houses fronting Kawela Bay. A 1954 map depicts a series of houses or beach cottages present along the side of Kawela Bay.

Subsequent to the rezoning of the property in 1987 for the then proposed Resort expansion, the cottages along the eastern half of Kawela Bay were demolished to make way for the construction of a hotel. Much of the property was grubbed and graded, structural fill material was imported to the site, and several dozen concrete pilings were driven into the earth for the proposed hotel's foundation. Underground utilities were also installed. By the early 1990's, the Japanese economic crisis let the Resort's Japanese owner to abandon hotel construction at Kawela Bay.

D.1. b. Existing Conditions

The SEIS Lands within the Ahupua'a O 'Ōpana-Kawela are vacant and generally overgrown with scrub vegetation. The remnant concrete pilings remain in place; some erect and some toppled by erosion.

There is no resident population within the SEIS Lands of Ahupua'a O 'Ōpana-Kawela.

D.1. c. Topography

From a regional perspective, the topography of the SEIS Lands within ʻOpana-Kawela is characterized as a coastal plain created by changes in sea level over thousands of years. As the topography of the SEIS Lands has not changed since it was described in Part IV Section A of the 1985 EIS, it included by reference pursuant to Section 11-200-28, HAR.

D. 2. Ahupuaʻa O Hanakaʻoe

Approximately 271 acres of the SEIS Lands are contained with Ahupuaʻa O Hanakaʻoe. Within the SEIS Lands, the boundary of Hanakaʻoe extends east from the West Main Drain to the East Main Drain which enters the ocean at the approximate mid-point of Kuilima Bay. See Figure 1-1.

Within the SEIS Lands, Hanakaʻoe includes the approximate eastern two thirds of Turtle Bay, all of Kuilima Point, and the western half of Kahuku Bay. The length of the coastline fronting the *ahupuaʻa* is approximately 1.36 miles or just over 7,000 feet.

At its eastern boundary along the East Main Drain, the property extends inland approximately 0.46 miles from the shoreline to Kamehameha Highway, or about 2,453 feet.

D.2. a. Historic Context

No *ʻolelo* pertaining specifically to this *ahupuaʻa* have been identified. However, given its location between Kawela and Kahuku, it is likely that it supported a resident population. As discussed in Section B above, the large scale changes to the land resulting from the establishment of a cattle ranch, and later a sugar plantation, transformed the land, and in so doing, erased any surface features that might have informed us of the area's history.

As presented in the Appendix D, four Land Court Awards (LCA) were awarded within the SEIS Lands contained within the Hanakaʻoe *ahupuaʻa* and another three were granted in the same region, but on properties outside of the SEIS Lands. (Appendix D, Pacific Legacy 2012: Table 1), suggesting an active community engaged in plant cultivation and fishing.

D.2. b. Existing Conditions

Ahupuaʻa O Hanakaʻoe contains the activity center of the Resort and includes 500 Resort units and 368 residential condominium units (366 are privately owned and 2 are operated as manager's units). The Resort units consist of three components: the existing seven-story Turtle Bay Hotel containing 401 Resort units; 57 Ocean Villa Resort condominium units abutting the hotel on its east side are; and 42 Beach Cottages abutting the hotel to the west. Average daily occupancy of the 500 Resort units averages approximately 80%. The residential condominium units comprise two adjacent developments south of the hotel's parking lot; Kuilima Estates East and Kuilima Estates West. The average daily resident population of Kuilima Estates is estimated to be about 223 persons.

D.2. c. Topography

From a regional perspective, the topography of the SEIS Lands within Hanakaʻoe is characterized as a coastal plain created by changes in sea level over thousands of years. As the topography of the SEIS Lands has not changed since it was described in Part IV Section A of the 1985 FEIS, it included by reference pursuant to Section 11-200-28, HAR.

D. 3. Ahupuaʻa O Kahuku

Approximately 506 acres of the SEIS Lands are contained within Ahupuaʻa O Kahuku. The *ahupuaʻa* extends east from the approximate alignment of the East Main Drain to the eastern boundary of the Resort, as delineated by Marconi Road. The shoreline of Ahupuaʻa O Kahuku extends approximately 8,230 feet and includes the eastern half of Kuilima Bay, all of Kahuku Point and about 3,000 feet of shoreline east of the point. See Figure 1-1.

The eastern boundary of the *ahupuaʻa* extends inland approximately 6,280 feet, or about 1.18 miles, from the shoreline to Kamehameha Highway.

D.3.a. Historic Context

Of the three *ahupuaʻa*, Kahuku is most frequently identified in *ʻolelo* and legend. The name Kahuku appears to be used not only as the name of an *ahupuaʻa* and village, but as a district or place name for the area roughly between ʻŌʻio and Keana Ahupuaʻa. Of the seven historic *ahupuaʻa* originally identified in the project area, Kahuku has the most extensive traditional and mythological background.

According to Pukui et al. (1974:67) Kahuku literally translates as "the projection" and is the name of a village, land division, northernmost point, golf course, ranch, schools, forest reserve, as well as surfing beach on Oʻahu. Several other landmarks within the *ahupuaʻa* have traditional names, such as Punamanō, the spring-fed wetland which translates as "shark spring" John Clark (2003:310). Hanakaʻīlio ("work [of] the dog") is a sandy beach located between Kalaeokaunaʻoa and Kalaeuila Points (2003:92). Kalakala ("rough" or "craggy") is the name of the two semi-submerged linear outcrops of limestone that roughly parallel Kahuku Point to the east (Ibid:149).

Traditional accounts of natural resources and environmental conditions are relatively abundant for the *ahupuaʻa* of Kahuku. Traditional land use in Kahuku is also made apparent through legend. The landscape of Kahuku appears to have had several configurations, from the pre-European contact era to the present. During Hawaiian settlement prior to the arrival of Europeans, many parts of the landscape were used for traditional agriculture, habitation, and ceremony, varying from intense to moderate. In the initial Contact period, a good portion of the land lay fallow due to severe population decline and was overgrown in some areas with exotic plant species.

As discussed earlier, the subsequent creation of Kahuku Ranch, followed by cultivation of the land in sugar cane as part of Kahuku Plantation permanently altered its physical characteristics and use.

D.3. b. Existing Conditions

There are no persons residing with the portion of the SEIS Lands contained within the Kahuku *ahupuaʻa*, however it includes land designated as the MacKenzie *kuleana.*

D.3. c. Topography

From a regional perspective, the topography of the SEIS Lands within Kahuku *ahupuaʻa* is characterized as a coastal plain created by changes in sea level over thousands of years. As the topography of the SEIS Lands has not changed since it was described in Part IV Section A of the 1985 FEIS, it included by reference pursuant to Section 11-200-28, HAR.

E. Contextual Natural Environment

Following is a discussion of the natural environment within which the Resort is located. A discussion of the Proposed Action's impacts on the natural environment is presented in Chapter Five of the SEIS.

E. 1. Marine Resources

As discussed above, three bays generally front the SEIS Lands: Kawela Bay to the west, Turtle Bay in the center, and Kuilima Bay (sometimes called Kaihalulu Bay[1]) to the east. Kawela Point separates Kawela Bay from Turtle Bay. Kuilima Point separates Turtle Bay from Kuilima Bay and is the location of the existing Turtle Bay Hotel. Kahuku Point marks the eastern end of Kuilima (Kaihalulu) Bay. The shoreline to the southeast of Kahuku Point is known as Hanakaʻilio Beach and extends just over a mile to Kalaeuila Point, which is situated a few hundred feet to the east of the Turtle Bay Lands' eastern property boundary.

According to information provided by the National Marine Fisheries Service, the marine water column and seafloor in Kawela Bay, Turtle Bay, and Kuilima Bay, also offshore of the bays, are designated as Essential Fish Habitat (EFH) and support various life stages for the management unit species (MUS) identified under the Western Pacific Regional Fishery Management Council's Pelagic and Hawaii Archipelago Fishery Ecosystem Plans (FEPs).

Each of these bays and shorelines have widely different physical characteristics that impact both the normal quality of the water and the benthic habitats that support the algae, coral, invertebrates, fish, sea turtles, and monk seals that frequent the coast.

The following discussion of the project's marine resources is derived from a study prepared by Oceanit and presented in Appendix E. Oceanit's analysis and recommendations are based upon over 25 years of data collection and monitoring that has been conducted at the Resort. The discussion begins with general regional characteristics and then continues with a discussion of each of the three bays.

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[1] Preliminary information suggests that Kaihalulu is actually the name of the beach extending east from Kahuku Point and that the name is sometimes applied to the offshore water area. Note: the resort's SMA Use Permit referred to the beach east of Kakuku Point as Hanakaʻilio Beach.

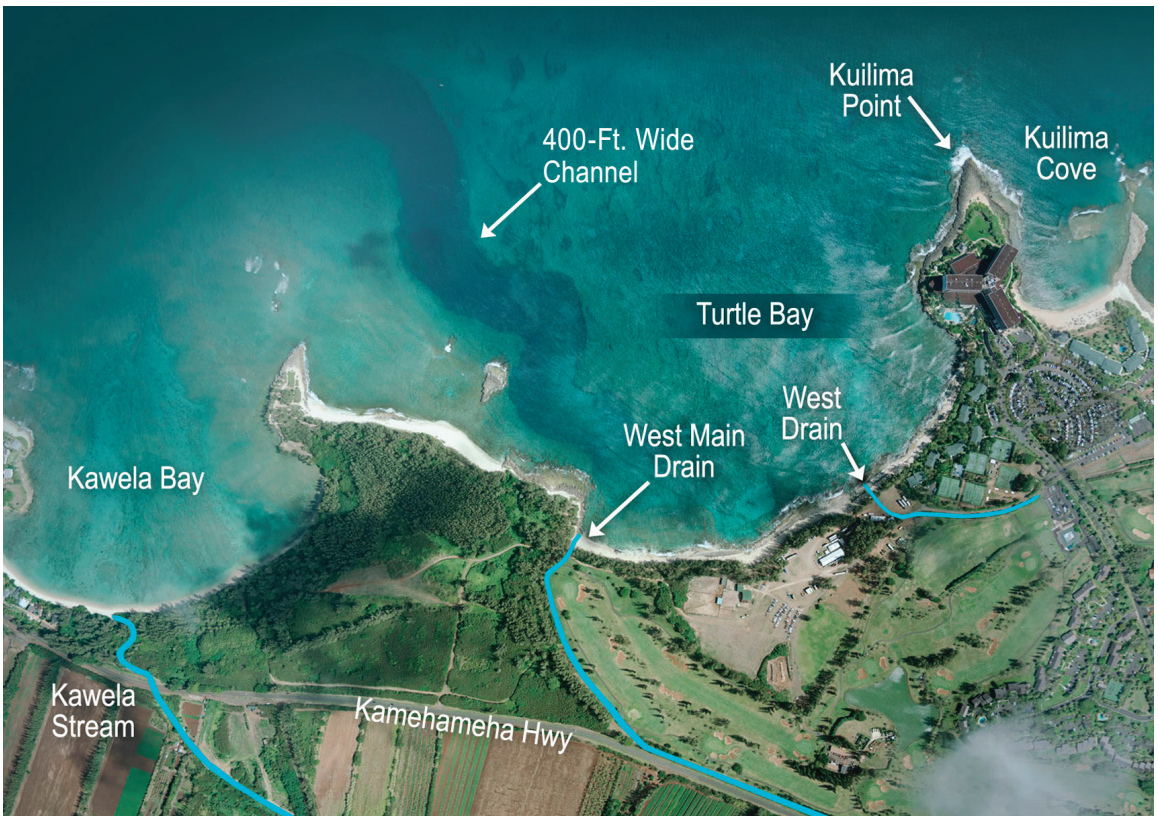
E.1. a. Overview of Coastal Geology and Subsurface Hydrology

From a regional perspective, the Kahuku coastline (which contains the Resort Shoreline) consists of a relatively narrow, flat coastal plain backed by steep hills with steep valleys holding small flashy streams. Much of the character of the coastline is the result of past sea level elevation changes. During periods of lower sea levels, the primary streams carved channels through what now exists as a shallow reef area. One such 400-foot wide channel can be clearly seen in aerial photographs cutting through the reef from the east end of Turtle Bay in Figure 2-1 ~~from Marine Report~~. Such channels can provide excellent conduits of storm water flow to the open ocean bypassing more sensitive near shore reef systems.

During periods of higher sea levels coral grew seaward from the abrupt coastline at the base of the mountain range and formed what is now the flat coastal plain that constitutes the SEIS Lands. The sediments that cover the coastal plain are a mixture of ancient marine deposits combined with alluvial deposits from the streams. Numerous portions of the plain are at low elevations and groundwater emerges at the ground surface to form wetlands, some of which are tidally influenced.

The shoreline along much of the Kahuku coastline is hardened by a natural formation of lithified calcium carbonate sand commonly called "beach rock." When calcareous sediments along a

Figure 2-1: Large channel through the reef near the West Main Drain



shoreline are exposed to alternating fresh and salt (ocean) water tidal flows, the pH differences in these waters cause the sand particles to bind together into a hard cement-like material. These calcareous formations often form abrupt shoreline faces several yards high, but in sheltered coves can support perched sand beaches.

The sand dunes behind the Kahuku coastline typically accrete to elevations at least several feet higher than much of the inland coastal plain and this sand dune structure can lead to drainage problems. During heavy or prolonged rainfall events when the shoreline sand blocks surface flows, dunes, ponding and flooding can occur in low-lying areas.

The calcareous nature of much of the coast subjects it to the formation of karst cave systems. The low pH of fresh groundwater dissolves underground tunnels through which the fresh water flows to the ocean. These cave systems result in concentrated areas of freshwater flow to the ocean and form conduits through which part of the runoff from the mountains enters the sea. Much of the surface water also percolates into the groundwater and discharges into the ocean as diffuse flow.

During periods of heavy rainfall the infiltration capacity of the soil and the capacity of the karst conduits are insufficient to carry the surface sheet-flow. Under these conditions significant flooding problems can result. Because the majority of the Kahuku coastline is higher than inland areas of the plain, storm water tends to pool and cause flooding until the shoreline dune perimeter is breached and the storm water discharges into the ocean. When the capacity of the soil infiltration and karst system is exceeded the additional storm water floods low-lying areas on both sides of the Kamehameha Highway.

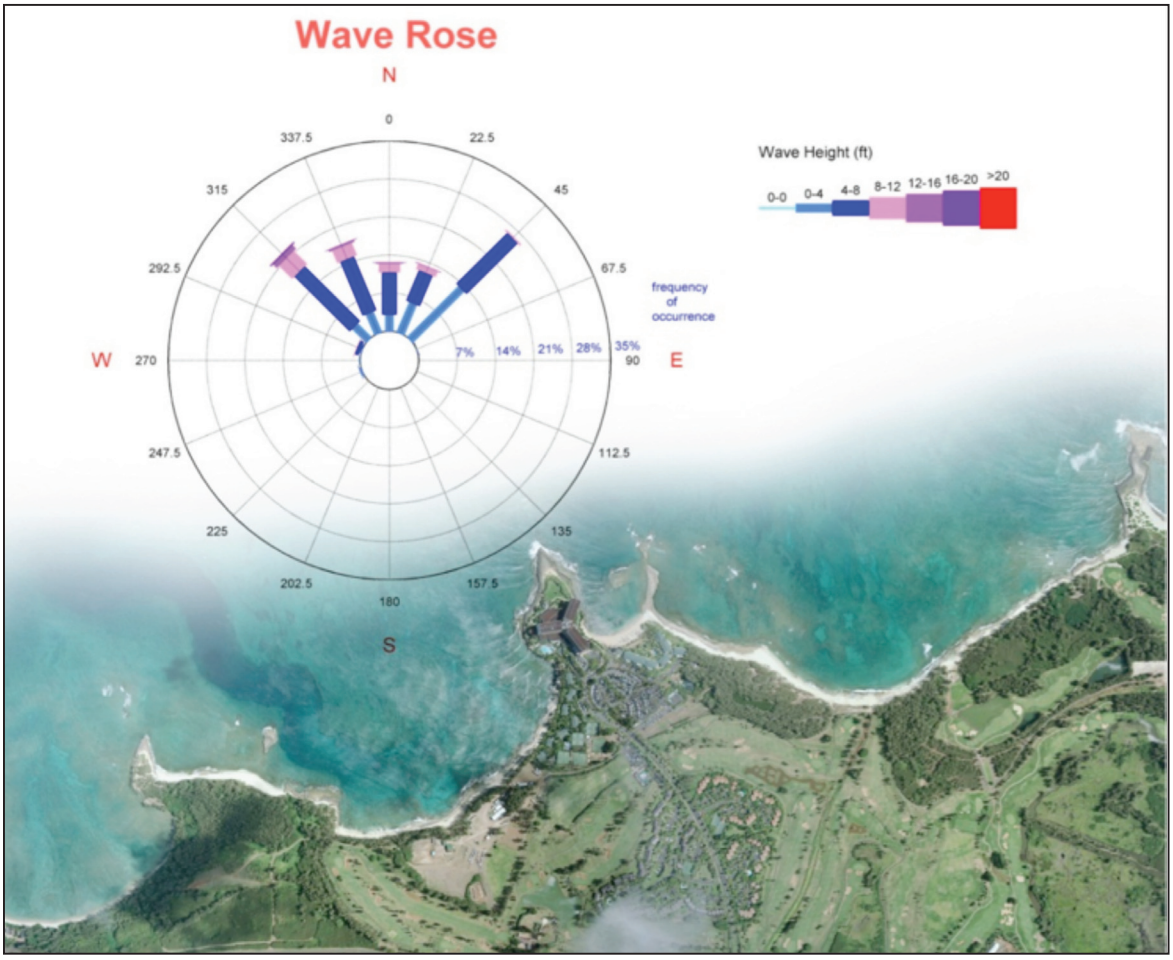
The physical character of underground cave system is not known. It is not possible to map it. However, systematic marine water quality monitoring conducted at the resort since the early 1990s has provided a general understanding of it functions on a regional scale, as discussed above.

E.1. b. Oceanographic Overview: Coastal Waves, Tides and Currents

Waves, tides, and currents are important to the ecology of a coastal site and are not generally impacted by coastal developments. Understanding the wave climate helps determine the fate of sediments, nutrients, and other substances brought into the near shore ocean from land sources.

Wave conditions for the entire shoreline were determined from existing offshore wave statistics (North Pacific Marine Advisers Data Set: NOAA) to define the distribution of wave heights and direction. Figure 2-2 is a graphical representation termed a "wave rose" that displays directions and wave heights from which waves will strike the Turtle Bay Shoreline. The wave exposure for the Resort Shoreline is from the north between about 315 degrees (NW) to 45 degrees (NE) with other wave directions blocked by the headlands that delineate the study area. The most dominant waves are trade wind generated swells from the NE (45 degrees) and ENE (22.5 degrees) with a dominant wave height of about 5.2 feet and period of about 10 seconds.

Figure 2-2: Project Coastline Showing Dominant Wave Directions



The North Shore of O'ahu is famous for its large winter waves which tend to come from the NW (315 degrees) and NNW (337.5 degrees). These wave trains are commonly in the range of 3 to 10 feet and a period of 8 to 14 seconds with heights greater than 20 feet occurring on an annual basis. As waves approach the shoreline, they undergo deformation from shoaling and refraction. Wave shoaling is caused by bottom friction and refraction is caused by change in depth. During episodes of high surf, water may build up against the shoreline, causing a local rise in sea level by as much as a half-foot. This increased depth allows greater wave energy to cross any shallow reefs, impact the shoreline, and cause increased turbidity from re-suspended sediments. The increased depth of water along the shore also accentuates the speed and volume of currents transporting water away from the coastline through passes in the reef.

O'ahu is situated within the North Equatorial Current which approaches the island chain from the east. This typically results in a slow but dominate offshore current from east to west along the Resort Shoreline. Near shore currents are more variable as they are largely driven by the twice-daily 2 to 3-foot rise and fall of tides and the flow of seawater to drain and fill the bays with each tide.

E.1. c. Overview of Water Quality

The State of Hawai'i has developed a water quality standard for Open Coasts during Dry and Wet seasons that applies to the entire Kahuku coastline. Because each of the three coastal segments within the Resort Shoreline are referred to as "Bays" and each may be subject to significant fresh water inflow, the Oceanit report also included the state's water quality standard for embayments for comparison purposes. The State's water quality standards are shown in Table 2-1.

Water quality data at all three bays has been examined in three separate studies during a period of over two decades with a total of 724 samples analyzed for water quality parameters.

- From 1989 through 1994, surface and mid-water samples were taken at near-shore, mid-shore, and offshore locations in each bay on a quarterly basis. The 232 samples that make up this data set form the basis from which to gage any changes in water quality over time.

- Between 2000 and 2002, studies by the City were undertaken to understand the merits of various storm water outfall locations along the Resort Shoreline. The purpose of these studies was to determine the degree of mixing at each outfall location and to monitor short-term changes in water quality. At each outlet site (Kawela, Turtle Bay, Kuilima Bay) a single meter was installed to record water quality at 0.5-hour intervals, and six surface water sample sites closely aligned off each outlet site were monitored on a monthly basis for 11 months (198 samples total). Comparing the similarity of the six samples off each outfall to one another gives a good indication of the degree of mixing and ability to assimilate storm water inflow at each site.

- From 2006 to the present, quarterly water quality samples have been obtained from all three bays at stations similar to those used in the 1989-1994 survey. Data from these 294 samples forms the base to examine present day water quality and any changes observed during the past two decades.

Water quality along the project shoreline has been monitored since the early 1990s. There do not appear to be any significant long-term changes in water quality off the project shoreline. A graphical summary comparing water quality trends in all three bays between the three sampling periods over the past two decades is presented in Figure 2-3. For ease of comparison each water quality parameter is expressed as a percentage of a given standard (Table 2-1). Apparent increases seen within Kawela Bay (turbidity, TN, NO3+NO2) are consistent with changes between sampling methods that have placed sample sites closer and closer to a significant source of groundwater inflow.

Water quality has been found to vary predictably with daily cycles, season, wave height, and the inflow from storm runoff through the four runoff outfall locations. During and shortly after runoff events State water quality standards for turbidity, total nitrogen, and total phosphorus are typically exceeded in the nearshore water of each bay. During prolonged periods when there is no stream outflow the waters of both Turtle Bay and Kuilima Bay are usually within State water

quality standards, but the waters of Kawela Bay typically do not meet these standards. In Kawela Bay total nitrogen and total phosphorus did not meet state standards. These nutrients likely inflow with the large flux of groundwater and become concentrated due to the high residence time of water in the bay. Turbidity in Kawela Bay usually does not meet State standards, particularly in the eastern portion of the bay. Turbidity is likely the result of both sediment input from Kawela Stream and phytoplankton growth associated with the inflow of nutrient rich ground water. Nitrogen is commonly high in groundwater inflow, but the high concentration of phosphorus is unusual. Potential sources of the high groundwater phosphorus concentration include septic waste systems from adjacent homes, and fertilizers from up-slope agriculture.

Table 2-1: Hawai'i State Water Quality Standards Applicable to Project Shoreline

Open Coast Dry Season (parameter)	**Geometric Mean**	**Not to Exceed More Than 10% of the Time**	**Not to Exceed More Than 2% of the Time**
Total Nitrogen ug N/L	150	250	350
Nitrate+Nitrite ug N/L	5.0	14	25
Total Phosphorus ug P/L	20	40	60
Chlorophyll-a ug/L	0.50	1.5	3.0
Turbidity NTU	0.4	1.0	1.5
Total Suspended Solids mg/L*	15	25	35
Open Coast Wet Season (parameter)	**Geometric Mean**	**Not to Exceed More Than 10% of the Time**	**Not to Exceed More Than 2% of the Time**
Total Nitrogen ug N/L	200	350	500
Nitrate+Nitrite ug N/L	8.0	20	35
Total Phosphorus ug P/L	25	50	75
Chlorophyll-a ug/L	1.5	4.5	8.5
Turbidity NTU	1.5	3.0	5.0
Total Suspended Solids mg/L*	25	45	50
Embayment (parameter)	**Geometric Mean**	**Not to Exceed More Than 10% of the Time**	**Not to Exceed More Than 2% of the Time**
Total Nitrogen ug N/L	200	350	500
Nitrate+Nitrite ug N/L	8.0	25	35
Total Phosphorus ug P/L	25	50	75
Chlorophyll-a ug/L	2.0	5.0	10
Turbidity NTU	1.5	3.0	5.0
Total Suspended Solids mg/L*	35	45	50

*** TSS standards are from original State WQ standards. This parameter is not included in the present State Standards.**

Figure 2-3: Summary of Near Shore Water Sampling Events (1989-1994 / 2000-2001 / 2006-2011) (new)

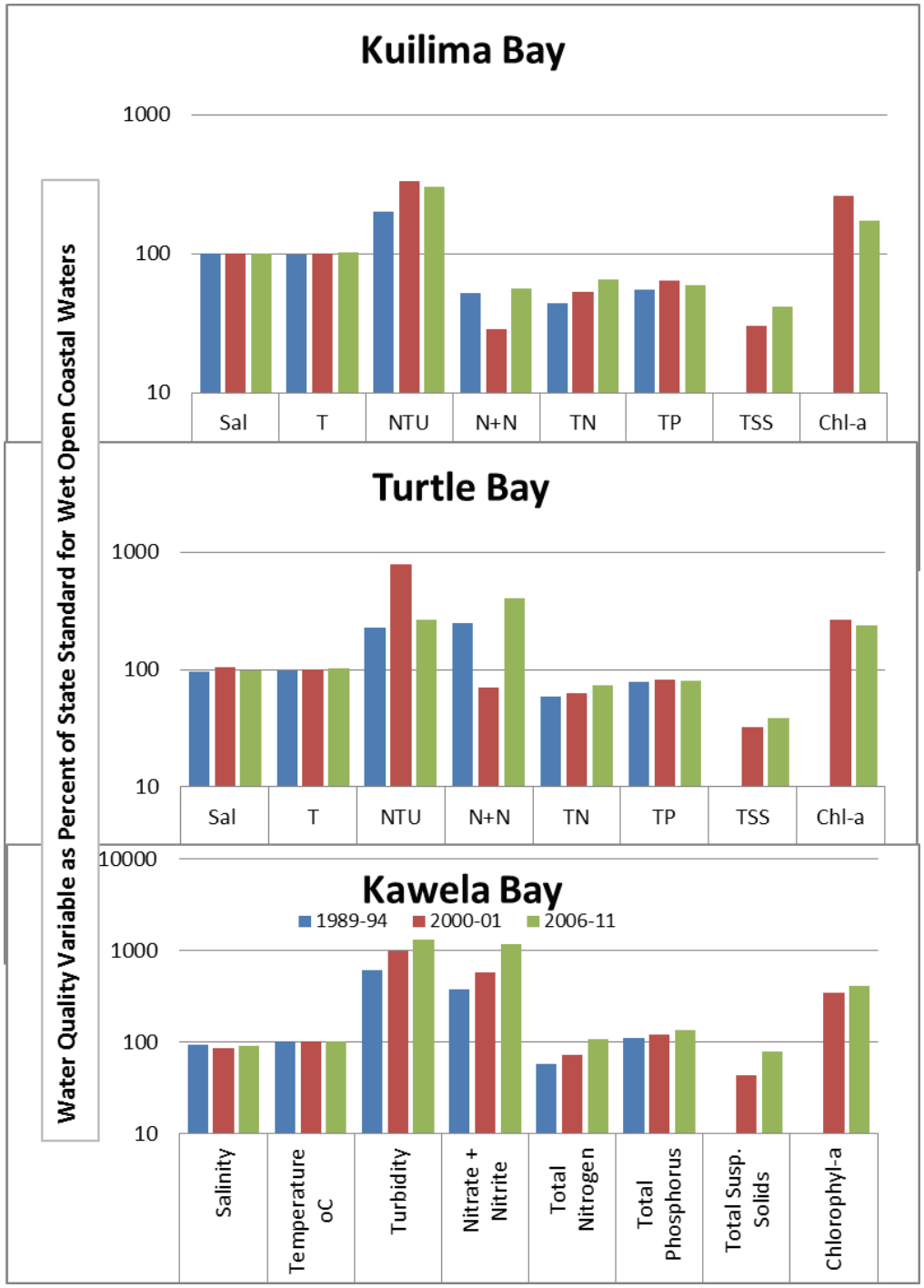


Figure 2-3. Summary of nearshore water quality off Turtle Bay Resort development site comparing data taken during three major sampling events [1989-1994 (blue) / 2000-2001 (red) / 2006-2011 (green)]. Variables are expressed as percent of State Water Quality Standard for Wet Open Coastal waters. Standard values for Salinity (34 ppt), Temperature (25° C) and TSS (20 mg/L) are not State Standards.

E.1. d. Site Specific Description of the Turtle Bay Resort's Marine Resources

Because of their varied character, the Oceanit report presents a separate discussion for each of the three bays that together constitute the Resort Shoreline. Following is a summary of the report's findings. Living marine resources along the very near shore area of the Turtle Bay coastline appear relatively unchanged or improved over the past 22 years. The benthic surveys were restricted to very near-shore waters, less than 300 feet from the shoreline, and were not intended to characterize the quality of the offshore coastal reef system nor the health of the recreational fisheries. The status of recreational and commercial fisheries is challenged around the entire state and was beyond the scope of the survey. Rather, the intent of the surveys was to characterize the benthic resources adjacent to storm water and stream outfalls, as these locations are the most sensitive to potential impacts from land based pollution and therefore the most likely to be impacted by development that adversely impacts these flows.

E.1.d. [1] KAWELA BAY

Kawela Bay encompasses a large (~~80~~ 50 acre) relatively shallow bay consisting primarily of a back-reef lagoon with minimal wave impact or influence from coastal currents.

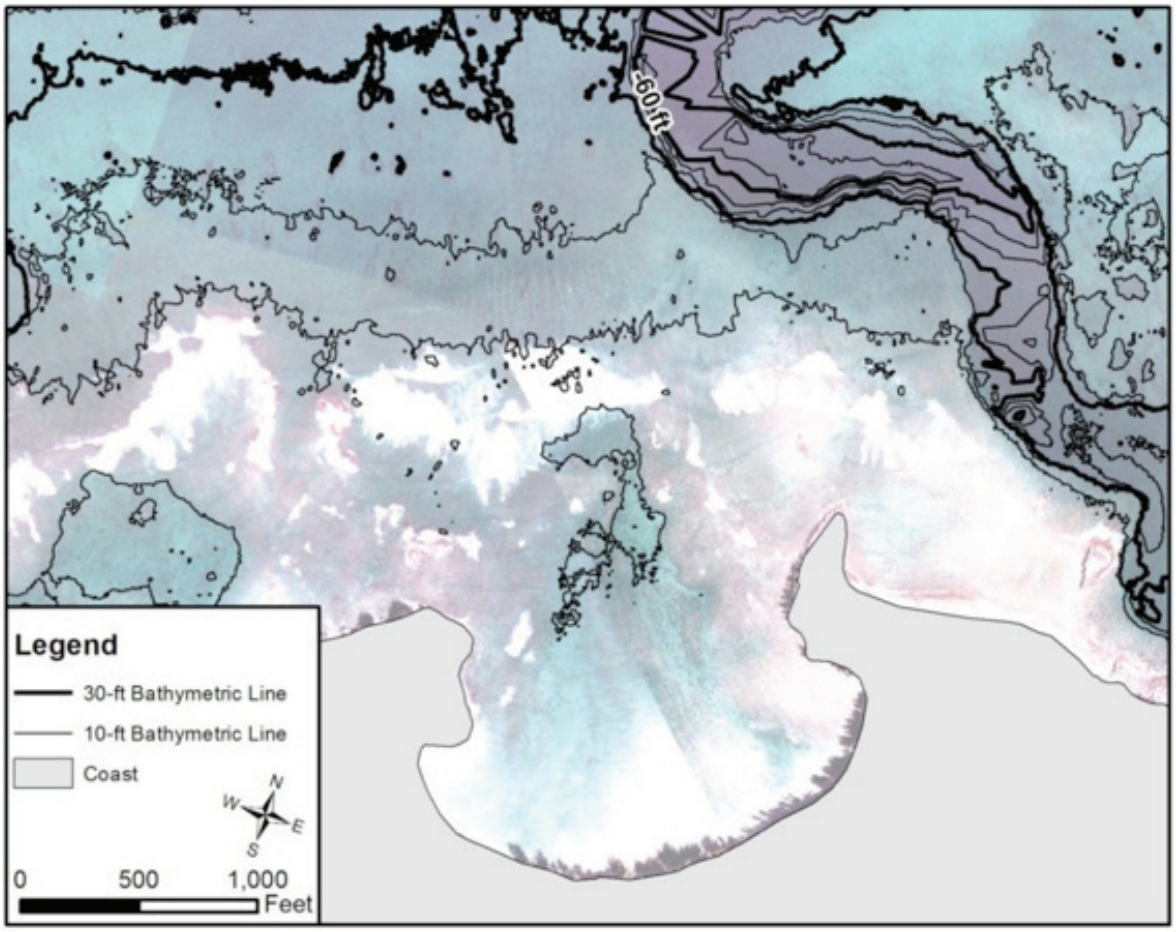
The bathymetry of the bay is critical to the understanding of water quality within the bay and is displayed in Figure 2-4 and Figure 2-5. From a broad perspective the bay is relatively shallow, less than 10-feet, with no clear deep passage to the open ocean and a distance from the stream mouth to the 30-foot contour of about 3000 feet.

The bay is a roughly symmetrical horse-shoe shape with shallow shelves beneath the east and west headlands (Figure 2-4 and Figure 2-5). The middle of the bay is relatively shallow, only a couple of feet deep, with narrow finger-and-groove coral structures perpendicular to the shore through the center of the bay. Note that the depths given are relative to the tide at mean-lower-low-water (MLLW) so actual water depth would typically be one or two feet deeper than indicated.

There are channels on both sides of the bay separating the shallow headland shelves from the reef in the center of the bay. However, the channel on the west side of the bay is much wider (~100 ft) and deeper (~6-8 \ft) with a clean coral sand substrate. One important feature is the relatively deep (~6 ft) area on the east side of the bay isolated inside the headland shelf but 100-200 feet off shore. This is the area that, in 1987, held several feet of very fine silt material and prompted the developer (at the time, KDC) to investigate means to remove the mud and improve water quality in the bay. Subsequent studies suggest that removing the primary source of the mud (Kawela Stream) may be a more prudent approach to water quality improvement. Although thick mud was not evident at this site during the 2011 surveys, this end of the bay remains much more turbid than the western side of the bay.

While large corals are present in deeper sand channels on both sides of the bay, the benthic community is dominated by a wide variety of macro algae. It is likely that the macro-algae grows

Figure 2-4: Bathymetry of Kewala Bay (new)



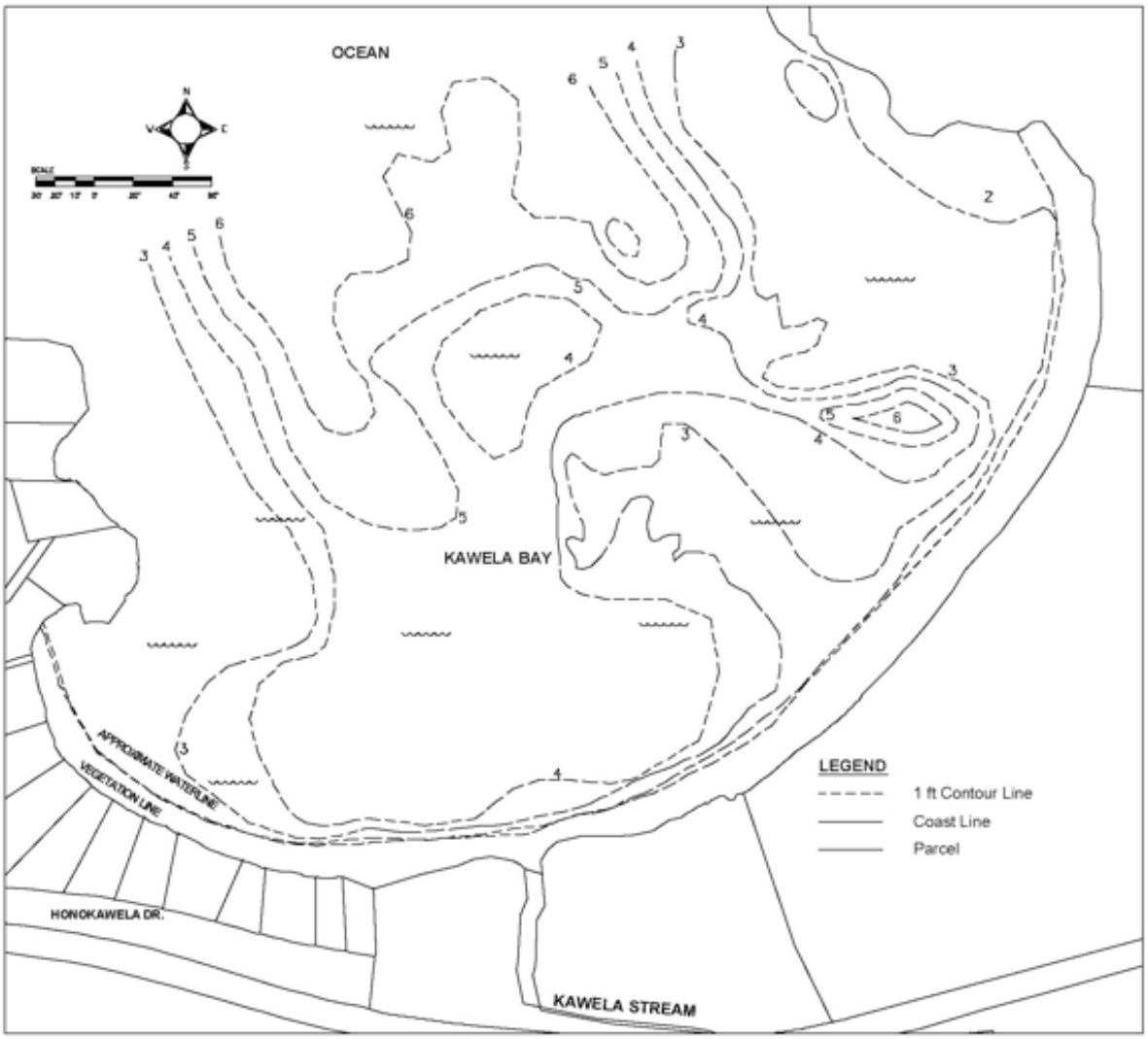
Note general shallow character of bay compared to adjacent shorelines.

well within the bay because of decreased impact from large waves, the shallow stable substrate, and the relatively high concentration of nutrients (particularly phosphorus) ~~in the bay, and the shallow extent of the bay~~ that enter the bay in groundwater through the beach at the west end of the bay. ~~Analyses of the benthic surveys showed Kawela Bay to have the highest near-shore coral counts (1.25% cover) and a moderate number of fish.~~

Inflow from Kawela Stream during large storm events has a long-lasting and adverse impact on water quality in the bay primarily due to the large quantity of sediment deposited into the bay. Removal of this stream flow from this bay and restoration of its flow to Turtle Bay would have a large positive impact on Kawela Bay's ecosystem without a significant adverse impact to Turtle Bay because Turtle Bay has much better exposure to the open ocean, and nutrients are able to disperse at a much better rate.

Waves and Currents: Currents within the bay are primarily wind and wave driven but with an important overlay of groundwater inflow. In the main western half of the bay, the overall

Figure 2-5: Fine Scale Bathymetry of Inner Kewala Bay (new)



direction of the current ~~seems to be~~ is counter-clockwise where the inward flow occurs on the west side of the bay then exits through the center and at the east corner by flowing along the shore and then out to sea through the center and east portion of the bay. Water circulation in the east portion of the bay is much slower and tends to form a clock-wise gyre with a long residence time. Figures ~~2-3~~ 2-6 and ~~2-4~~ 2-7 show the interpolated current from the field study. Note how this current pattern mirrors the salinity variations shown in Figure ~~2-5~~ 2-8. Fresh water tends to percolate through the beach in the west end of the bay, rise to the surface, and flow out through the center of the bay where it is joined by flow from a spring near the center of the bay (see Figure ~~2-5~~ 2-8).

Water Quality: Water quality has been examined during three separate long-term studies 1989-1994, 2001-2002, and 2006-2011, with collection points as shown in Figure ~~2-6~~ 2-9. The large-scale physical characteristics of the bay such as its bathymetry, current patterns, and

Figure ~~2-3~~ 2-6: Interpolated Current During Ebb Tide

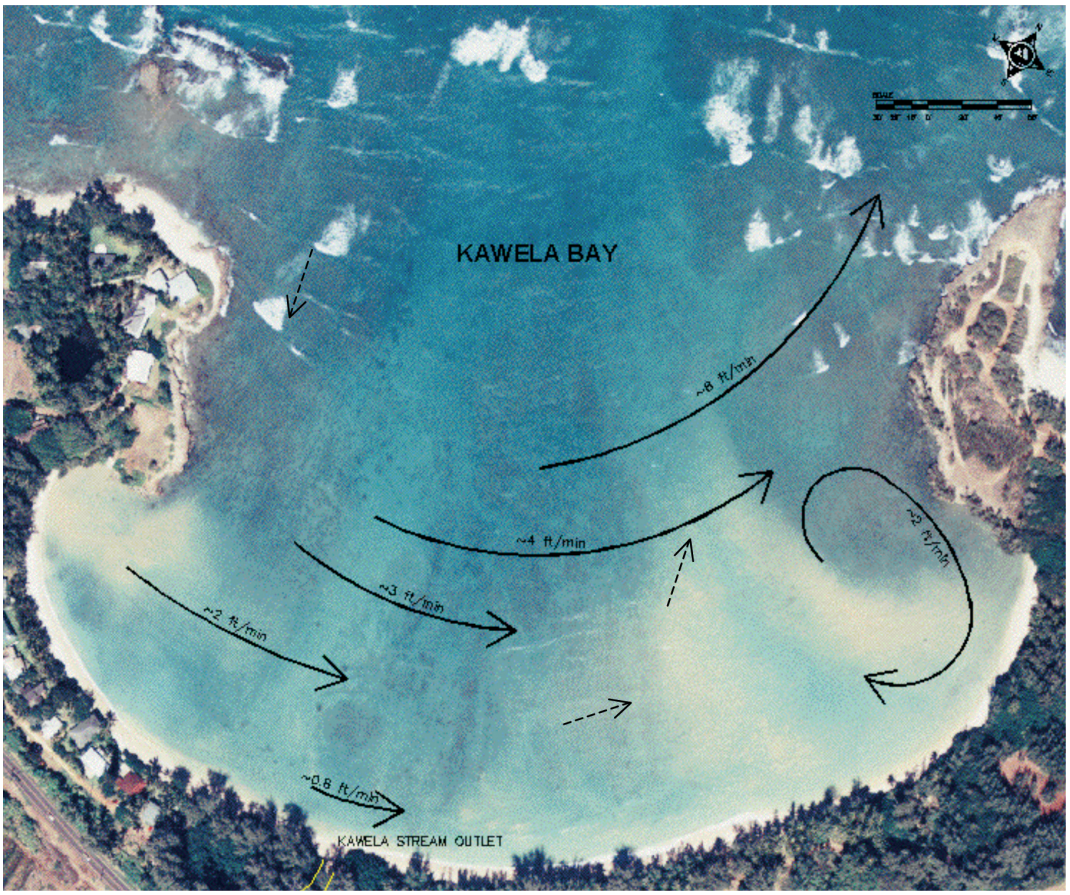


Figure ~~2-4~~ 2-7: Interpolated Current During Flood Tide

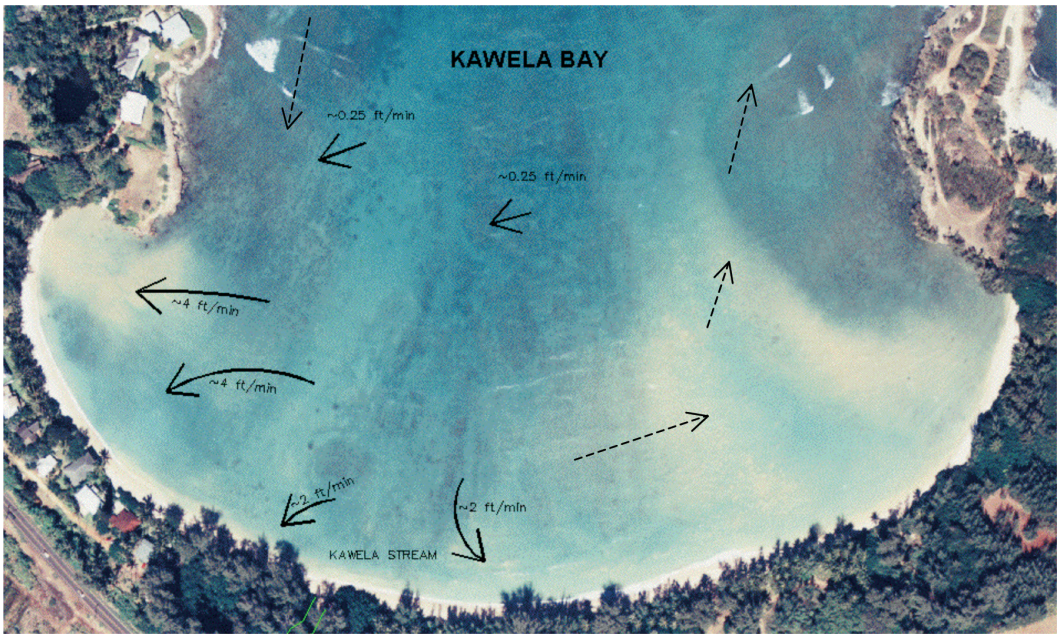
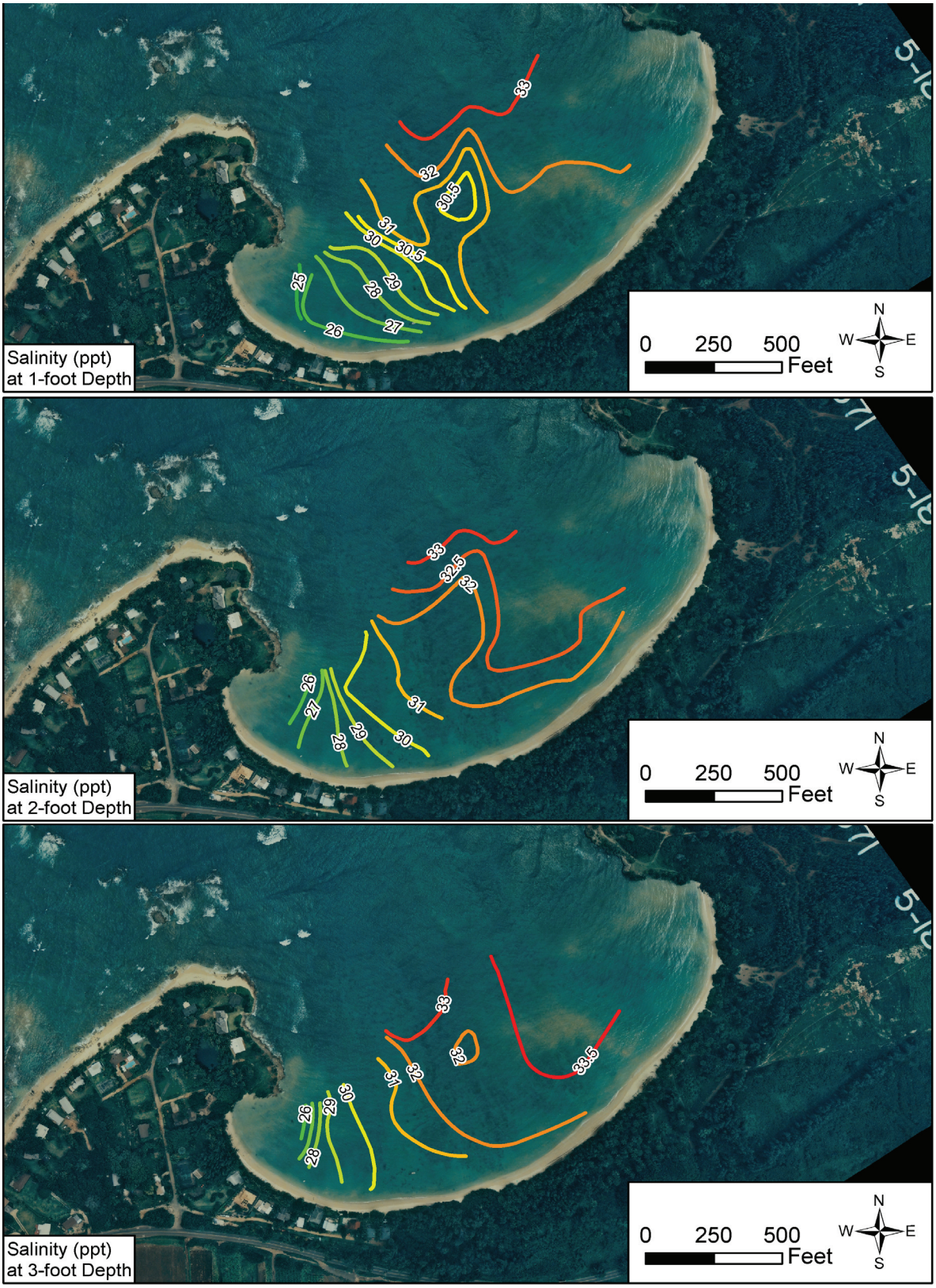


Figure ~~2-5~~ 2-8: Salinity profiles in Kawela Bay



salinity profiles are likely stable over a period of decades, but water quality has the potential to change over much shorter time periods in coastal areas.

The information in Figure ~~2-5~~ 2-8 was derived from a detailed salinity and bathymetry survey of the bay conducted by Oceanit in 1987. The figure shows a strong groundwater inflow of fresh water from the western portion of the beach. An inflow of approximately 5,000 gallons per minute (Oceanit 1987) of fresh groundwater was estimated as necessary to sustain the observed low-salinity plume. This fresh water rises to the surface and is transported out through the center of the bay with the dominant current. Near the center of the bay, a fresh water spring adds additional water to this flow. It has been confirmed visually and is determined to be still active as of 2011. During low tide, multiple groundwater freshets have also been observed eroding the beach slope as the groundwater flows through the sand beach at the west end of the bay showing the persistence of this groundwater flow. This strong and consistent flow of groundwater into the bay is an important factor in the interpretation of water quality results because the groundwater tends to carry significant quantities of nutrients into the bay.

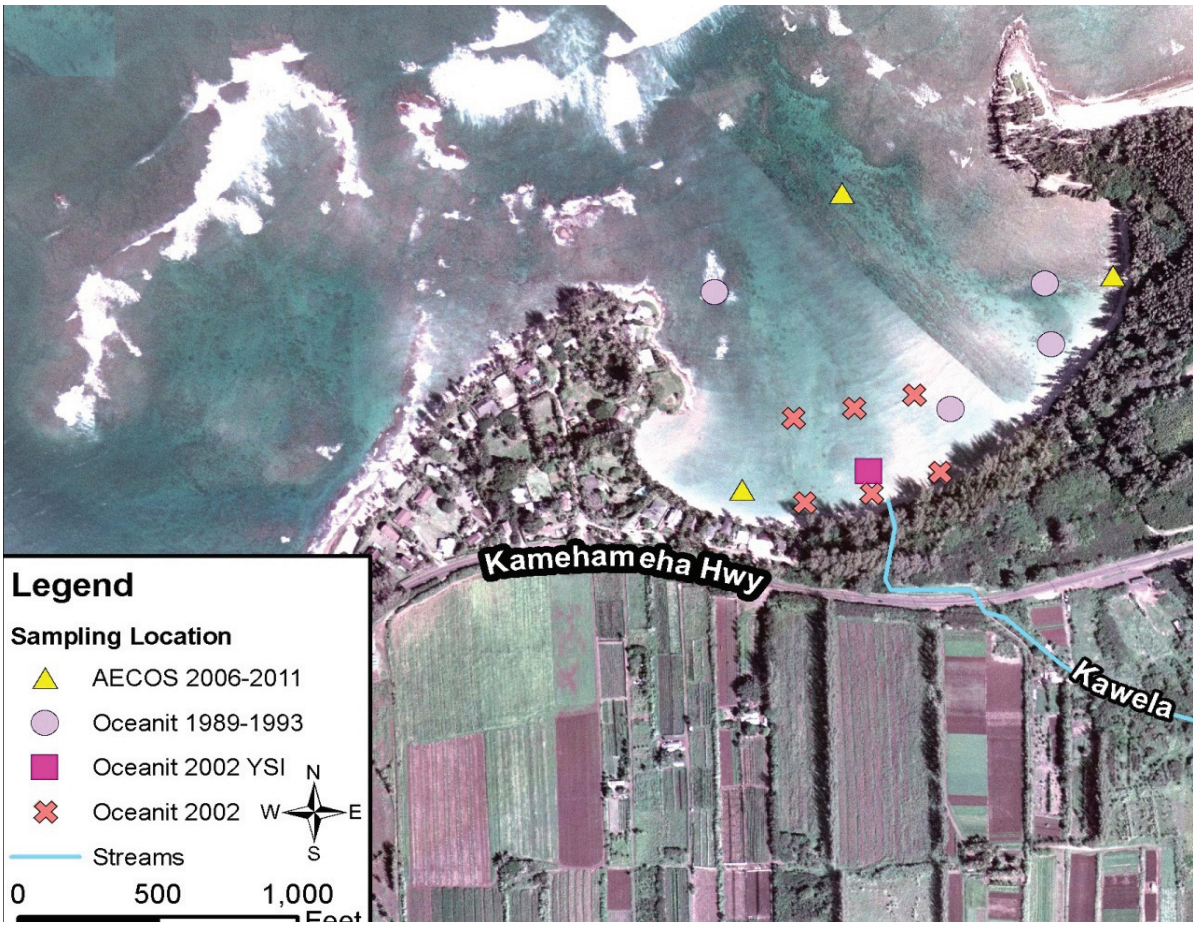
From June 1989 through December 1993, surface and bottom samples were taken from four locations each quarter (see Figure ~~2-6~~ 2-9) for a total of 152 samples. Three of the sample sites were in the central and east bay surrounding the area exhibiting significant soft sediments and perpetually high turbidity. The fourth, a control site, was in the west bay at the edge of the sand channel and fringe shelf and was subject to more open ocean waters. This study concluded that the source of the sediment was Kawela Stream due to the high content of non-calcareous and organic particles within the silt sediment, and from observations of the stream outflow into the bay.

For the large majority of time, the flow of Kawela Stream terminates at the sand beach berm and percolates slowly through the berm to the bay. During the infrequent occasions (~3-4 times per year) when the stream flow is sufficient to break through the beach barrier the entire bay ~~is usually~~ becomes extremely turbid for days afterward. Following these stream flow events, water turbidity in the west end of the bay usually clears within a few days, while the east end of the bay often remains turbid for several weeks to a month.

Following a very large storm event in March of 1991 that flooded most of Kahuku, turbidity within the bay ranged from 88 to 4,000 NTU (the State standard not to be exceeded 2% of the time for embayments is 5.0, as presented in Table 2-1). But even when the Kawela Stream is not flowing to the bay, the water quality of the bay rarely meets State Standards for open coastal waters.

Samples taken in the early 1990s and more recently in the past 5 years show that nitrate plus nitrite concentration in samples are highly correlated with groundwater inflow to the bay. High concentrations of total nitrogen and total phosphorus are correlated with high turbidity either as phytoplankton growth or associated directly with eroded sediments from stream flow events. Much of the water within the bay has N:P ratios (by weight) between 4:1 and 10:1, which is ideal for plankton and algae growth.

Figure ~~2-6~~ 2-9: Locations of water quality sampling stations in Kawela Bay since 1989



In the central and western portions of the bay the environment appears to have responded to the combination of high nutrients and high water turnover rates (currents) with abundant and diverse growths of macro-algae. In the eastern bay, with its much lower currents and long resident time, these nutrients appear to lead to a perpetual turbidity caused by a combination of suspended terrigenous silt and plankton growth.

The major flood of March 1991 gave rise to plans for improved drainage along the Kahuku coastline and a need to better understand water quality offshore of individual storm water outfall points. During 2001-2002, eleven monthly samples were obtained from 3 near-shore and 3 offshore (300 ft) locations directly fronting the Kawela Stream mouth for a total of 66 samples. During this same period a YSI-datasonde water quality meter was affixed just above the bottom in about 5 feet of water directly off the stream mouth, where it recorded physical water quality data (temperature, pH, depth, salinity, turbidity) at half hour intervals for the entire year.

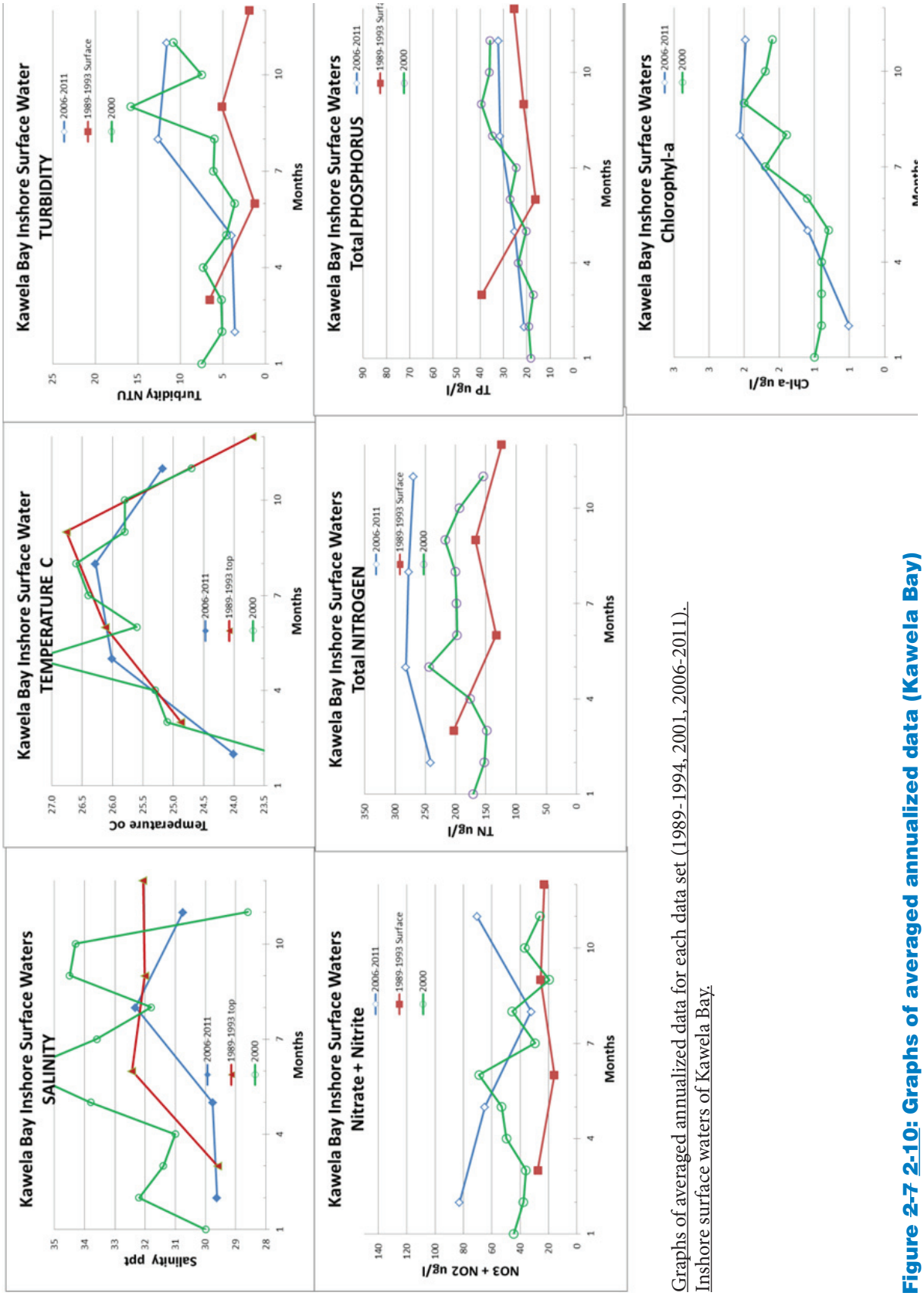
The 2002 study concluded that turbidity was more than ten times higher than the State standard for dry open coasts, and that high turbidity events could be associated both with stream

openings and, to a lesser degree, with high surf events. The closely spaced sample sites off the stream mouth showed that there were differences in water quality between very near-shore (~30 feet from shore) and slightly more offshore (~300 feet) and between east and west along the shoreline. Both nitrogen and phosphorus nutrients were in higher concentrations within the groundwater plume near shore on the west side of the bay and exceeded the State standard for dry open coasts. Total phosphorous (TP) was highest during the summer months. The high levels of TP were correlated with high chlorophyll-a levels, particularly when coupled with total nitrogen concentrations at a ratio of about 1:5. As phosphorus is not normally this high in groundwater (it usually becomes adsorbed to sediments), it may indicate a relatively close source of phosphorus to the groundwater. These sources could include the adjacent agriculture fields or the adjacent home lots. The study concluded that Kawela Bay was not suited to receive enhanced storm water discharge that presently occurs due to the low rate of mixing and transport within the bay.

Beginning in 2006 until the present, four water samples (~~2~~ two near shore, two offshore) have been taken at three locations within the bay on a quarterly basis for a total of 80 samples (see Figure ~~2-6~~ 2-9). Comparison of the results from these samples indicate the near shore sites show an increase in the concentration of nitrate plus nitrite, total nitrogen, and possibly total phosphorus. (See Figure ~~2-7~~ 2-10)

During 1989-94, the three near shore samples were in the center-west portion of the bay. The 2001 samples were in the center-east portion of the bay, off the stream mouth. The two 2006-2011 sample locations were very close to shore (high groundwater influence) and one was at the west end of the bay within a known groundwater plume. Therefore the relatively small trends seen in the dataset over the 2+-decade period of monitoring could be merely a function of the location of the samples taken within the bay with respect to the location of groundwater inflow. This is particularly interesting because the 1989 samples began not long after the last of the residents had moved away from the east end of the bay and septic systems associated with the homes became unused. If cesspools were delivering a significant load of nutrients through the sand berm, one would have expected a decrease in near shore TP concentrations over time in the east end of the bay. However, the expected decrease in phosphorus over time has not been seen. With the exception of a high total nitrogen value, all water quality parameters from the station at the east end of the bay from 2006 to the present are indistinguishable from the samples near this same location taken two decades ago. Long term water quality in Kawela Bay appears to have shifted slightly towards becoming more nutrient enriched during the past two decades, but it is possible that these changes could be the result of shifts in the points from which samples have been taken. However, it remains true that the bay receives more nutrients than is likely appropriate and that this problem is exacerbated by the shallow nature of the bay and its relative low rate of exchange with ocean waters.

The data indicates that the waters of Kawela Bay do not meet State water quality standards of an open dry (or wet) coastline. While a large quantity of nutrients are delivered to the bay in groundwater, the majority of sediments and their associated nutrients enter the bay during



Graphs of averaged annualized data for each data set (1989-1994, 2001, 2006-2011).
Inshore surface waters of Kawela Bay.

Figure ~~2-7~~ 2-10: Graphs of averaged annualized data (Kawela Bay)

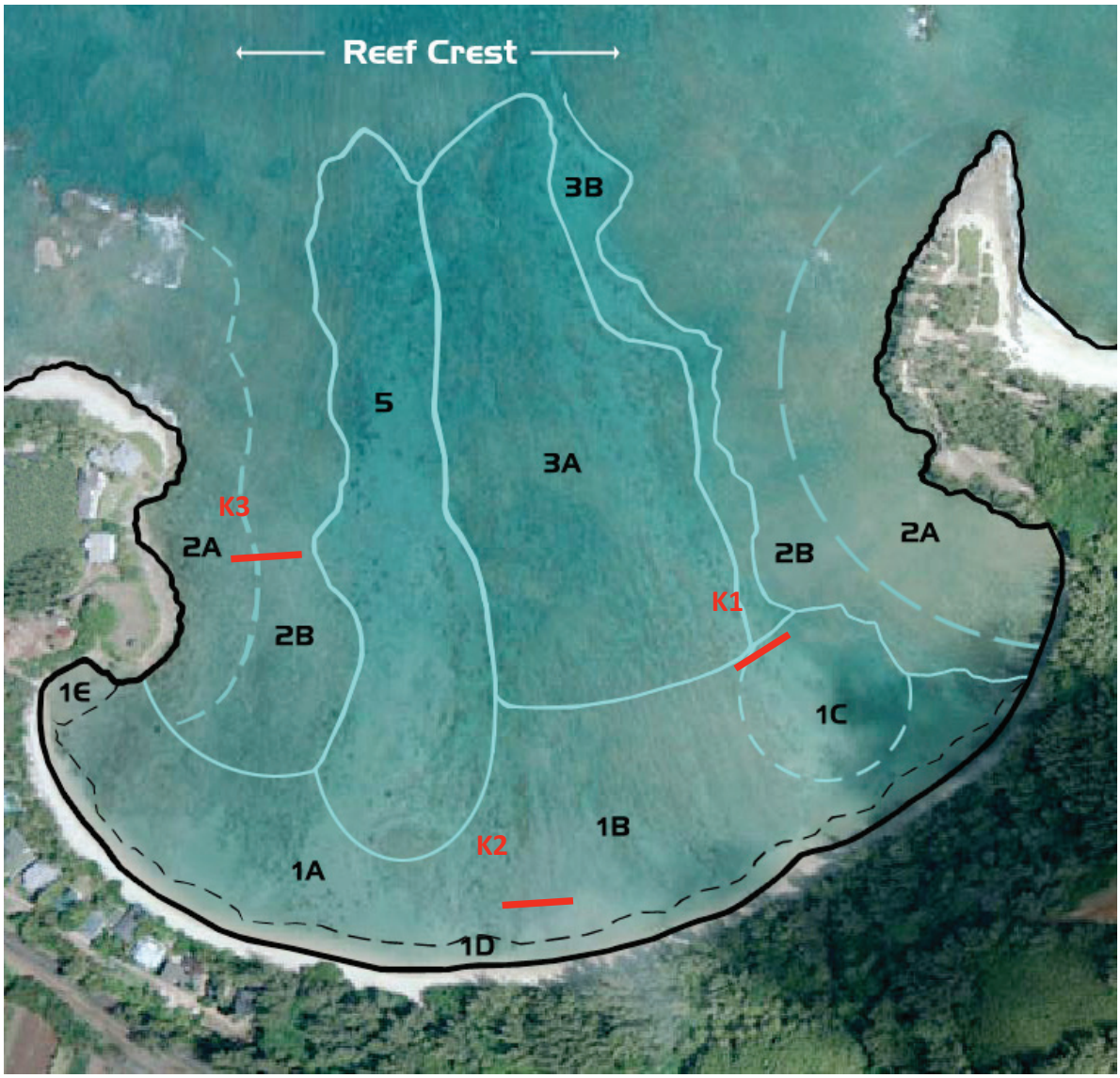
infrequent flow events of Kawela Stream. Removal of this source of nutrients and sediments to the bay would greatly improve water quality over a period of years. Given the large quantity of fresh groundwater entering the bay, low circulation and mixing within the bay, and inefficient transport to the open ocean, consideration should be given to minimizing storm water flows to this body of water. And given the physical aspects of the bay and high groundwater inflow, it may be more appropriate to use State water quality standards associated with embayments rather than open coastlines.

Marine Biota: Benthic habitat and water quality surveys of the Kawela shoreline were first conducted by Biengfang and Brock (1981), then over a 5-year period by Oceanit (1994), and again during the winter and summer of 2011~~. Benthic survey techniques have changed and improved over the years, particularly with the advent of digital underwater cameras and the ability to use computers to assist with photograph analyses. During the winter and late summer of 2011, three 100-foot transects were established, one each in the east bay, central bay (200 feet off shore), and at the edge of the sand channel near the western mouth of the bay (K1, K2, and K3 respectively in Figure 2-3). The first two sites (K1, K2) approximated survey locations used during the early 1990's and the third survey was able to locate underwater markers and therefore duplicate the third transect from the 1990's.~~ Benthic survey techniques have changed and improved over the years, particularly with the advent of digital underwater cameras, GPS positioning, and the ability to use computers to assist with photograph analyses. The surveys done in 1981 were conducted across measured transects, but data was only recorded by hand. The survey locations for the 1989-1994 studies were located primarily in response to a proposal (never implemented) to suction dredge accumulated silt from Kawela Bay. These same three survey locations (Figure 2-11) were placed: K1) in the highly turbid area about 200 feet offshore of the east end of the beach, K2) over the shallow backreef section about 200 feet offshore near the center of the beach, and K3) at the west end of the bay from the edge of the sand channel towards the shore just inside the point. In 1989-94 all three survey start points were fixed with (CDUA permitted) cement block anchors. Photographs of grids ($0.25m^2$) laid at 10-foot intervals on a tape measure extending from this fixed point were taken to quantify benthic substrate. During the most recent surveys, the digital photo grids captured a continuous record of 50-photographs at 2-foot intervals along the entire 100-foot survey tape. Specific survey methods are detailed in the appendix.

A more general characterization of Kawela Bay as a whole was conducted qualitatively based upon many mask and snorkel observations within the bay as aided by aerial photographs and depicted in Figure 2-11. Figure 2-11 depicts the five principal habitat zones within Kawela Bay including:

1. Inner bay sand, soft sediments, rubble, and scattered solitary corals
2. Shallow hard bench substrate with abundant algae
3. Central shallow back-reef with moderate coral and diverse seasonally abundant macro-algae
4. Offshore crest of patch reefs where large winter swells break and disperse energy
5. Wide sand channel with unique large massive coral colonies

Figure 2-11: Principal Habitat Zones in Kawela Bay (new)



~~Results of the 2011 fish surveys are presented in Table 2-2 with the benthic survey data presented in Table 2-3 and representative photographs from each transect in Figure 2-8.~~

Results of the 2011 fish surveys are presented in Table 2-2 with the benthic survey data presented in Table 2-3 and representative photographs from each transect in Figure 2-12. As would be expected from this very nearshore survey, most of the fish observed are small reef-dwelling species, primarily herbivores and omnivores. The most prevalent species seen are small wrasses, and surgeon fish. The lack of observed predatory fish is most likely due to the shallow water and relatively poor visibility. The benthic survey data shows that coral was not plentiful in this inner bay environment. At the K1 site (far right side – muddy water) there are numerous large (1-2m^3) coral heads, but they are almost completely covered with algae. The small areas of live

coral on these heads show obvious signs of stress, likely due to the very silt laden environment. The nearshore central bay (K2) is typical of shallow back-reef areas displaying low vertical profile with ample sand in pockets and small coral rocks and rubble mobilized across the surface by occasional storm waves. Coral cover is lowest in the area, likely due to the unstable substrate and fish count are also low likely in response to a lack of cover. Site K3 was selected primarily as a positive control as its location on the shelf at the west end of the bay typically provides it with ample surge and oceanic water. Corals at this site, while still not abundant, were by far the healthiest with no observed tissue stress. The quantitative data from these recent surveys are consistent with the findings of both the 1994 study (Oceanit) and the 1981 survey (Biengfang and Brock).

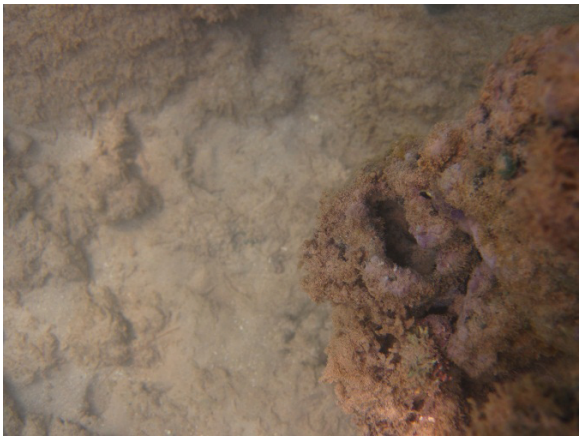
Table 2-2: Benthic substrate and benthic biota survey results from Kawela Bay, 2011 (revised to improve clarity)

	Kawela Site 1			Kawela Site 2			Kawela Site 3		
	March	Sept	% cover	March	Sept	% cover	March	Sept	
	# Points	# Points	%	# Points	# Points	%	# Points	# Points	%
BIOLOGICAL SUBSTRATE	18	na	3.5	70	77	14.6	104	166	26.0
CORAL	9	na	1.8	0	2	0.2	9	9	1.7
OTHER INVERTEBRATES	0	na	0.0	0	0	0.0	0	1	0.1
CORALLINE ALGAE	34	na	6.7	13	6	1.9	45	18	6.1
TURF ALGAE	449	na	88.0	423	368	78.3	361	275	61.2
NATIVE ALGAE	0	na	0.0	0	4	0.4	13	3	1.5
INVASIVE ALGAE	0	na	0.0	0	40	4.0	0	24	2.3
CYANOBACTERIA	0	na	0.0	0	1	0.1	0	0	0.0
UNKNOWN	0	na	0.0	0	0	0.0	0	0	0.0
TAPE, QUADRAT, SHADOW	0	na	0.0	4	2	0.6	8	4	1.2
Substrate Total	510		100.0	510	500	100.0	540	500	100.0

	Kawela Site 1			Kawela Site 2			Kawela Site 3		
	March	Sept	% cover	March	Sept	% cover	March	Sept	% Cover
PHYSICAL BENTHIC SUBSTRATE	# Points		%	# Points	# Points	%	# Points	# Points	%
Benthos (BENTH, HARD)	229		45.0	191	129	31.8	395	316	68.6
Boulder (BOULD)(ROCK)	1		0.2	13	8	2.1	1	1	0.2
Cobble (COB)	24		4.7	54	45	9.8	22	1	2.2
Rubble (RUB)	210		41.3	139	192	32.9	44	15	5.7
Gravel (GRAVEL)	8		1.6	36	19	5.5	5	2	0.7
Coarse Sand (CSAND)	11		2.2	46	48	9.3	72	162	22.6
Fine Sand (FSAND)	19		3.7	30	57	8.6	0	0	0.0
Mud (MUD)	7		1.4	0	0	0.0	0	0	0.0
Substrate Total	509		100.0	509	498	100.0	539	497	100.0

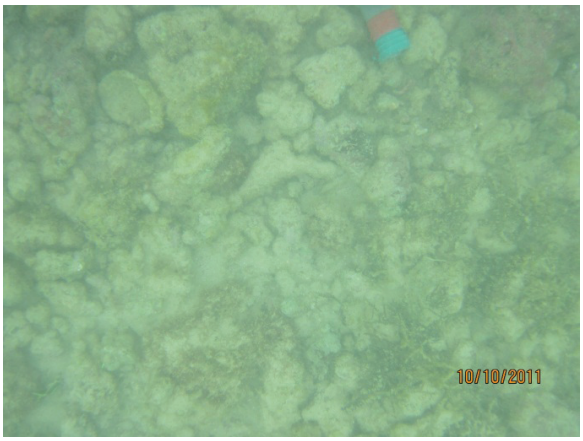
The bay is protected from constant ocean tradewind swells by a fringing reef at the center of the bay and by raised headlands and adjacent shallow limestone benches to the east and west. The bay supports a highly diverse growth of corals, fish, sea turtles and macro-algae. Five principal habitat zones (see Figure 2-11) have been identified in Kawela Bay covering a total of about 50 acres. ~~They are depicted in Figure 2-3.~~

Figure ~~2-8~~ 2-12: Representative photographs from three transects within Kawela Bay



1. Kawela Bay East Transect quadrant photo

1. Kawela Bay East Transect detail photo



2. Kawela Bay Center Nearshore quadrant photo

2. Kawela Bay Center Nearshore detail photo

3. Kawela Bay West quadrant photo

3. Kawela Bay West detail photo

Table 2-3: Results of fish surveys from three transects in Kawela Bay, 2011

				Kawela Bay				
			K1		K2		K3	Total
		March	Sept	March	Sept	March	Sept	Fish
Surgeon Fish	Acanthurus leucopareius							
	Acanthurus nigrofuscus	2		2				4
	Acanthurus triostegus	8		3	3			14
	Acanthurus xanthopterus			2				2
Butterflyfish	Chaetodon auriga	2		1				3
Goat fish	Mulloidicthys flavolineatus							
Box fish	Canthigaster jactator	1				1	1	3
	Canthigaster amboinensis					1		1
	Ostracion meleagris					1		1
Wrasses	Coris flavowittata							
	Coris venusta				12	1		13
	Labroides phthirophagus				1			1
	Stethojulis balteata							
	Thalassoma duperrey	3		3	3	6		15
	Thalassoma purpureum							
	Thalassoma trilobatum							
Damselfish	Plectroglyphidodon imparipennis					1		1
	Plectroglyphidodon johnstonianus							
	Abudefduf abdominalis				2			2
	Stegastes marginatus	2				2		4
Triggerfish	Rhinecanthus rectangulus					1		1
	Total Species Count	6	0	5	5	8	1	14
	Total Number Fish	18	0	11	21	14	1	65

The inner bay (Habitat Zone 1) fronts the beach shoreline and is protected from constant ocean swells and currents by the headlands and shallow central reef. Habitat Zone 1A is primarily sand or hard bottom with low relief at depths from 3 to 6 feet in the west side of the bay. Typically, this biotype has high water clarity, but often with a well-defined fresh water lens at the surface. Habitat Zone 1B is shallower generally 2-4 feet and consists of the inner portion of the finger-and-groove central reef. Finger-and-grooves are formed on a reef in response to wave action and scouring by sand. Sand channels tend to form in line with the wave direction, and corals grow on either side of the channel, each one protected from scouring by the coral head in front. Over time this forms linear furrows in the reef. Although in this habitat the finger-and-groove formations are indistinct with lower relief and greater quantity of rubble and sand. Small coral colonies within this zone are more numerous on the west side of the zone away from the typically turbid water common on the east side of the bay. Habitat Zone 1C consists of an isolated low point in the bathymetry with depths of up to about 8 feet. This area accumulates soft sediments and is often very turbid. The narrow (20-40 foot wide) steep sand beach constitutes Habitat Zone 1D.

The shallow shelves fronting both headlands (Habitat Zone 2) are divided into very shallow (2A) and slightly deeper (2B) habitats. The benthic substrate in 2A presents itself as a very flat but pitted calcareous substrate supporting a dense growth and broad variety of macro-algae and occasional sea urchins. This substrate is usually swept with waves and may be exposed, or nearly so, during low tides. Slightly deeper, Habitat Zone 2B expresses greater irregularity with the presence of sand patches in depressions, coral rock boulders scattered across the surface, and occasional coral colonies. This slightly deeper habitat appears to be a favorite for grazing by green sea turtles. The bench along the eastern headland has an abrupt edge dropping several feet into a channel. Along the western headland the depth of the bench increases gradually to the edge of the sand channel and supports a variety of coral growth in a surge habitat.

The center of the bay is characterized as a true reef habitat with high cover of several varieties of corals dominated by lobe coral (Porites lobata) but with at least seven other species prevalent (*P. lutea, P. compressa, P. duerdeni, Pavona duerdeni, Montipora flabellate, Pocillopora meandrina*). The inner shallower portion of Habitat Zone 3 displays classic "finger and groove" coral and sand channel formations that extend into Habitat Zone 1 near shore. There is no distinct reef crest, the inner portion of the Habitat Zone displaying a depth of 2-3 feet and then gradually increasing to a depth of 4-6 feet at the outer edge where the finger and groves become deeper and more prominent. The west side of Habitat Zone 3B may either be termed a major groove or a minor channel, strewn with boulder sized lobe coral colonies up to the abrupt ledge forming the outer limits of the shallow benches of Habitat Zone 2B. As the water increases in depth outside the bay, the reef takes on the characteristics of a deeper and wider surge channels that eventually grade into deep patch reefs of Habitat Zone 4. It is these deeper patch reefs that break and adsorb the energy from large winter storm waves.

Habitat Zone 5 is somewhat unique in that it consists of a relatively wide and deep sand channel with about a dozen immense free standing colonies of Porites lutea (*ex. P. evermanni*). These colonies range from about 3-feet to 12-feet in diameter.

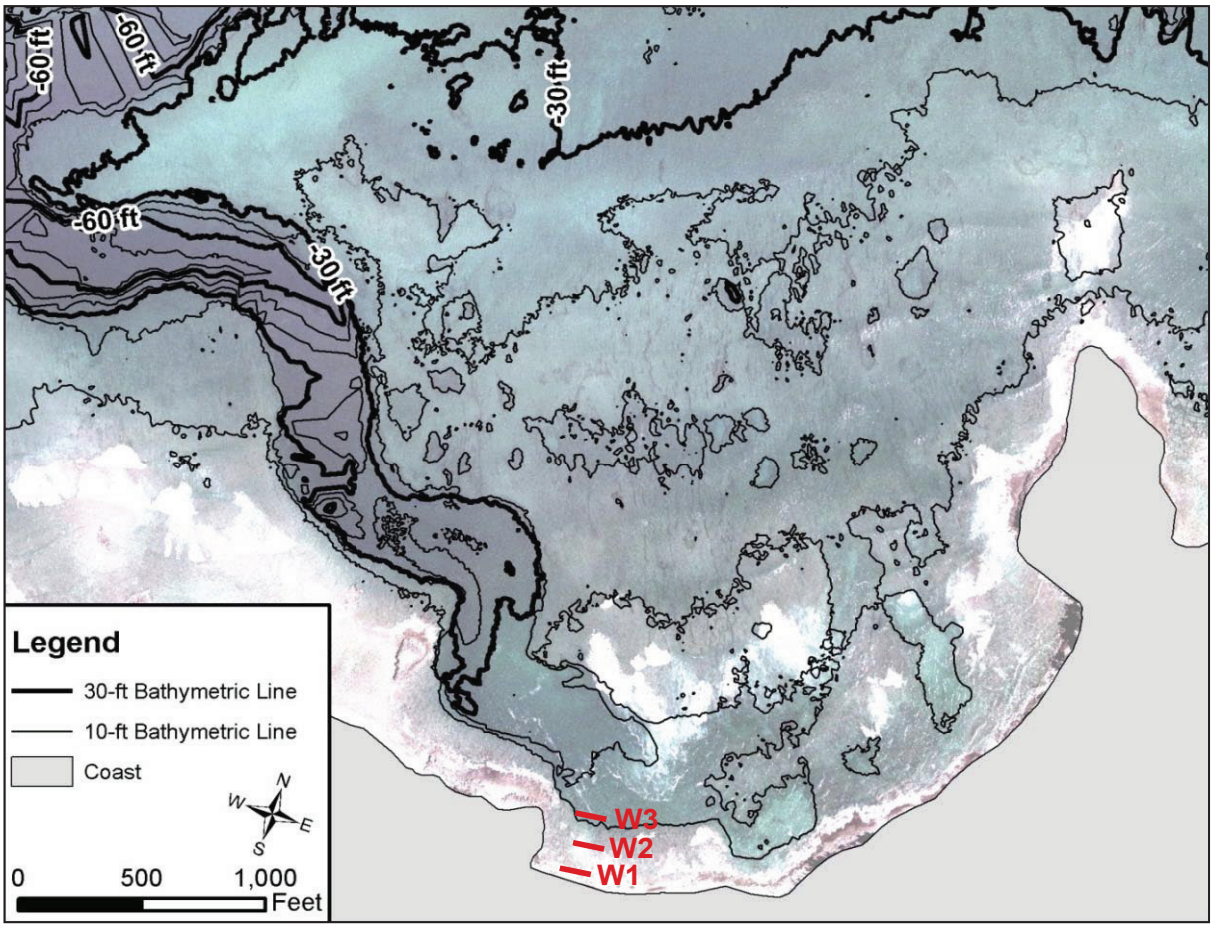
E.1.d. [2] TURTLE BAY

Turtle Bay beach is a half-mile long crescent of white sand beach perched on top of a beach-rock shoreline. Kuilima Point at the east end of the beach blocks most of the trade-wind generated swells from the beach, although these swells do wrap around the peninsula to create a popular surf break in the lee of the Resort. The active reef crest is well off shore from the beach (~2000 feet) with a significant back-reef lagoon between the beach and reef. The following general description of the bay is based upon numerous mask and snorkel observations within the lagoon and out across the reef to deep (>30ft) water, coupled with examination of aerial photographs of the area.

Turtle Bay's unique bathymetry has a dramatic impact on water flow and water quality in the bay. During prehistoric times the ocean was as much as 60 feet (17 meters) higher than present, during which time much of the flat coastal plain was formed and upon which the project site now rests. But during times of lower sea levels (by as much as 200-feet) the coastline was much

farther out to sea, and coastal streams formed channels across the broad plateau. A remnant of the prehistoric Kuilima Stream channel snakes through the reef from the west end of Turtle Bay in a deep 350-foot wide channel and meets the shoreline about a third of the way along the beach towards the Turtle Bay hotel (Figure ~~2-9~~ 2-13). This channel is a dominant factor in the hydrology of Turtle Bay as described below under waves and currents below.

Figure ~~2-9~~ 2-13: Turtle Bay Bathymetry (revised)



Turtle Bay Bathymetry showing submerged ancient stream bed that controls hydrology within the bay. Red lines mark locations of 100-foot long survey transects W1, W2, and W3.

Because the sand beach is perched on top of a lithified beach-rock shoreline, the toe of the beach sand is either above or, at most, slightly below water line. Along the eastern portion of the bay closest to the main Resort buildings, the near shore displays the characteristics of a shallow back-reef substrate. The bathymetry is relatively flat with depths from 2-6 feet with a coral rubble surface consolidated by a cover of algae and invertebrate growth. Small depressions or ridges filled with coarse sand and rubble are interspersed with small coral rocks thrown back from the reef face by past storms. Occasional small corals, more prevalent further from shore, grow on raised outcroppings above the action of the scouring sand. Small fish, primarily damsals, wrasses, and

occasional box-fish and trigger fish are associated with the scattered cover provided by ridges, small corals and coral boulders.

The near shore along the western half of the beach provides a significantly different appearance. Here the prehistoric stream channel is roughly parallel to the shore forming a 350-foot wide relatively deep lagoon. At the extreme west end, a narrow (200-ft) apron of hard substrate remains between the shore and the edge of the channel, but this apron is highly ridged or wrinkled and includes scattered boulders presenting a complex substrate. Oceanit's three benthic transects were located over this near shore apron. Closer to the center of the beach the old stream channel crosses the shoreline. The lagoon substrate consists of sand and rubble with boulder debris particularly nearer the shoreline. This more irregular substrate in the near shore with its ample groundwater intrusion provides excellent habitat for the abundant growth of a wide variety of algae along the shoreline at the west end of the beach. The algae, deeper water, and enhanced cover also support a greater variety of fishes in the near shore as compared to the east end of the beach. While the edges of the submerged streambed provide enhanced substrate, the rubble and sand bottom of the bed provide very limited habitat.

Two storm water drains outfall into Turtle Bay, neither of which receives significant flows from mountain streams or inland valleys. The Kuilima Drain consists of two 48-inch culverts placed in a concrete headwall at a cut through the beach-rock shoreline about mid-way along the beach. The Kuilima Drain receives flows from the golf course and the general Resort premises only during heavy rainfall events. During light to moderate rainfall events, the golf course and Resort grounds typically infiltrate the large majority of rainfall.

The West Main Drain is located at the extreme west end of the perched sandy beach against the base of the rocky headland and consists of two 48-inch drains ending at a concrete headwall at the top of the beach with a short channel cut through the beach- rock shoreline to the ocean. During summer, sand from the adjacent perched beach often completely covers these outlets (Figure ~~2-10~~ 2-14) and requires physical sand removal prior to the arrival of winter storms to allow flow to the ocean.

About 600 feet from the beach, the far side of the old stream channel manifests as an abrupt vertical ledge rising to within about 5 feet of the surface. In the lagoon this ledge varies from almost 0-feet to well over 10 feet in height. As one follows the channel seaward, the near vertical face of the old stream bed wall approaches 20-feet in height above a uniform sand and rubble bottom. The reef crest at a depth of 3-5 feet is another 1,000 feet beyond the edge of the channel. White water from the waves breaking over the reef crest dissipates where it crosses into the lagoon channel. No surveys have been conducted over this section of the reef because it is far from the stream and storm drain outfall points. However, qualitative observations show this reef to be typical of other reefs along this windward shoreline. With the exception of the ancient streambed channel the crest of the reef is continuous across the width of the bay and of relatively uniform width and depth.

Figure ~~2-10~~ 2-14: West Main Drain Outlet ~~(above)~~ to Turtle Bay and Culvert under Kamehameha Hwy

West Main Drain Outlet (above) to Turtle Bay is typically buried in sand when not actively flowing. The small channel under Kamehameha Highway (right) limits flow to the West Main Drain from *mauka* of the highway. Water current circulation in Turtle Bay during rising tide (top) and falling tide (bottom) showing wave pumping over shallow fringing reef into deeper nearshore lagoon with the majority of outflow occurring throught the deep channel through the reef at the south-west end of the bay.

Waves and Currents: Swells from trade winds and direct north swells wrap around the Kuilima peninsula and approach the shoreline as 3-4 foot waves through a minor channel at the east end of the bay. Larger swells from the northwest tend to break over the shallow reef crest and dissipate as white-water moving over the back-reef and into the lagoon. Within the bay, currents are driven by white-water pulsing over the reef and to a lesser degree by wind direction. The overall direction of the current seems to be counter-clockwise where the inward flow occurs on the east side of the bay then exits at the east corner by flowing along the shore then by cutting diagonally across the bay. Figure ~~2-11~~ 2-15 shows the interpolated current from the field study. Both show the current in a counter-clockwise orientation. Under conditions of normal trade wind swells with surf extending across the shallow reef and into the deeper near shore back-reef lagoon, there is a dominant outward current to the sea through the channel at the southwest end of the beach immediately off the outfall of the West Main Drain.

Water Quality: Water quality has been monitored in Turtle Bay during three time periods, semi-annually from 1989-1994, monthly for one year during 2001-2002, and quarterly from 2006 to the present. The location of these samples is shown in Figure ~~2-12~~ 2-16.

Table 2-4 displays the geometric mean value for each water quality constituent collected at each of the sample sites within Turtle Bay for each survey period, and then the whole-bay average during each survey period for each constituent. The graphics in Figure ~~2-13~~ 2-17 present this same data, but with the geometric means expressed by month, to show any seasonal trends in the

Table 2-4: Summary of water quality from three surveys over 22 years at Kawela Bay

Turtle Bay Water Quality		Temp. (° C)	Diss. Oxygen (mg/L)	pH	Salinity (ppt)	Turbidity (lab) (NIU)	Total Susp. Solids (mg/L)	Ammonia (ug N/L)	Nitrate + Nitrite (ug N/L)	Total Nitrogen (ug N/L)	Total Phosphorus (ug P/L)	Chlorophyl a (ug/L)	Silicates (ug/L)
1989-1994													
	W1-1 surface	24.5	6.2		31.8	1.5			16.7	181	19.5		
	W1-2 - mid-water	24.6	6.2		32.7	1.8			20.5	186	16.2		
Each Value	W2-1 - surface	24.4	6.4		34.2	0.8			8.3	113	12.0		
Geo Mean of	W2-2 - mid-water	24.3	6.4		34.4	0.7			4.7	104	11.0		
10 semi-annual samples													
	Average	**24.47**	**6.29**		**33.26**	**1.19**			**12.53**	**146**	**14.7**		
2002	West Turtle Bay												
Each GM of	Near Shore (10 ft)	25.12	7.5	8.08	33.63	2.4	7.8		4.1	154	15.9	0.93	
33 samples	Off Shore (300 ft)	25.11	7.5	8.17	35.43	1.7	5.0		2.8	124	11.7	0.47	
	Average	**25.11**	**7.5**	**8.1**	**34.53**	**2.0**	**6.4**		**3.4**	**139**	**13.8**	**0.70**	
2006-2011	East nearshore	26.06	7.2	8.3	33.95	2.3	10.9	2.0	20.9	208	17.9	1.31	967
	Cntr nearshore	25.77	6.8	8.2	34.20	1.5	8.6	1.7	6.2	176	16.7	0.86	559
Each GM of	Cntr 300 ft offshore	25.53	6.7	8.2	34.49	1.1	6.6	1.4	7.3	162	11.4	0.42	451
21 samples	West nearshore	25.49	7.0	8.2	33.02	1.5	8.7	1.7	34.2	208	21.4	1.02	1525
	West 300 ft offshore	25.28	6.7	8.2	34.40	1.1	6.7	1.4	6.5	163	10.5	0.43	495
	Average	**25.62**	**6.88**	**8.23**	**34.01**	**1.50**	**8.32**	**1.64**	**15.02**	**183.37**	**15.59**	**0.81**	**799.50**
Open Coast	Wet Season					0.50	20	3.5	5	150	20	0.30	
State WQ Std	Dry Season					0.20	10	2.0	4	110	16	0.15	

* Measured constituents with a geometric mean greater than the State WQ Open Coast Wet season standard are noted in blue

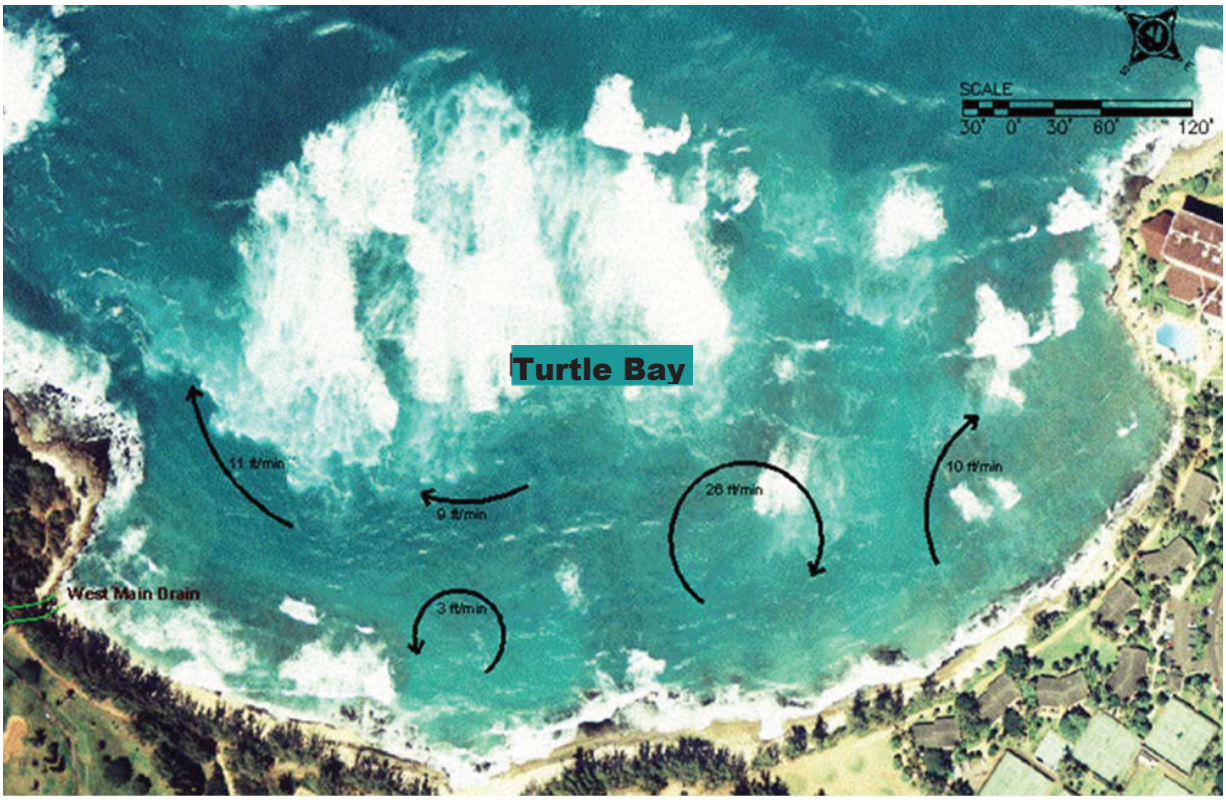
data. The graphs are all of the same scale as those of Figure ~~2-7~~ 2-10 for Kawela Bay to allow for ease of comparison between bays. Figure ~~2-14~~ 2-18 displays one month of hourly data from the 2002 survey as a data visualization graph for physical water quality constituents only.

Turbidity values are rarely below the State Water Quality Standard for Wet Open Coasts (0.5 NTU). Turbidity values are typically higher in near shore (~2 NTU) than from offshore sample sites (~1 NTU), but as can be seen from Figure ~~2-16~~ 2-18 there is a great deal of variability in turbidity from day to day and even from hour to hour during a given day. Turbidity appears to be correlated with water outflow events from the West Main Drain, with high wave events, and with summer periods with low waves (and presumably low circulation) causing high chlorophyll-a levels associated with plankton blooms.

Although turbidity levels are higher than state standards, it is unrealistic to assume that this standard is achievable in shallow near shore areas subject to the turbulence of waves and currents. The State previously used a geometric mean of 20 mg/l for Total Suspended Solids as a water quality constituent along near shore open coasts. All of the sample geometric means are well within this standard. There does not appear to be any long-term trend in turbidity levels within Turtle Bay.

Total nitrogen, as well as nitrate plus nitrite levels typically exceeded the State Water Quality standards for these constituents, particularly at the very near shore sample stations. The higher nitrogen concentrations in near shore samples show that these constituents are likely carried to the shore in groundwater. Because of the strong relationship between nitrogen concentration and ground water input (Figure ~~2-15~~ 2-18) the only way to lower nitrogen in near shore waters

Figure ~~2-11~~ 2-15: Water current circulation in Turtle Bay



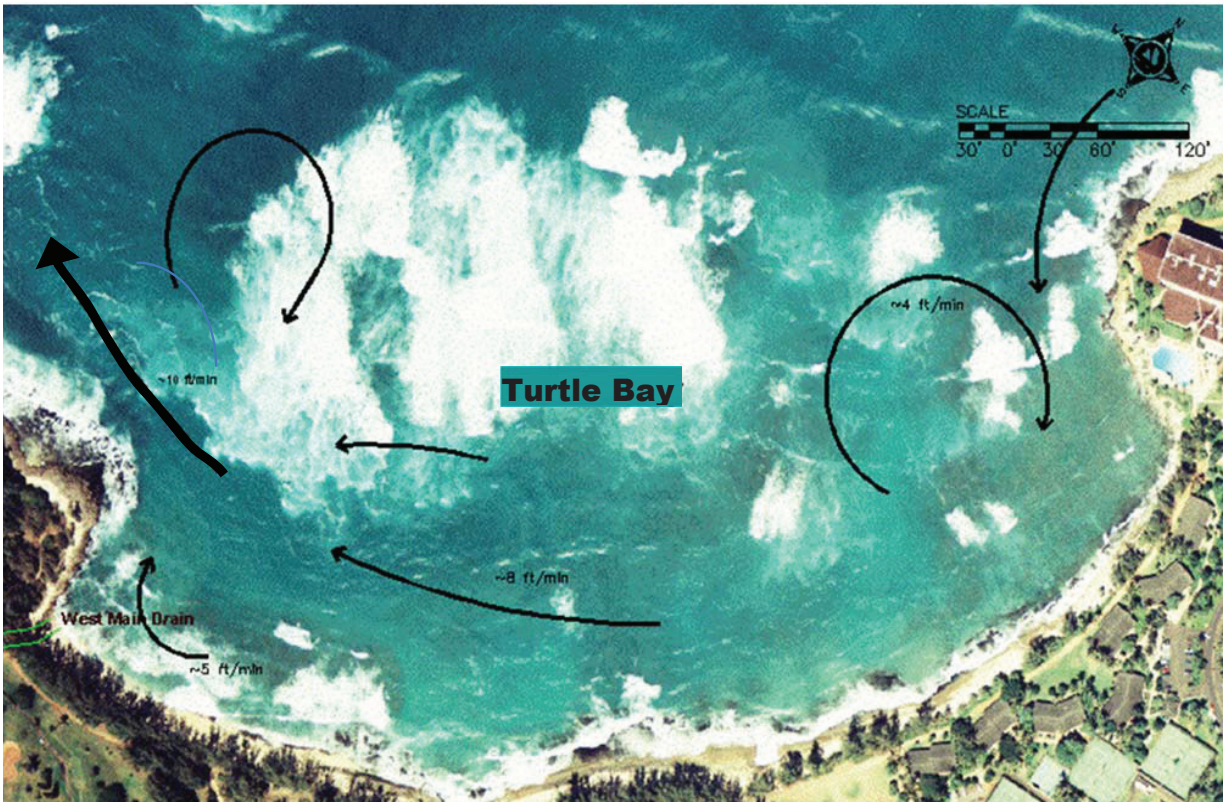
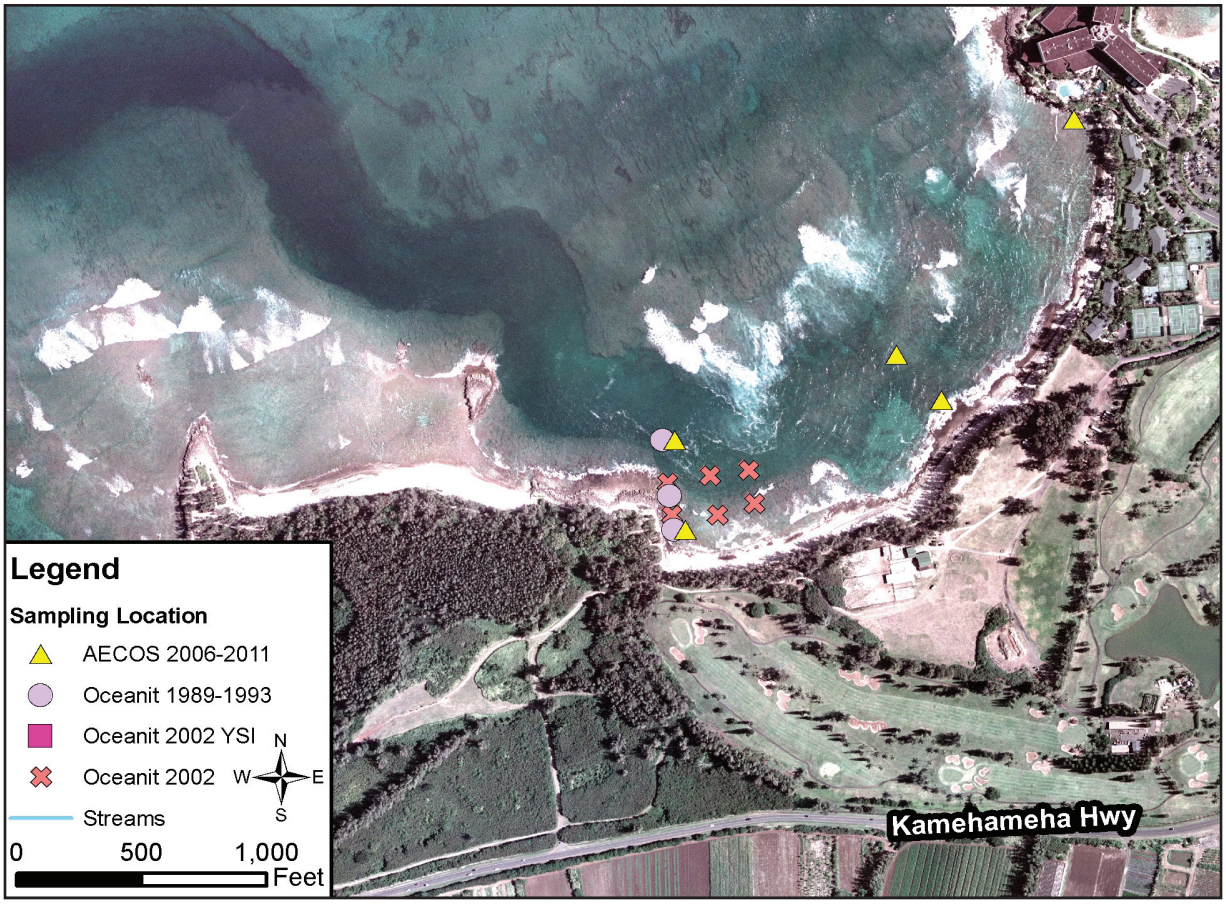


Figure ~~2-12~~ 2-16: Turtle Bay water quality sample locations



Location of water quality samples taken during 1989-1994, 2002, and 2006-present Graphic display of annualized averaged data from three studies conducted in Turtle Bay since 1989.

would be to either lower the nitrogen in the ground water, or to increase the rate of mixing or offshore transport of near shore waters.

Total phosphorous concentration is likely a more important variable than nitrogen concentrations in near shore aquatic environments, because it is typically the limiting nutrient for plankton or plant growth. In contrast to Kawela Bay where TP concentrations were generally above State Water Quality Standards, in Turtle Bay these concentrations are, with one exception, generally lower than the State Water Quality Standard. Therefore in Turtle Bay, the growth of algae and phytoplankton is generally phosphorous limited and there is not a strong correlation between turbidity (caused by plankton growth) and total nutrient concentration (see Figure ~~2-15~~ 2-19).

Water quality within Turtle Bay appears to be strongly influenced by the rapid exchange of water with the open ocean as it is pumped in across the reef by wave action and exits through the ancient stream bed at the west end of the bay. Nutrient levels within the bay can reach very high concentrations during storm water outflow events through the West Main Drain, but due to the

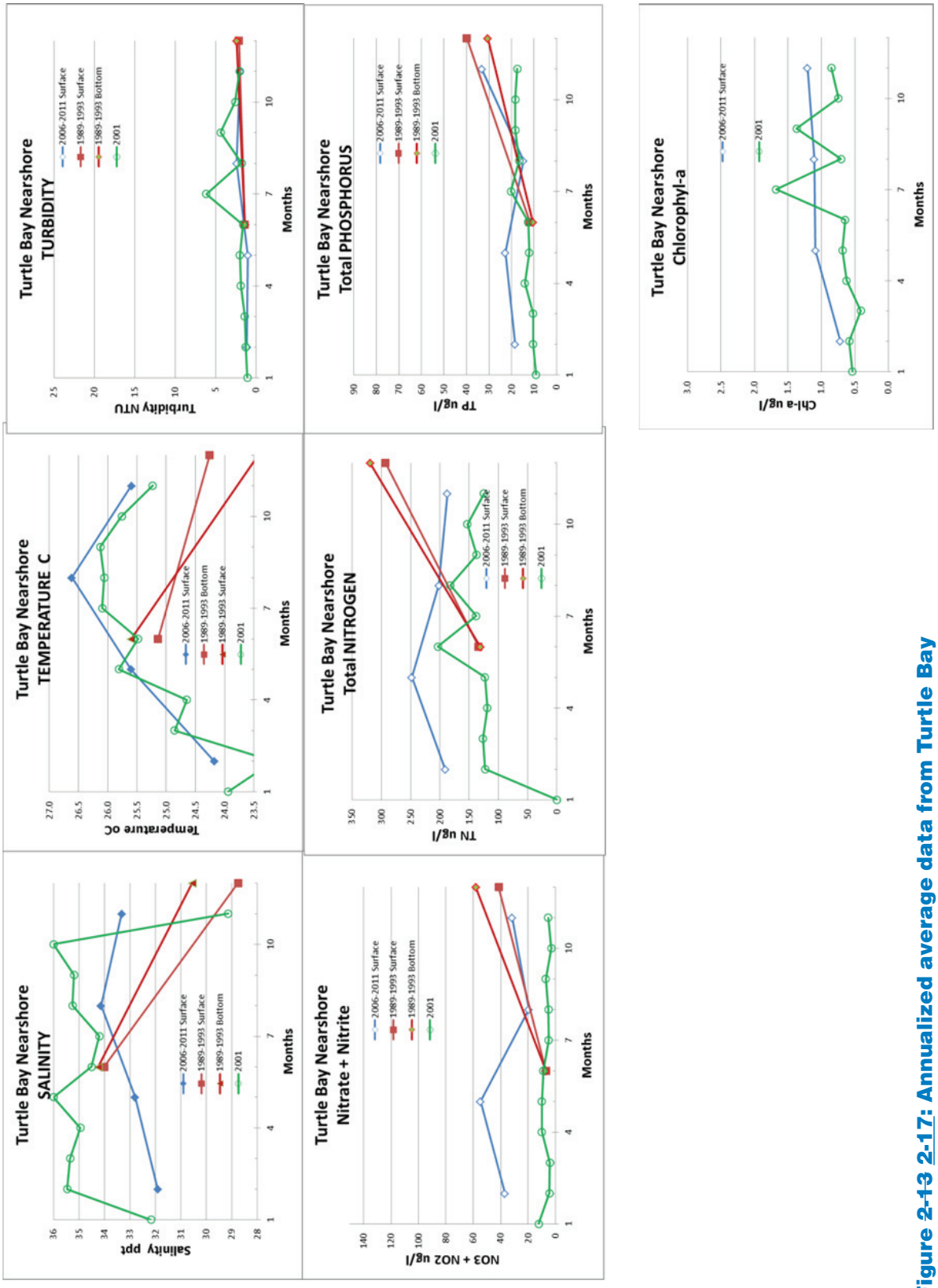
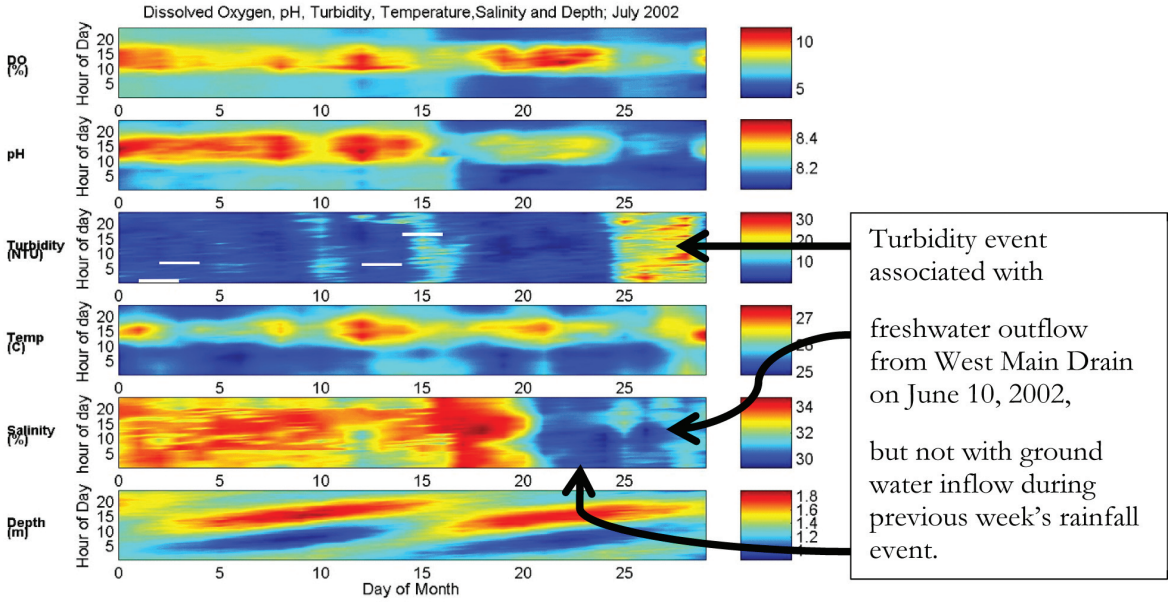


Figure ~~2-13~~ 2-17: Annualized average data from Turtle Bay

Figure ~~2-14~~ 2-18: Data visualization graphic from Turtle Bay, June 2002



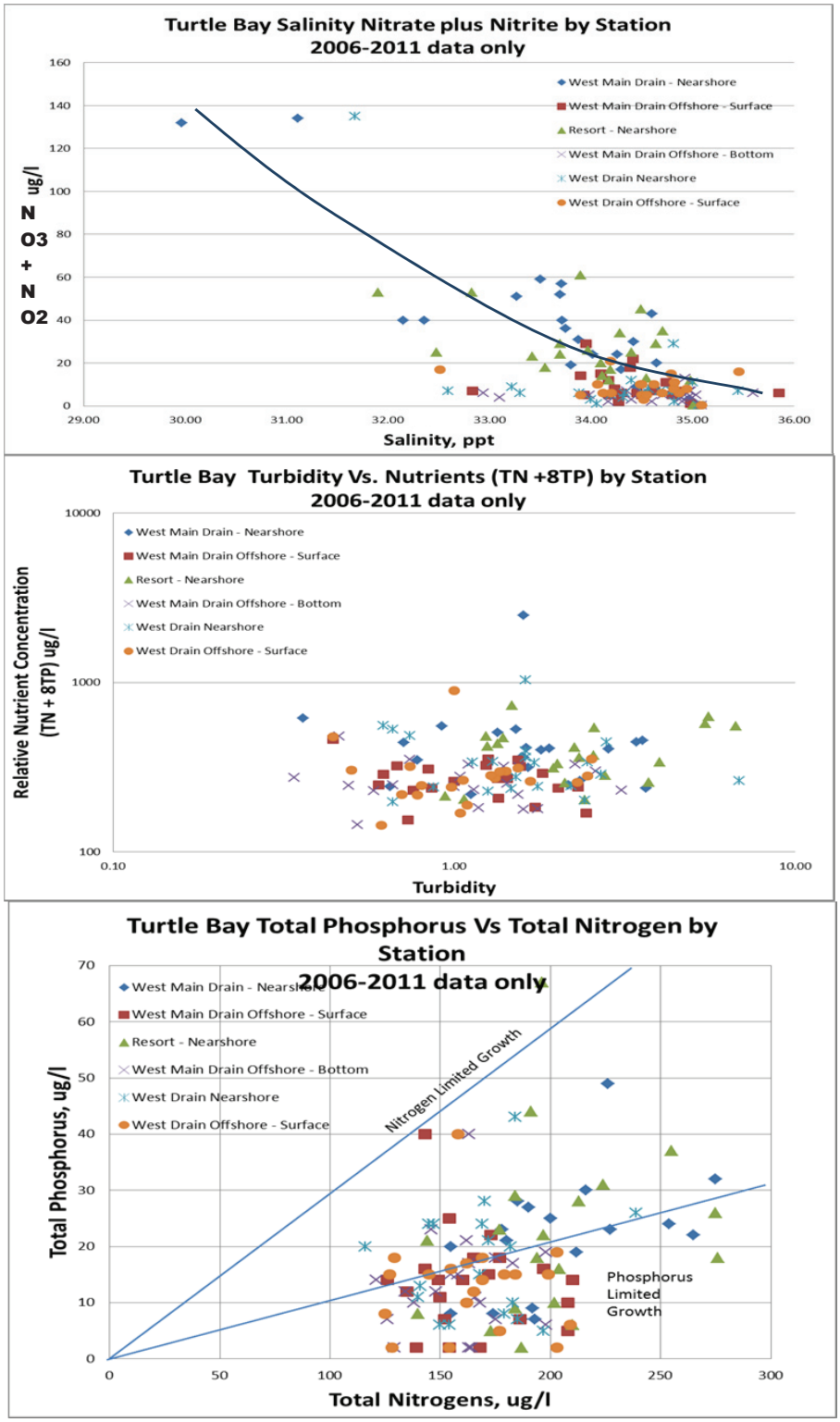
high exchange rate these high concentrations do not persist and water quality rapidly improves. There is no apparent long-term trend in water quality within the bay.

Marine Biota: Benthic marine surveys were conducted in the near shore waters in Turtle Bay off the West Main Drain during March and September 2011. The survey locations were selected to be consistent with the 2002 survey location and were intentionally placed very nears shore in proximity to the outlet of the West Main Drain. The surveys were conducted along 100-foot transects parallel to shore approximately 50-feet, 100-feet, and 150 feet off the shoreline at the extreme west end of the bay. The near shore survey was over a heavily scoured rough hard substrate in the surge zone just below the beach in about 4 feet of water. The survey 100 feet offshore was still over a hard beach-rock substrate but slightly deeper with slightly less surge, more gravel, and greater vertical relief. Both transects displayed abundant macro algae, calcareous algae, and occasional small corals. The third survey, at 150 feet from shore, was deeper (6-10 feet) and just inshore of the edge of the submerged streambed. Substrate is highly irregular along this outer transect with large cracks and caves in solid substrate and provides a myriad of niches in which fish and invertebrates find refuge. This transect displayed both the highest total fish count (35) and the greatest number of fish species seen (8).

E.1.d. [3] KUILIMA BAY

The shore at the ʻŌʻio Stream outlet consists of a raised beach-rock shoreline supporting a perched sand beach. A 20-foot wide channel has been excavated through the beach rock shore to allow for the passage of storm water from the East Main Drain, but this depression is often filled with sand from the perched beach to either side. The shoreline is a vertical face dropping to a sand and rubble bottom in 6-8 feet of water. The sand bottom extends about 200 feet from shore where it's depth gradually increases to about 12-feet. Beyond this a hard bottom substrate

Figure ~~2-15~~ 2-19: Relation between Salinity and nitrate plus nitrite in Turtle Bay



Top: Relationship between Salinity and nitrate plus nitrite in Turtle Bay. *Middle:* Relationship between total nutrients (TN + 8TP) and turbidity. *Bottom:* TN Vs TP in Turtle Bay.

with scattered corals and reef rubble gradually shallows to a depth of 6-8 feet over an indistinct reef crest about 500 feet offshore.

The reef crest is discontinuous near the center of the bay with passes deeper than 10-feet extending from near shore to offshore areas. This deep reef crest allows a significant quantity of wave energy to impact the shoreline, much more than either Turtle Bay or Kawela Bay. The 30-foot depth contour is reached about 2000 feet off shore across multiple hard bottom reef areas.

Waves and Currents: Of the three bays along the project coastline, Kuilima Bay presents the most open shoreline to the ocean waves and currents. The reef directly off of the East Main Drain is not as well formed, as wide, or as shallow as the reef off of Turtle Bay and subsequently allows much more wave energy to pass to the shore. Near shore currents, both during rising and falling tides, were along shore from east to west, directly towards the main Turtle Bay Hotel facility. This is consistent with visual observations during outflow events where the plume of muddy water from the East Main Drain stays relatively close to shore and moves towards the west.

Water Quality: Water quality has been monitored in Kuilima Bay during three time periods, semi-annually from 1989-1994, monthly for one year during 2001-2002, and quarterly from 2006 to the present. The location of these samples is shown in Figure ~~2-16~~ 2-20.

Figure ~~2-16~~ 2-20: Location of Water Quality samples in Kuilima Bay

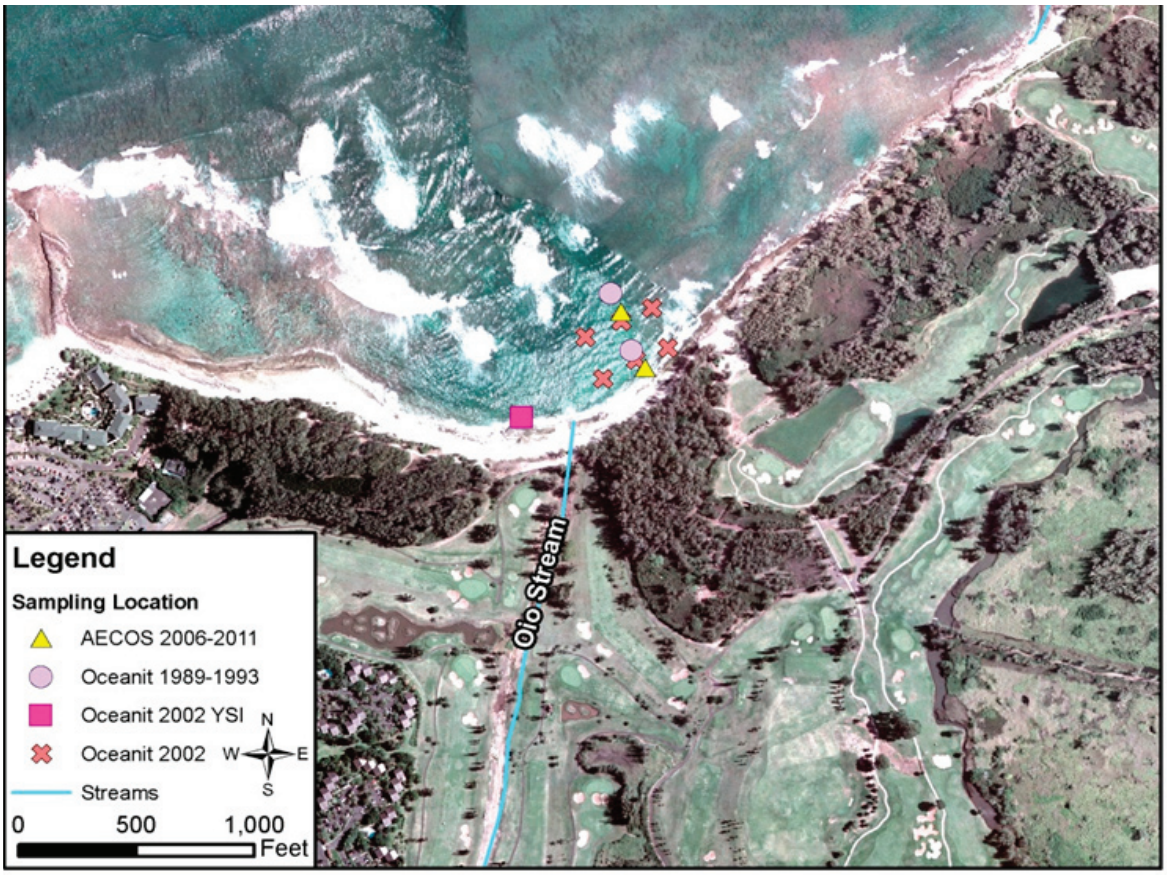


Table 2-5: Summary of water quality from three surveys over 22 years at Kuilima Bay

Kuilima Bay		Temp. (°C)	Diss. Oxygen (mg/L)	pH	Salinity (ppt)	Turbidity (lab) (NTU)	Total Susp. Solids (mg/L)	Ammonia (ug N/L)	Nitrate + Nitrite (ug N/L)	Total Nitrogen (ug N/L)	Total Phosphorus (ug P/L)	Chlorophyll a (ug/L)	Silicates (ug/L)
1989-1994													
	E1-1 surface	24.81	6.0		34.09	1.4			3.06	123.09	12.2		
	E1-2 - mid-water	24.71	6.3		34.43	1.0			1.99	102.36	12.1		
Each Value	E2-1 - surface	24.71	6.5		34.29	0.7			2.11	98.34	9.9		
Geo Mean of	E2-2 - mid-water	24.62	6.4		34.45	0.7			2.7	97.18	12.1		
10 semi-annual samples													
	Average	**24.71**	**6.30**		**34.32**	**0.91**			**2.46**	**105.24**	**11.59**		
2002													
Each GM of	Near Shore (10 ft)	25.12	7.5	8.08	33.63	2.4	7.76		4.06	154.0	15.92	0.93	
33 samples	Off Shore (300 ft)	25.11	7.5	8.17	35.43	1.7	5.05		2.84	123.5	11.72	0.47	
	Average	**25.11**	**7.5**	**8.1**	**34.53**	**2.0**	**6.4**		**3.4**	**138.7**	**13.8**	**0.70**	
2006-2011													
Each GM of	Nearshr Surface	25.94	6.48	8.20	34.44	1.7	9.5	1.61	2.10	172.6	13.2	0.66	415
21 samples	Offshore Surface	25.65	6.61	8.17	34.47	1.3	7.3	1.39	3.51	156.6	10.6	0.38	356
	Offshore Bottom	25.58	6.87	8.18	34.42	1.3	8.0	1.21	3.34	165.1	11.9	0.43	323
	Surface Only	**25.80**	**6.55**	**8.19**	**34.45**	**1.50**	**8.39**	**1.50**	**2.80**	**164.58**	**11.94**	**0.52**	**385.77**
Open Coast	Wet Season					0.50	20	3.5	5	150	20	0.30	
State WQ Std	Dry Season					0.20	10	2.0	4	110	16	0.15	

* Measured constituents with a geometric mean greater than the State WQ Open Coast Wet season standard are noted in blue

Table 2-5 displays the geometric mean value for each water quality constituent collected at each of the sample sites within Kuilima Bay for each survey period, and then the whole-bay average during each survey period for each constituent. The graphics in Figure ~~2-17~~ 2-21 present this same data, but with the geometric means expressed by month, to show any seasonal trends in the data. The graphs are all of the same scale as those of Figure ~~2-14~~ 2-10 for Kawela Bay and Figure ~~2-14~~ 2-17 for Turtle Bay to allow for ease of comparison between bays. Figure ~~2-18~~ 2-22 displays one month of hourly data from the 2001 survey as a data visualization graph for physical water quality constituents only.

Nitrate plus nitrite levels in the ocean waters off the Ōiʻo stream outlet are generally low, consistent with Oceanic or open dry coastline concentrations indicating low groundwater input at this site. The concentrations measured range from 0.5 ug/l. in May and June to 6.5 ug/l. in July 2001 at station E5. However, Total Nitrogen levels are not exceptionally low, being more on the level with nutrient concentrations typical of Wet open coastlines and Estuaries (according to State Standards). There are many potential sources of nitrogen in groundwater including animal feces, fertilizers, cesspool systems, and decayed plant material. The near shore marine environment also adds to these sources with fish and invertebrate wastes and decaying plankton or benthic algae. There does not appear to be a significant source of groundwater with high nitrate plus nitrite concentrations impacting this site.

Total nitrogen levels are lower than both Kawela Bay and Turtle Bay, but still slightly above State Water Quality Standards for Wet Open Coast. There does appear to be a long-term trend

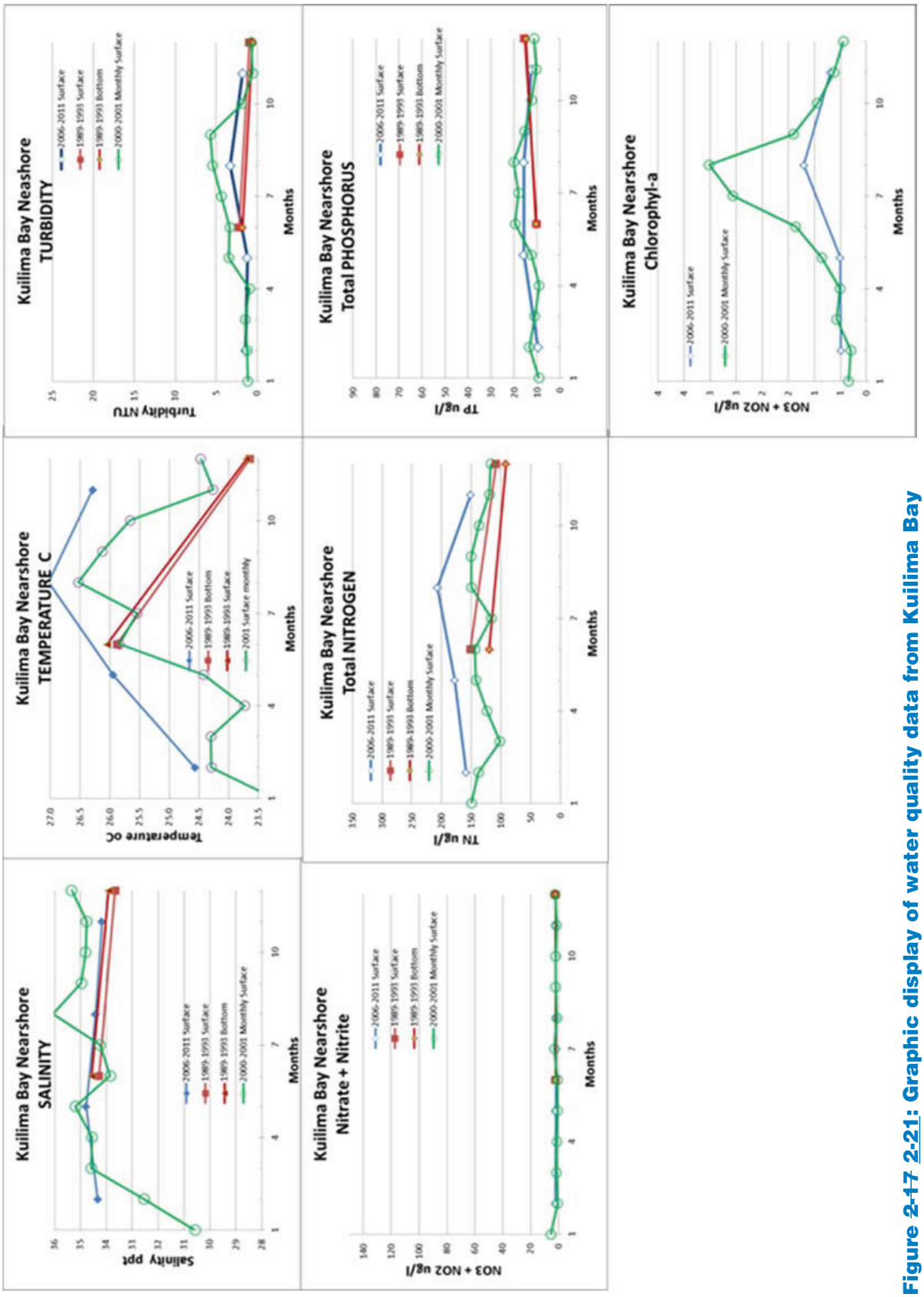
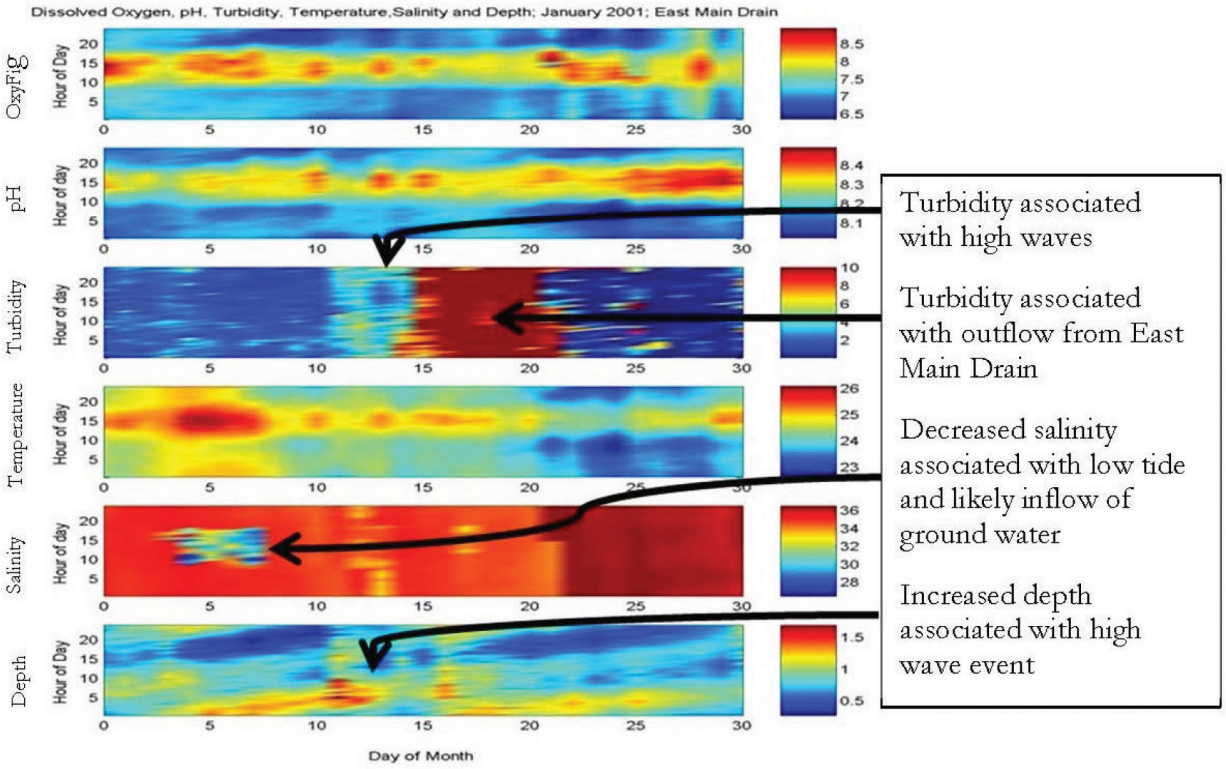


Figure ~~2-17~~ 2-21: Graphic display of water quality data from Kuilima Bay

Figure ~~2-18~~ 2-22: Water quality interpretive graphic from Kuilima Bay



towards increasing total nitrogen in the water during the past 22 years, but the source of this increase is unknown.

Total phosphorous (TP) levels are well below State Water Quality Standards and show no long-term trends over the past 22 years. The monthly sampling conducted in 2001 appears to show a slight trend of increasing TP levels during summer months, but the concentrations typically stay below the 20 ug/l state standard except for individual very near shore samples. The slight increase in summer TP concentrations during 2001 is correlated with both an increase in turbidity and an increase in chlorophyll-a concentrations.

A meter near the shore just west of the East Main Drain outlet in Kuilima Bay recorded physical water quality data on an hourly basis for one year in 2001. One month of this data is shown in Figure ~~2-20~~ 2-22 as data interpretive graphic with colors representing measured values.

Examination of the graphic shows a turbidity event beginning on January 12 with a storm and large wave event followed an outflow from the drain to the ocean. The period of turbid water lasted 5 days with significant outflow from the stream occurring over a period of 3 days until water subsided and the ocean closed the stream outlet with sand from adjacent beaches.

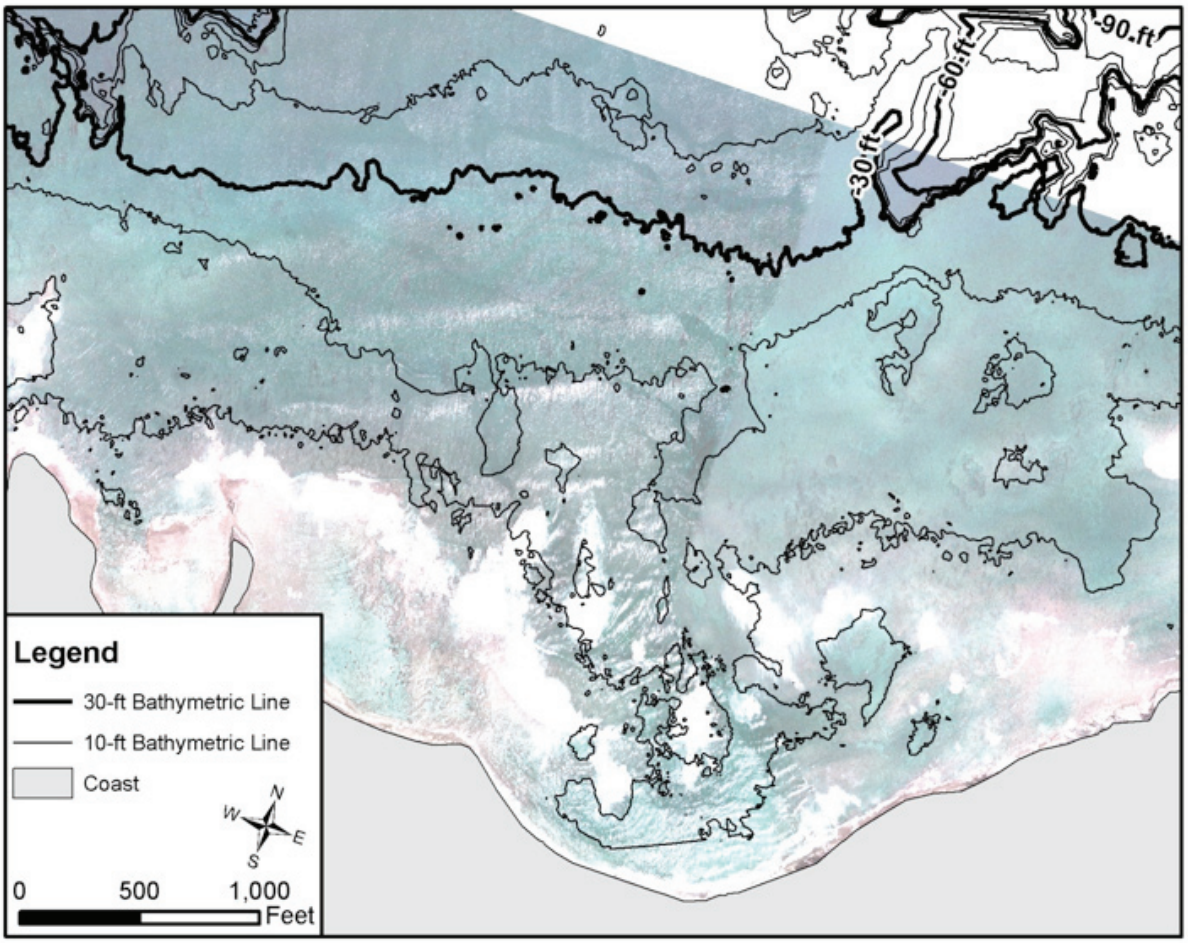
Examination of Figure ~~2-20~~ 2-22 is critical as it shows how daily and ~~some times~~ occasionally hourly changes in water quality can be significant factors. With the possible exception of total nitrogen concentrations, there do not appear to be any significant changes in water quality

during the 22-year period of measurement at this site. The concentration of total nitrogen in Kuilima Bay is lower than in either Turtle Bay or Kawela Bay.

Marine Biota: The near shore benthic habitat changes with distance from the abrupt shoreline out to the reef crest. Quantitative benthic habitat and fish surveys were conducted along three 100-foot long transects located 25, 100, and 200 feet offshore of the Ōiʻo Stream outlet (Figure 2-23). These transect locations were intentionally selected very close to shore as this is the location nearest the Ōiʻo Stream outlet most likely to be impacted if there are any significant changes in the stream outflow quantity or quality over time. Descriptions of adjacent habitats are from repeated mask-and-snorkel observations and are therefore more qualitative in nature.

The intertidal zone consists of the beach-rock surface. Where the surface has been protected by sand it forms a ledge sloping towards the sea with vertical broken edges and cracks exposed to the ocean. The cracks, and biological borings of the exposed surface support the growth of intertidal mollusks and, deeper, boring echinoderms. Where the cracks are too narrow for

Figure 2-23: Bathymetry of Kuilima Bay showing location of ʻŌʻio Stream and transect locations (new)



fish to graze they commonly support a growth of bright green Ulva seaweed, which is often an indicator of fresh water intrusion. At the bottom of the bench and extending 100-200 feet from shore (the area containing the quantitative survey transects E1 and E2) is a relatively flat seascape 6 to 12 feet deep with at least 50% cover of fine to coarse sand and rubble with exposed hard substrate covered with a fine algae turf.

~~Further from shore~~ Further off shore than 200 feet (the area containing survey E3) the fine sand is replaced by coarse sand and the depth begins to decrease with increasing incidence of raised shelves and reef rubble supporting more algae and an occasional small coral. The most prevalent algae is *Halimeda sp, Acanthophora sp.* and *Martensia sp.* Farther than 300 feet from the beach, the backside of the reef is approached, where the water is generally shallower, and the surface relief begins to show more complexity, more reef rubble, occasional reef boulders, a greater predominance of coralline and fleshy algae, and more common corals on the uplifted surfaces.

~~The~~ Qualitative observations of the crest of the reef, at about 450 feet offshore, ~~display~~reveals a complex highly variable and discontinuous reef surface at depths of 2 to 6 feet without obvious finger and groove formations. The most visibly prevalent corals are lobe coral (Porites lobata) and cauliflower corals (Pocillopora meandrina).

~~Benthic surveys were conducted over 100-foot long transects laid parallel to shore 25 feet, 100 feet and 150 feet off shore. A~~ For each quantitative survey a continuous string of 50 photographs was taken along one side of the transect line and the photographs were analyzed to determine substrate type. The results were tabulated by percent benthic substrate type, and then by percent of biological cover over the substrate (Table 2-6). These surveys are in good agreement with those conducted in 1989-93 and again in 2002 by Oceanit and characterize these near shore areas as being relatively low relief, highly mobile sand and gravel sediments, with little habitat for fish (except at the shoreline), and low percent cover of either coral or fleshy algae.

The characteristics of the benthic habit improve markedly away from the shore to the inner extent of the active reef about 300-400 feet off shore. The reef is highly irregular with a profusion of sand patches, ledges, and uplifted reef sections supporting a healthy growth of corals.

Table 2-6: Benthic survey results from Kuilima Bay, 2011

	1			2			3		
	Kuilima Bay Nearshore			Kuilima Bay Midshore			Kuilima Bay Offshore		
	March	Sept	% cover	March	Sept	% cover	March	Sept	
RESULTS SUMMARY CHART	# Points	# Points	%	# Points	# Points	%	# Points	# Points	%
SUBSTRATE (only)	47	254	30.1	156	136	28.9	175	127	30.2
CORAL	0	0	0.0	1	0	0.1	0	0	0.0
OTHER INVERTEBRATES	0	0	0.0	0	0	0.0	0	0	0.0
CORALLINE ALGAE	19	4	2.3	10	9	1.9	24	12	3.6
TURF ALGAE	402	210	61.2	308	280	58.3	280	277	55.7
NATIVE ALGAE	25	30	5.5	29	70	9.8	12	82	9.4
INVASIVE ALGAE	0	0	0.0	0	1	0.1	0	0	0.0
CYANOBACTERIA	0	0	0.0	0	0	0.0	0	0	0.0
UNKNOWN	0	0	0.0	0	0	0.0	0	0	0.0
TAPE, QUADRAT, SHADOW	7	2	0.9	5	4	0.9	9	2	1.1
TOTAL POINTS	500	500	100	509	500	100	500	500	100
	Kuilima Bay Nearshore			Kuilima Bay Midshore			Kuilima Bay Offshore		
	March	Sept	% cover	March	Sept	% cover	March	Sept	% Cover
CATEGORIES			%						
BENTHIC SUBSTRATE									
Benthos (BENTH, HARD)	274	187	47.0	78	287	37.0	285	355	63.0
Boulder (BOULD)(ROCK)	28	0	2.9	3	0	0.3	0	0	2.8
Cobble (COB)	14	8	2.2	1	4	0.5	4	4	1.8
Rubble (RUB)	19	6	2.5	2	25	2.7	15	8	2.7
Gravel (GRAVEL)	7	3	1.0	1	6	0.7	3	7	1.4
Coarse Sand (CSAND)	147	8	15.8	415	165	58.8	193	122	26.9
Fine Sand (FSAND)	0	280	28.5	0	0	0.0	3	0	0.0
Mud (MUD)	0	0	0.0	0	0	0.0	0	0	0.0
Substrate Total	489	492	100.0	500	487	100.0	503	496	98.6

E.1. e. Presence of Sea Turtles

Sea turtles are common along the entire Resort coastline from the shoreline out to at least the 100-foot bathymetry contour. Hawksbill turtles (Eretmochelys *imbricate)* are endangered. They were listed as Endangered under the Endangered Species Act (ESA) in 1978 (43FR32800). Hawksbill turtles in Hawai'i nest primarily on the Big Island of Hawai'i where approximately 10 to 15 turtle nest annually (Sietz 2010). Hawksbill turtles have been reported from other locations on O'ahu's North Shore, and although there have been no verified sightings from Kawela Bay, Turtle Bay, or Kuilima Bay, this protected species likely inhabits these waters.

Green sea turtles (Chelonia *mydas)* in the Pacific have been listed as Threatened under the ESA since 1978. These turtles are primarily herbivorous in the wild and graze off of macro-algae. Their preferred foraging areas include protected bays, such as Kawela Bay, where a variety of macro-algae proliferate over shallow shelves and reef flats protected from large surf (Balazs et al. 1987). The National Marine Fisheries Service Honolulu office (G. Balazs, pers communication) reports that basking green turtles resting/sleeping on the beach are commonly reported at Kawela Bay and Turtle Bay and nesting activity is also occasionally reported. There has been no formal documentation of either the success or failure of turtle nest hatching at Kawela or Turtle Bays.

~~(This is not unusual as the nests are notoriously difficult to locate, and beach-goers who may witness a hatching event are not commonly present near midnight when the juvenile turtles emerge to make their escape to the sea.)~~

PHOTO CREDIT: A. BRUCKNER, NOAA

Figure ~~2-19~~ 2-24: Green Sea Turtle

Oceanit conducted visual surveys of turtle abundance and distribution in Kawela Bay for 5 days per quarter (17 quarters) between December 1989 and December 1993. The methodology for the surveys is discussed in Appendix E.

Between 1989 and 1993 a total of 58 observation days (174 morning, noon, afternoon observation periods) recorded an average of 7 turtles in the bay at any given time. During 18 time periods (~10%) no turtles were observed in the bay. The maximum number of turtles observed (24) were seen on the morning of 9/14/1991. During five winter (March) days in 2011, the average number of turtles observed at any given time was 9. The maximum number of turtles observed in the whole bay during a 2011 wintertime period was 16, and the minimum was 3 turtles. During the five summer (September) days of observation inn 2011 , the number of turtles in the bay at any given time ranged from 10 to 22 with an average of 15. The average number of turtles seen in the bay during 2011 (summer and winter) was 12.

The average number of turtles has increased from a daily average 7 in the early 1990's to 12 this past year and the number of periods when no turtles are observed in the bay has fallen from 10% to 0%. This 50-percent increase in the turtle population in the bay is statistically significant at a

95% confidence interval. There does not appear to be any difference in turtle abundance between the 5 observation zones or between the periods of day when observations were conducted.

NMFS does not undertake standardized in-water monitoring to assess population abundance in this region. The most relevant turtle information from this area comes from the Pacific Islands Fishery Science Center Marine Turtle Research Program (PIFSC MTRP) that records information from turtle strandings. This data set provides evidence that green turtles of all age classes utilize this coastal area, but that it appears most important to juvenile and sub-adult green turtles from 40-70cm straight carapace length (SCL).

Since 1985, the NMFS has recorded a total of 85 turtle strandings from Kawela Bay, Turtle Bay, and the Resort beaches. Forty-nine of the strandings were documented as mortalities, about half of which were of an unknown etiology. Stranding reports include information on turtle size by carapace length. By graphing the length of stranded turtles over the past 25 years, it was noted that the average carapace length of stranded turtles has increased from 50 cm (20-inches) to 62 cm (25- inches). The more recent samples of stranded turtles (2005-2010) show a definite increase in the numbers of larger turtles. This is consistent with the growth and recovery of the population over time since protection by the ESA began in 1978 (Balazs and Chaloupka 2004).

Fibropapillomatosis (FP), a debilitating tumor disease of the skin and internal organs, is the most significant known cause of stranding and mortality in green turtles in Hawaiʻi, accounting for 28% of strandings and 88% mortality rate of stranded turtles (Chaloupka et al. 2008). FP causes large fleshy tumor growths, often around the eyes and mouth of turtles, and typically causing mortality through starvation. While the primary cause of mortality in stranded turtles along the project coastline is unknown, the single known cause of mortality with highest prevalence (18%) in stranded turtles is FP.

E.1. f. Presence of Monk Seals

Hawaiian monk seals (*Monachus schauinslandi)* have been listed as Endangered under the Endangered Species Conservation Act (now ESA) since 1973 and as of 1976 are also protected by the Marine Mammal Protection Act of 1972. About 90- percent of the 1,161 seals estimated to be members of the total population in 2008 (NMFS 2011) live around the Northwestern Hawaiian Islands (NWHI), but a growing sub-population is also found throughout the main Hawaiian Islands (MHI) (Baker, et al. 2011a).

NOAA reports that from the 1970s through 1990, Hawaiian monk seals were present in the MHI but in low numbers and rarely seen. Since 1990, these populations have been increasing with an estimate of 133 individuals noted in 2001 (Baker and Johanos, 2004), and estimated 150 to 200 individual seals in 2011 (C. Littnan, NMFS, pers. comm.). These seals are primarily distributed around Niʻihau, Kauaʻi, Molokaʻi, and Oʻahu. Although survival rates appear higher in the MHI, NOAA has expressed concerns about the potential of an increased incidence of disease, fisheries interactions and intentional killings of seals as they interact with human populations in the MHI (NMFS 2007).

As part of the NMFS Monk Seal Recovery Program, 21 male seals were removed from the NWHI and released into the waters of the MHI in 1994. These males were moved as part of a

successful effort to reduce male aggression and increase female survival at Laysan Island, where males previously outnumbered females by over 2:1 (Johanos et al. 2010, Baker et al. 2011b). Although there have been a few relocations of seals from the MHI to the NWHI for management purposes, the 1994 event is the only relocation of seals from the NWHI to the MHI to date (Baker et al. 2011b), and cannot account for the bulk of the increase in population documented around the MHI. All female seals in the MHI occur here naturally, and the few relocated males that remain are well over 20 years old, nearing the end of their natural life span (T. Johanos, pers. comm. with Oceanit staff).

The increasing population and good condition of pups around the MHI is in positive contrast to the continuing dwindling populations in the NWHI. It is theorized that the lower density of seals in the MHI and the scarcity of large predators that either compete for food or predate seal pups, are key elements of the seals recovery. However, there is concern that as populations increase mortalities due to fisheries interactions (nets, hooks), boating impacts, and potential human borne diseases could adversely impact this population revival.

Estimates of monk seal populations along the North Shore of O'ahu also continue to increase with 18 individually recognized individuals (7 female, 7 male, 4 juveniles) having been sighted from the Resort Shoreline (Kahuku Point – Kawela) between 2002 and 2011 (NMFS, 2012). These eighteen individuals account for 422 of the 543 sightings during this period.

It is difficult to translate "sighting" data into a population abundance estimate, but it is clear that the population trend along this shoreline has definitely increased during the past decade. Of the

PHOTO CREDIT: NMFS, 2007

Figure ~~2-20~~ 2-25: Hawaiian Monk Seal

three aerial surveys conducted by NMFS around the entire Oʻahu shoreline in 2000, 2001, and 2008, no monk seals were sighted along the Resort coastline.

Three monk seal births were documented on Kaihalulu Beach during the summers of 2006, 2010, and 2011. This compares to a total of 78 pups born in the MHI over the last two decades. It is known that the mother and pub will remain together and in the same general area for the 6 to 7 week nursing period (NMFS, 2012). These births and the increasing trend in sightings indicate that this coastline is an important habitat for Hawaiian monk seals.

As part of the turtle surveys conducted for the Oceanit study, the waters of Kawela Bay were observed for 85 days between 1989 and 1994, and no seals were observed during that period. However, during only 10 observation days conducted in 2011, one seal was observed repeatedly on a single day. This single observation has little mathematical significance, but is in line with NOAA's conclusions that seal populations are increasing around the Main Hawaiian Islands and along the project shoreline.

E. 2. Groundwater Resources

The Resort is situated within the region of the Kawela and ʻŌʻio watersheds that make up a portion of the northern part of the Koʻolau Loa Aquifer system (Koʻolau Watershed Management Plan, p. 2-10). The Koʻolau mountain range that is seen today is a remnant of a deeply eroded shield volcano, similar to Mauna Loa on the Big Island. As molten lava formed the gently sloping shield, some solidified in ground cracks under pressure, creating relatively impervious vertical structures known as volcanic dikes. These dikes control most high-level water in Windward Oʻahu. (USGS Water Resources of Oahu, 1968). The Koʻolau Loa dikes underlie the upper mountainous portions of the watersheds and prevent groundwater from easily moving from the upper part of the watershed to the coastal areas.

Dikes and dike complexes divide the Koʻolau Loa groundwater sources into upper mountain and lower coastal areas. The water stored behind the dikes is referred to as high-level water and is prevented by the dikes from interacting with saltwater. The lower levels are called basal groundwater aquifers. The high-level water recharges basal aquifers, provides stream flow, and provides high quality potable water. (KWMP, p. 2-8)

Basal groundwater is a groundwater body that overlies seawater. Freshwater, which is less dense, floats on top of the denser salt water within the basal formation. The Resort is situated over the basal groundwater aquifer. An important distinction regarding basal water is whether or not it is confined. Confined water has a caprock that generally prevents basal water from freely flowing into ocean waters. The Koʻolau Loa caprock extends along the coast from Punaluʻu to Kahuku Point. The caprock's low permeability generally limits infiltration and contamination of the aquifer. (KWMP, p. 2-9) By its nature, caprock has a very high range of permeability. Its average vertical permeability tends to be relatively low because of the presence of phenomenon like marsh deposits. But, other units of the caprock-like cavernous limestone derived from coral reefs have extremely high horizontal permeability, meaning that water can flow freely downslope to the ocean.

As discussed in the Oceanit report on marine resources (Appendix E), the same caprock that protects the aquifer contains subterranean caverns and channels that were eroded by streams at the low points of sea level changes over tens of thousands of years. This underground system of caverns beneath the Resort facilitates the rapid flow of percolated water to the ocean.

The regional groundwater flow direction in this area is to the north or northeast and is divided between the shallow caprock flow and the deeper basal discharge. Takasaki and Mink (1985) estimated that the coastal discharge in the Kahuku area was 3.3 million gallons per day (mgd)/ mile, or about 80 cubic feet of fresh water per day per linear foot of coastline. This number includes both the deep bedrock and shallow cap-rock aquifers. Assuming the shoreline is similar to the Ewa plane caprock (Giambelluca, 1986) with a caprock area larger than the development of 2.3 square miles, a recharge of 6.1% of rainfall and 20% discharge to the shallow caprock from deep basal flow, this yields a lower and much more realistic estimate of shallow discharge of about 0.66 million gallons per day per mile, or about 17 cubic feet of freshwater discharge per linear foot of coastline per day.

According to the Board of Water Supply's Koʻolau Loa Watershed Management Plan, the currently used sustainable yield is 36 mgd for the Koʻolau Loa system.[2] The BWS estimates that the likely recoverable yield (that which might feasibly be developed) may approach the sustainable yield (36mgd).

The State of Hawaiʻi's 2008 Water Resources Protection Plan (WRPP) identifies the sustainable yield of the Koʻolauloa aquifer to be 35 mgd. (The 2009 Koʻolau Loa Watershed Management Plan prepared by the City and County of Honolulu as required by the WRPP, identifies the sustainable yield to be 36 mgd.) The WRPP identifies existing permit allocations as of 2008 to total 21.508 mgd, leaving over 13.5 mgd unallocated. As of July 2005, the WWRP determined existing water use in the Koʻolauloa aquifer to be 9.7 mgd.

E. 3. Regional Drainage

The Resort was designed to utilize the Fazio and Palmer Golf Courses in conjunction with two major drainage channels, the East and West Main Drains, to provide flood control mitigation for the Resort property.

As discussed previously, the SEIS Lands are comprised of three *ahupuaʻa*. Following is a discussion of the existing drainage features within each the *ahupuaʻa*. This description is then followed by a discussion of the drainage patterns from a more technical engineering point of view.

[2] Section 174C-3 of the State Water Code defines sustainable yield as "the maximum rate at which water may be withdrawn from a water source without impairing the utility or quality of the water source as determined by the [Commission on Water Source Management]."

E.3. a. Ahupuaʻa O ʻOpana Kawela

The watershed that is drained by Kawela Stream is estimated to be approximately 1,327 acres. (Koʻolau Loa Watershed Management Plan, p. 2-17) Kawela Steam originates on the western slope of Mount Kawela, near its summit, at an elevation of approximately 800 feet, approximately 1.9 miles inland from the shoreline. The 1990 Hawaiʻi Stream Assessment classifies the upper reaches of Kawela Stream as a continuously flowing, perennial stream and assigns it ID No. 3-1-04. It is possible that he stream's lower reach is perennial; however, flow in the upper reach through Kawela Gulch is likely intermittent, making this an interrupted stream (Timol & Malciolek, 1978). Based on direct observation at the Resort over the past thirty years, Kawela Stream *makai* of Kamehameha Highway is intermittent; flowing only when there is significant sustained rainfall.

Kawela Stream enters the SEIS Lands beneath the Kawela Bridge on Kamehameha Highway and terminates behind the shore of Kawela Bay in a *muliwat*: a pond or estuarine feature behind a sand shoreline. Surface waters only reach the bay during heavy rain events when the impoundment is breached.

The present alignment of the stream is thought to be the result of a channelization effort by the Oʻahu Sugar Company circa 1940. Subsequently, the stream's original channel has been covered by sediments. However, a 400-foot wide channel clearly evident in aerial photos of the western end of Turtle Bay is believed to mark the original outfall of Kawela Stream before being rerouted by the plantation to its present location. (see Figure 2-1)

E.3. b. Ahupuaʻa O Hanakaʻoe

Two storm water drains outfall into Turtle Bay within the *ahupuaʻa* of Hanakaʻoe, neither of which receives consistent flows from mountain streams or inland valleys. The Kuilima Drain consists of two 48-inch culverts placed in a concrete headwall at a cut through the beach-rock shoreline about mid-way along the beach, just to the west of the Cottages. Within the Fazio Golf Course, the Kuilima drain exists as grassed swale that receives flows from the golf course and the general Resort premises only during heavy rainfall events. During light to moderate rainfall events the golf course and Resort grounds typically infiltrate the large majority of rainfall. The swale empties into the subterranean culverts that extend from the 9th hole of the Fazio Course to the shoreline.

The West Main Drain is located at the extreme west end of the perched sandy beach against the base of the rocky headland just inside the western boundary of the Hanakaoʻe *ahupuaʻa*. It consists of two 48-inch drains ending at a concrete headwall at the top of the beach with a short channel cut through the beach-rock shoreline to the ocean. During summer, sand from the adjacent perched beach often completely covers these outlets and requires physical sand removal prior to the arrival of winter storms to allow flow to the ocean. The normally dry swale follows around the west edge of the golf course and then parallels the Kamehameha Highway in a broad swale. The swale receives flow partially from the golf course, but primarily through a 2-foot wide culvert beneath the highway fed by the lower slopes of the Koʻolau mountains. The total drainage area of both the Kuilima and the West Main Drains is about 1⁄2 square mile (80 acres).

Kuilima Bay receives outflow from the ʻŌʻio Stream near the center of Kaihalulu Beach less than a mile East of the Resort. The stream outlet is often termed the "East Main Drain." Total stream length is approximately 4 miles up to the top of the Koʻolau Mountains at an elevation of 1200 to 1600 feet. The total direct watershed area is approximately 2.56 square miles. The stream is listed as a perennial stream in the 1990 Hawaii Stream Assessment (State ID No. 3-1-5), but is intermittent in its lower reach across the SEIS Lands.

The alignment of ʻŌʻio stream has been changed several times according to historical maps of the area. Kahuku Plantation maps from the 1890's (State register 1460 Map 3 and Map 4) show this stream ending not far from the foot of the mountains at the "Old Government Road", with no outlet to the ocean. In maps from 1932 (State Topo Survey Map No. 4754) much of the land is designated as "sugar plantation" and the stream mouth is shown out-letting into the small cove just east of Kuilima Point and present location of the Turtle Bay Hotel. During the 1940's when aviation landing strips were constructed across the eastern portion of the area now occupied by the Resort, the mouth of the stream becomes unclear, but by 1952, USGS maps show the stream again out-letting (as Kuilima Stream) at Kuilima Point, with another un-named stream skirting the west end of the Kahuku Airfield and entering the ocean at the present site of the ʻŌʻio Stream.

The present straightened alignment appears to have been constructed as part of the golf course construction in the late 1960's. Once the stream crosses under the Kamehameha Highway onto the Resort shoreline plateau, the elevation is very low and waters from adjacent watersheds may co-mingle under heavy flow events. The stream courses along a relatively straight path from the Kamehameha Highway through the grounds of the Palmer Course, along a primarily grassed, and typically dry, swale. Under heavy rainfall storm-flow conditions adjacent fairways may be flooded and flow direction is dependent upon which stream mouth (ʻŌʻio or Bakahan to the east) is open to the ocean. The mouth of ʻŌʻio stream is confined by a golf course road bridge constructed over three 3-foot diameter drainage pipes leading to the beach. Beach sand that accumulates at the ocean end of these outlets must be mechanically cleared to allow the passage of storm waters.

Others (RM Towill, Aug. 1998) have determined that during heavy rainfall events a 100-year flood would produce a peak storm flow in ʻŌʻio Stream of approximately 5,600 cubic feet per second (cfs). The present three 3-foot diameter pipes can handle only about 2,000 cfs. The City has proposed improvements to the ʻŌʻio stream channel to contain the storm flow including the construction of a 70-foot Kamehameha Highway bridge, and a 100-foot wide approximately 9 foot deep grassed swale across the golf course. Conceptual plans have not yet been developed to modify the outlet structure making it capable of handling the 8,000 cfs flow anticipated from Oʻio Stream and other sources during a 100-year storm event.

E.3. c. Ahupuaʻa O Kahuku

Punahoʻolapa Marsh, which is situated within the Kahuku *ahupuaʻa*, receives runoff from approximately 423 acres within the SEIS Lands, of which, approximately 100 acres make up the

marsh. In addition, the marsh receives runoff from areas across Kamehameha Highway to the south, including runoff from Hoʻolapa Gulch via Hoʻolapa Stream.

E.3. d. Technical Description

The following discussion reflects a more technical description of regional drainage that does not consider the *ahupuaʻa*. A 1985 *Drainage Plan for Kuilima Resort* and an approved 2005 *Drainage Master Plan for the Turtle Bay Resort* constitute the basis for existing and proposed drainage patterns on the Resort property *makai* of Kamehameha Highway.

The existing drainage patterns through the Resort and Kawela Bay Area are illustrated in Figure 2-21. Figures 2-22 and 2-23 show the existing Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) Flood Designations for the Resort. The existing site is subject to both riverine and tsunami flooding as shown on the FIRM. Tsunami elevations range from 17 feet to 12 feet and riverine flooding of 21-feet to 11 feet.

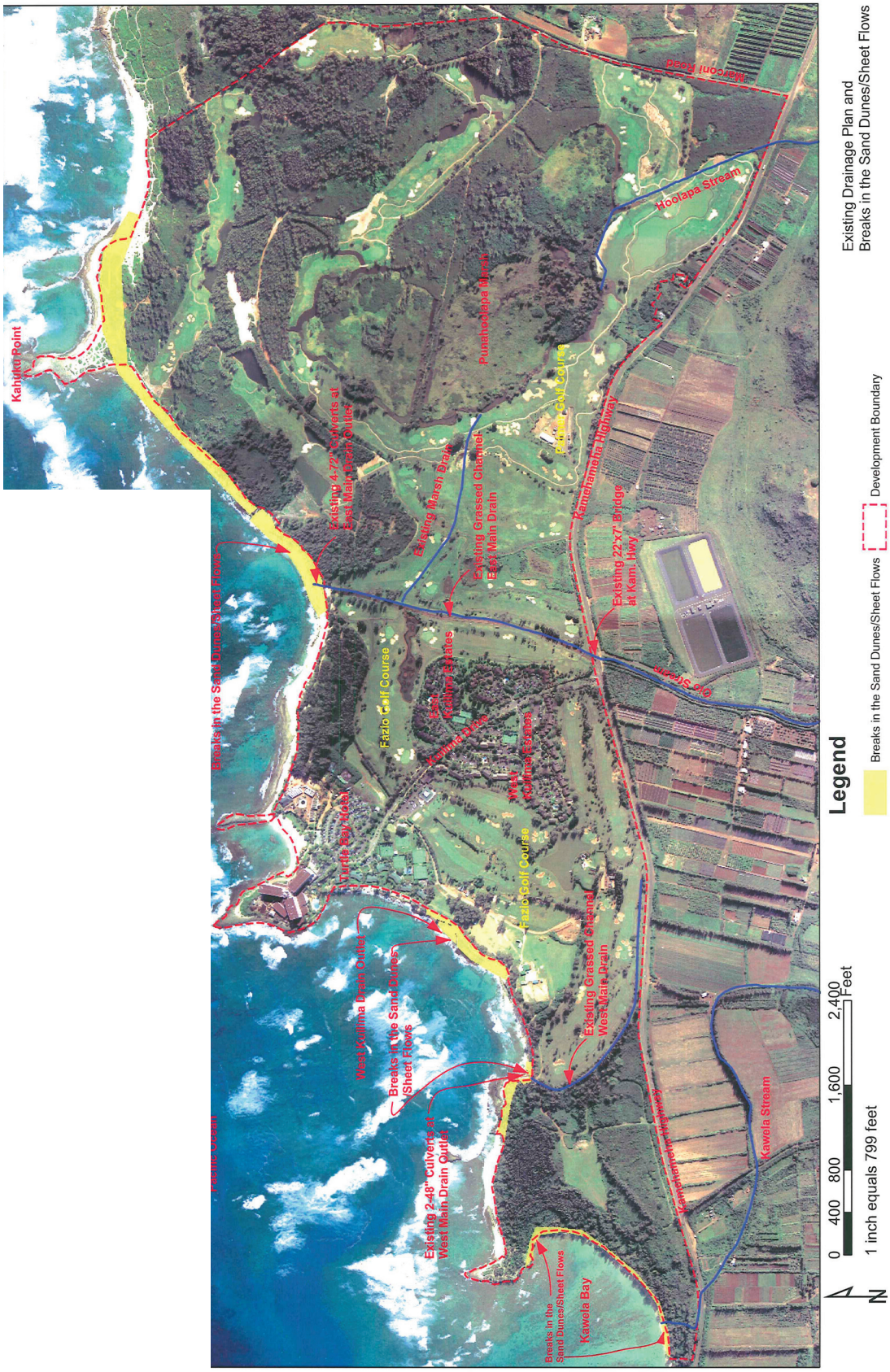
Three sources of intermittent regional drainage enter the property. The primary flooding source is ʻŌʻio Stream, which enters the East Main Drain as shown on Figure 2-24. Hoʻolapa Stream also enters the site at the eastern end of the Resort by culvert and sheet flow over Kamehameha Highway. Kawela Stream enters the western end of the property and presently flows to Kawela Bay. The alignment of Kawela Stream is proposed for restoration to its former route now occupied by the West Main Drain in the future, based on the previously approved Drainage Master Plan.

The existing riverine flooding for the project is shown on Figure 2-24 and the proposed riverine flooding pattern is shown on Figure 2-25. The riverine flooding for ʻŌʻio Stream or the East Main Drain and Hoʻolapa Stream is shown as determined by the United States Army Corps of Engineers (USCOE) Flood Study for Ohia Stream, Hospital Ditch, Kalaeokahipa and Hoʻolapa Gulches (Ohia Stream Study) which updated the findings of the Kahuku Regional Drainage Master Plan (KRDMP). The riverine flooding for Kawela Stream was calculated based on topographic data provided by the Kuilima Resort Company. In the future, the FEMA FIRM Maps from Kawela Stream, ʻŌʻio Stream and Hoʻolapa Gulch, can be modified to reflect the proposed drainage improvements.

For the purposes of the current drainage study and system design, the Resort property is divided into two drainage systems: the East Main Drain subsystem and the West Main Drain subsystem. The former comprises the area east of the existing Kuilima Drive and includes both the East Main Drain and intermittent drainage from Kawela Stream. The latter comprises the area west of Kuilima Drive and includes the West Main Drain and a smaller drainage channel called the West Kuilima Drain. Kuilima Drive constitutes a physical barrier between the two drainage systems because due to its elevation it is difficult for drainage water to cross it.

The buildings of Kuilima Estates West and East along Kuilima Drive are constructed on a site with ground elevations of approximately 12 feet msl or higher. These ground elevations are above the FEMA Flood Elevations.

Figure ~~2-21~~ 2-26: Existing Drainage Plan and Breaks in the Sand Dunes/Sheet Flows



Existing Drainage Plan and Breaks in the Sand Dunes/Sheet Flows

Figure ~~2-22~~ 2-27: Existing FEMA Flood Insurance Rate Map, Part 1 of 2 (revised)

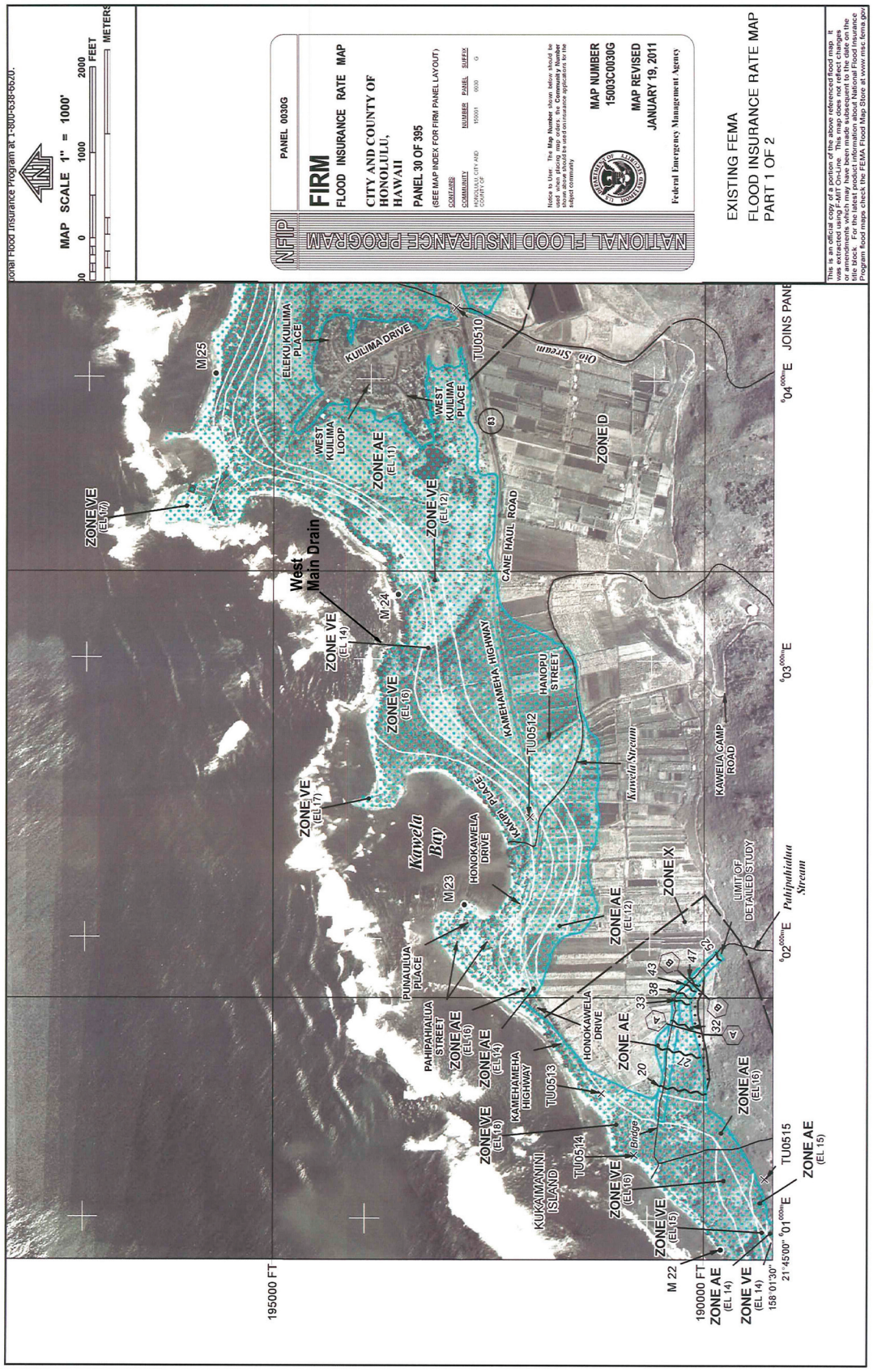


Figure ~~2-23~~ 2-28: Existing FEMA Flood Insurance Rate Map, Part 2 of 2 (revised)

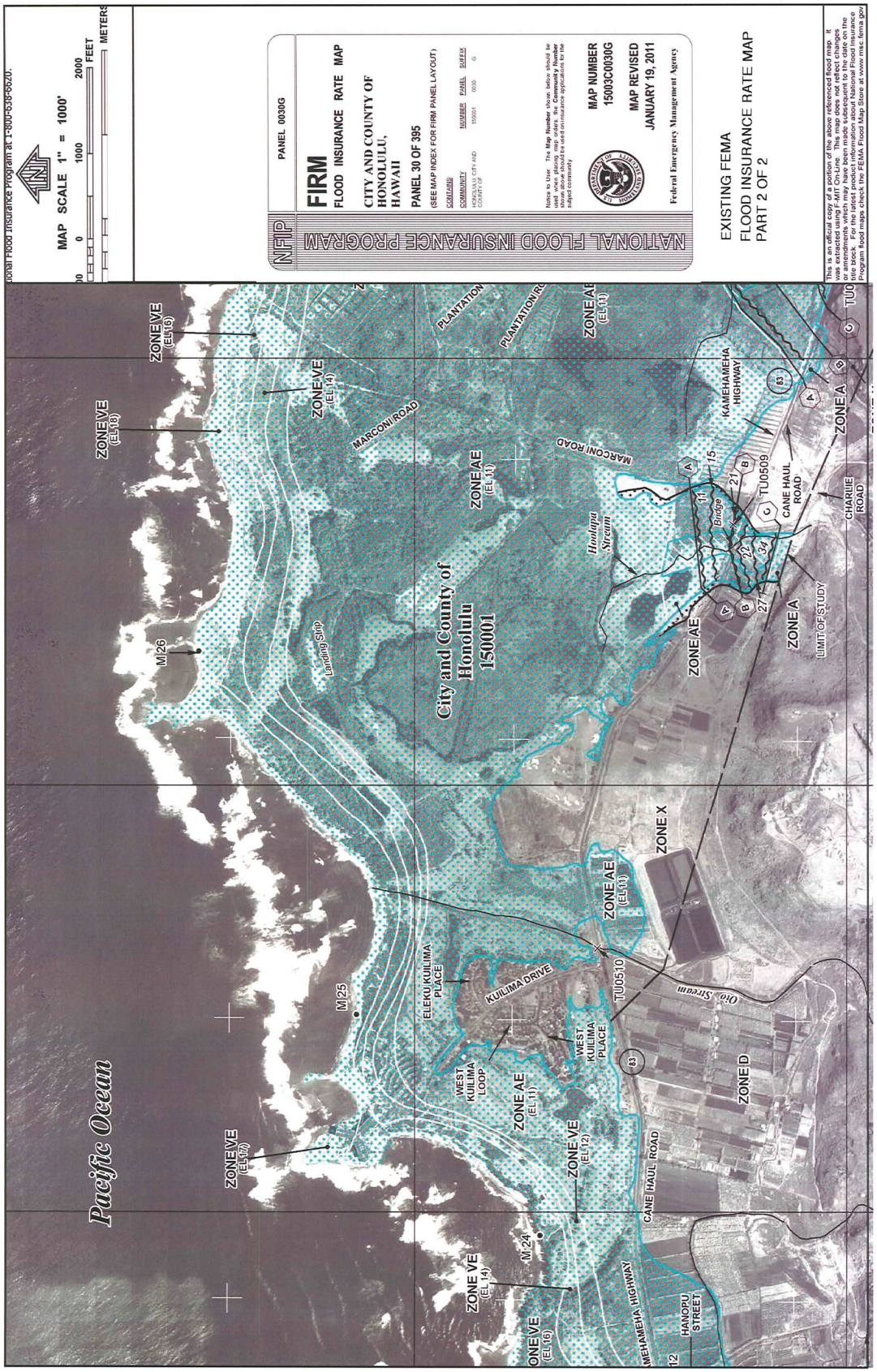


Figure ~~2-24~~ 2-29: Existing Riverine Flood Map

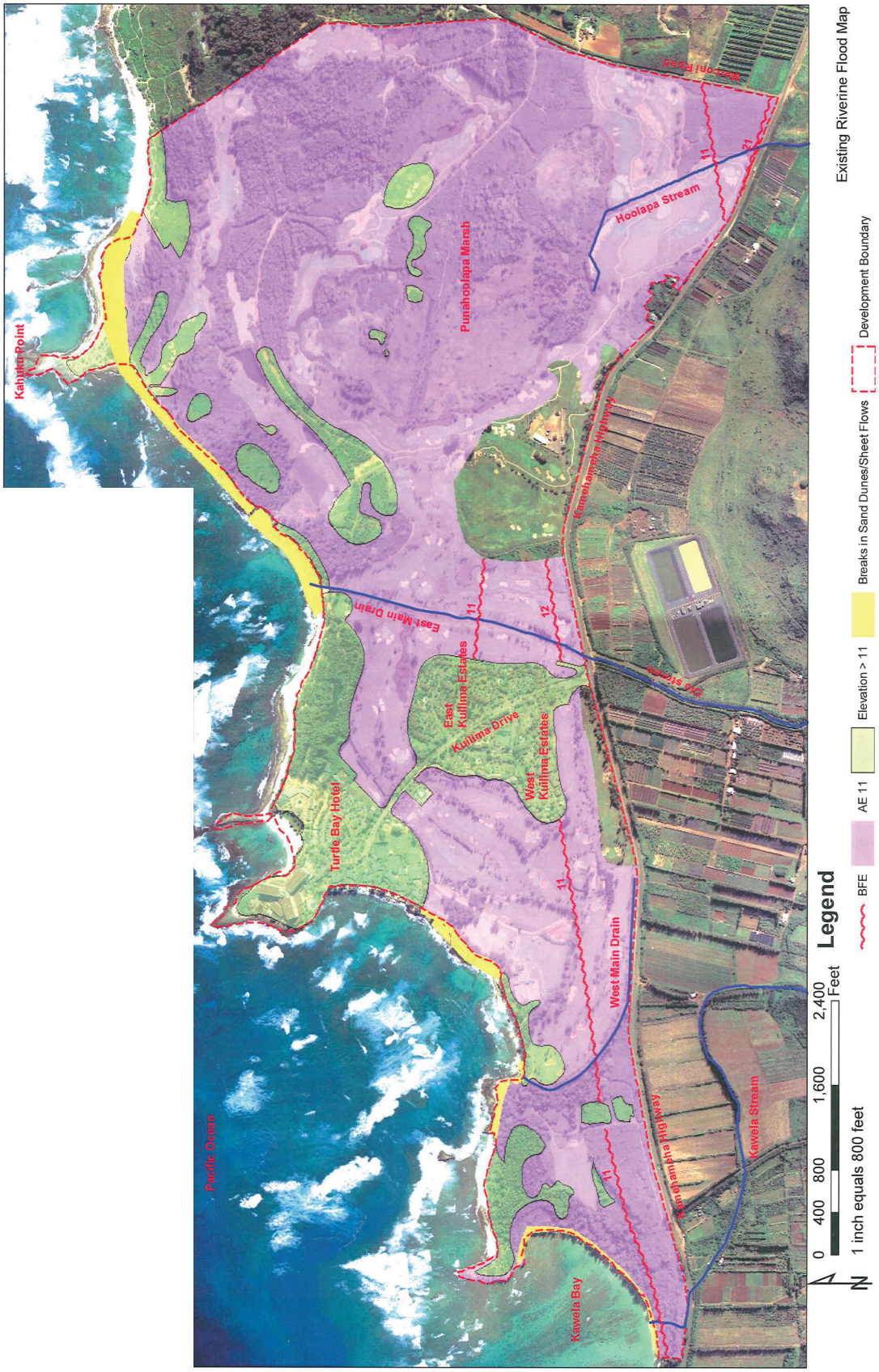
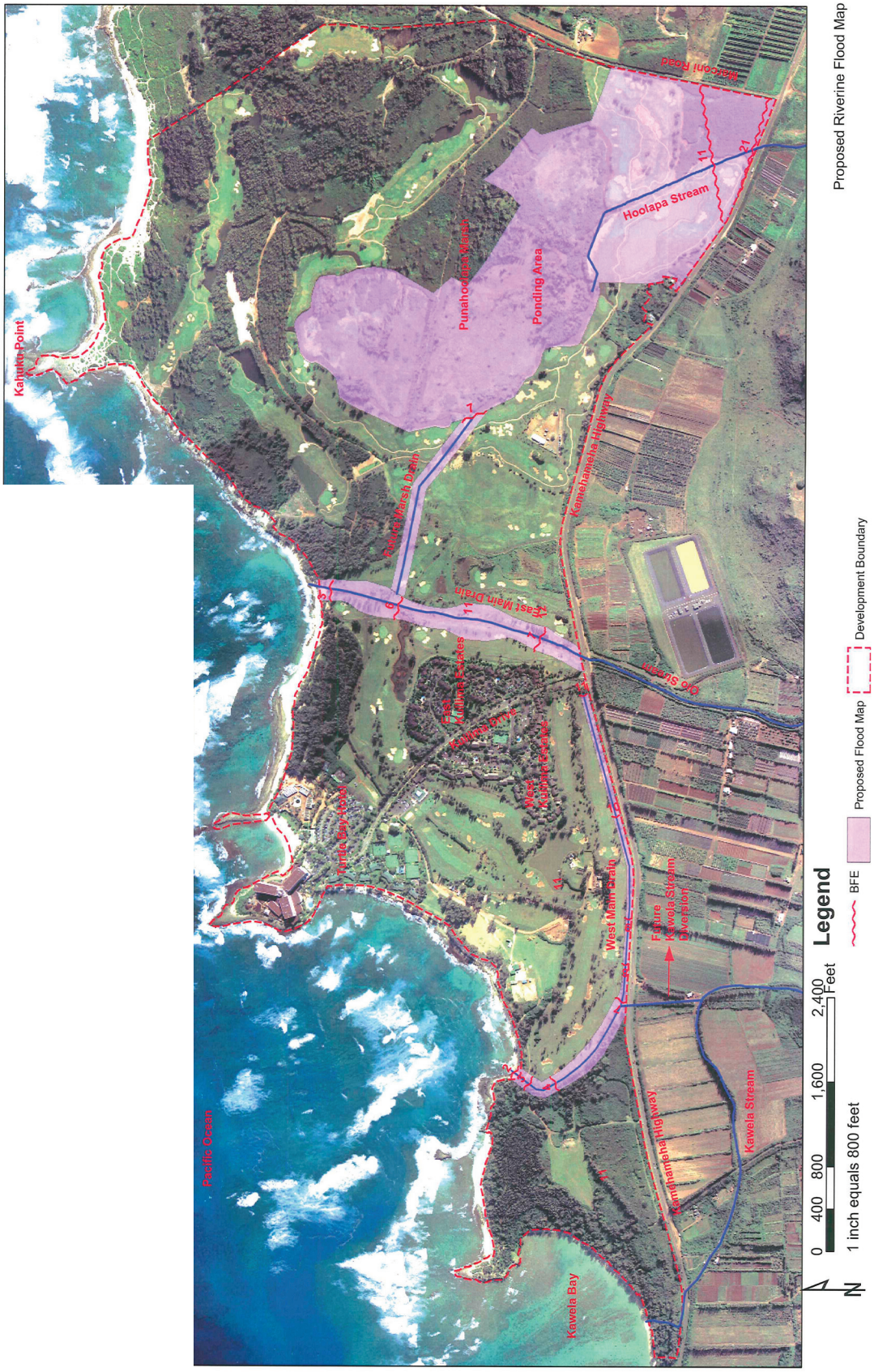


Figure ~~2-25~~ 2-30: Proposed Riverine Flood Map



E.3.d. [1] EAST MAIN DRAIN SUBSYSTEM

ʻŌʻio Stream presently enters the Resort through a 22-foot long, 7-foot high bridge on Kamehameha Highway and continues in a grassed channel to four (4) - 72-inch diameter culverts near the coastline. The present capacity of the Kamehameha Highway Bridge is approximately 420 cubic feet per second (cfs) at a design hydraulic grade of 9.5 feet msl, with a full flow capacity of 1,617 cfs at a hydraulic grade of 11.5 feet msl, according to the Hydrologic and Hydraulic Report for Kamehameha Highway Intersection Improvements at Kuilima Drive, prepared for the Department of Transportation.

During heavy and/or sustained rainfall events, the Fazio and Palmer Golf Courses receive runoff that primarily sheet flows across Kamehameha Highway. Hoʻolapa Gulch also sheet flows into the East Main Drain subsystem where the centerline grade at the Highway is approximately 21 feet msl. The runoff from ʻŌʻio Stream flows to the East Main Drain and Hoʻolapa Gulch sheet flows across the golf course to Punahoʻolapa Marsh. A small ditch presently conveys runoff from the Punahoʻolapa Marsh to the East Main Drain but the marsh spills out on to the golf course during larger storms. Additional runoff flows from the Palmer Golf Course through breaks in the sand dunes or sheet flow areas as shown on Figure 2-23.

The existing golf courses were designed to accommodate runoff and were constructed at a lower elevation than the existing developments (the Turtle Bay Hotel and Kuilima Estates). The proposed developments are to be constructed at an elevation higher than the golf courses. The 100-year Plate 6[3] flow of 8,000 cubic feet per second (cfs) is conveyed to the ocean primarily by sheet flow.

Approximately 1,200 cfs flows through the existing East Main Drain Outlet and the remainder sheet flows through breaks in the sand dunes or other sheet flow areas to the ocean. The KRDMP and USCOE ʻŌʻio Stream determined flood elevations for the East Main Drain subsystem based on sheet flow through the sand dunes and sheet flow areas to the ocean.

E.3.d. [2] WEST MAIN DRAIN SUBSYSTEM

During heavy and/or persistent rainfall events, the West Main Drain and the west portion of the Fazio Golf Course presently receive the overflow from Kawela Stream that primarily sheet flows across Kamehameha Highway. A grassed lined channel with a 30-foot bottom width conveys runoff to two (2) 48-inch drains near the coastline. Presently, the Kawela Stream runoff flows primarily to the Kawela Stream Outlet, then to the West Main Drain and also sheet flows through the Fazio Golf Course or undeveloped lands to the West Kuilima Drain and through breaks in the sand dunes and other sheet flow areas as shown on Figure 2-23.

Similar to the East Main Drain Subsystem, the runoff that does not go directly to the Kawela Stream Outlet presently flows through the golf course and undeveloped land to the West Main

[3] "Plate 6" refers to a table in the City and County of Honolulu's *Storm Drainage Standards.*

Drain Outlet, the West Kuilima Drain outlet, or sheet flows to the breaks in the sand dunes or other sheet flow areas to the ocean. Until the original alignment of Kawela Stream is restored to the West Main Drain, a significant amount of runoff will still flow to the Kawela Stream outlet.

E. 4. Climate

E.4. a. Existing Conditions

The climate of the Hawaiian Islands is generally characterized by warm temperatures, dry conditions, and persistent trade winds, which originate from the northeast during the summer season (May through September). Hawai'i's winter season (October through April) is typically characterized by cooler temperatures, elevated precipitation, and variable winds, including Kona (southerly) winds and storms (Juvik and Juvik 1998).

The climatic conditions of the Kahuku region are characteristic of lowland and coastal areas of O'ahu's windward side, having relatively consistent temperatures as well as persistent northeast trade winds. The Kahuku area has daily maximum temperatures in the range from the high 70s (˚F) during the winter to the low-to-mid 80s (˚F) during the summer. Average temperature lows range from the mid-to-high 60s (˚F) during the winter to the low-to-mid 70s (˚F) during the summer, with an annual minimum temperature of 70 ºF (WRCC 2011).

In general, rainfall is heaviest in October and April for most of the State of Hawai'i (the South Kona area of the Big Island is an exception because it experiences its heaviest rainfall in the summer). However, rainfall averages are greatly affected by terrain. Further, great variation in rainfall can occur over small distances with extreme topographical changes. In the subject area, rainfall is relatively moderate, with a median annual rainfall of approximately 36 inches. Approximately two-thirds of the rainfall in the subject area occurs between October and April. Annual rainfall also varies significantly from year-to-year in the area (WRCC 2011).

E.4. b. Climate Change

As the only state in the union that is located in the tropics and surrounded by ocean, Hawai`i is likely to experience the impacts of global climate change in unique ways. Although these changes cannot easily be isolated to specific geographic areas such as the Resort property, some regional trends have been identified and are discussed below.

E.4.b. [1] SEA LEVEL RISE

The most reliable means of identifying sea level rise in a given area is a comparison of the height of mean sea level over a period of time. Dr. Charles Fletcher of the University of Hawai'i's School of Ocean and Earth Sciences and Technology stated in a briefing to the Hawai'i State Senate in 2010, "Sea level has risen in Hawai'i at approximately 0.6 inches per decade over the past century and probably longer…Sea level rise accelerates and expands erosion, potentially impacting beaches that were previously stable…Although the rate of global mean sea level rise has approximately doubled since 1990, sea level not only did not rise everywhere, but actually declined in some large areas. The pattern of sea level change is complex due to the fact that winds and ocean currents affect sea level, and those are changing also." [Fletcher; 2010]

Shoreline changes (erosion and/or accretion) may help to indicate historical trends of changing sea levels. In May 2012, the U. S. Geological Survey published a document discussing beach erosion trends in Hawai'i: *National Assessment of Shoreline Change: Historic Shoreline Change in the Hawaiian Islands*. The report evaluates historic beach erosion trends on three of the major Hawaiian Islands; Kaua'i, O'ahu and Maui. Long-term trends were based on data from 1910 to 2007. Short-term trends were based on data from 1949 to 2007.

The report divided O'ahu's North Shore region into two areas; Sunset and Mokulē'ia. The Sunset area extends east from Hale'iwa to Kahuku Point and the Mokulē'ia area extends west from Hale'iwa to Kaena Point. The Resort is situated at the extreme eastern end of the Sunset Area.

The report identifies short-term and long-term beach erosion rates at 1,287 separate transects along the North Shore, based on data from 5-11 shorelines over the long-term and 5-8 shorelines over the short-term, and concludes that 24% of the short-term rates and 31% of the long-term rates are significant, the lowest rates of significance on O'ahu. The report attributes this low significance rate to the high seasonal variability in shoreline positions, due primarily to the large winter swells that can alter beach widths up to two-thirds [USGS 2012; p. 33]. The report also notes that the identified rates of erosion in some locations are unreliable due to the poor seasonal distribution of available aerial photographs.

The report concludes that the overall trend of North O'ahu beaches is erosion: seventy-three percent of the total extent of North O'ahu beaches is eroding in the long term and 68 percent is eroding in the short term. The two sub-regions of Sunset and Mokulē'ia have an overall trend of long- and short-term erosion, as indicated by average rates. The report identifies an erosion rate at Kuilima Bay of up to -0.4 ± 0.2 m/yr , at a 95% confidence level, but a general trend toward beach accretion (increase in beach area) at nearby Kahuku Point. [USGS: ibid, p. 33]

However, the report is careful to point out that "[R]ates of shoreline change presented in this report represent shoreline movement under past conditions and are not intended for use in predicting future shoreline positions or future rates of shoreline change." [USGS: ibid, p.1]

Sea level rise can lead to the potential for increased coastal inundation due to wave overtopping. In other words, at higher sea levels storm waves can impact areas further inland because the wave heights are further elevated by the increased sea level. Sea level rise can also increase the potential for flooding because it can raise the water table closer to the surface, causing drainage problems during high tides and periods of heavy rainfall

E.4.b. [2] REDUCED PRECIPITATION

Historical precipitation trends may help us to understand changes in climactic conditions. There are two rain gauges in the Kahuku region that are monitored by the National Weather Service (NWS); Kahuku gauge KAHH1 and Kahuku Training Area gauge KTAH1.

Discussions with NWS staff indicate that in general terms the Hawaiian Islands have been experiencing a drying trend in the past few years. Whether this trend is directly related to global climate change is unknown. But it does indicate that rainfall patterns may now differ from those that occurred in the 1980s. Along windward slopes, while the number of rain-days has been near normal, the amount of rain per day is only about half as much on average. This is believed to result from a lowered inversion layer (that point in the upper atmosphere that caps the height of cloud buildup), resulting in less windward showers being blown into leeward areas. (personal communication; Kevin Kodama (Lead Forecaster, National Weather Service, 11/8/11)

According to the recently published Rainfall Atlas of Hawai‘i; "…the rainfall evidence and other data point to a downward trend in mean rainfall that may persist at least through the end of this century." [Hawaii Rainfall Atlas 2011, *http://rainfall.geography.hawaii.edu/rainfall.html*]

Decreasing precipitation rates have also been attributed to the increased vog in the atmosphere since the mid-1980s when Pu‘u O‘o began erupting on the Island of Hawai‘i. It is now understood that the presence of increased amounts of particulate matter in the atmosphere attracts water molecules to bond with the particles. The result is that when the particles bond with water molecules, they tend to create more clouds, but the clouds produce less rain because the water molecules are dispersed and do not bond with each other to form rain droplets large enough to fall to earth: they stay suspended in the atmosphere. [Kodama; ibid]

E.4.b. [3] INCREASED STORM INTENSITY

At the same time there is some evidence of lower amounts of precipitation with periods of episodic rainfall, where several inches of rain can fall in a matter of a few hours. This appears to be global phenomenon that has also manifested in the Hawaiian Islands. Examples of these episodic precipitation events (derived from NWS on-line data) include:

- September 5, 1996: 12 inches of rain at Ewa Beach, O‘ahu in 3 hours;
- November 29 to December 8, 2003: 33 inches of rain at Windward O‘ahu;
- August 3, 2004: 10 inches of rain at Windward O‘ahu; and
- October 30, 2004: 10 inches of rain at Manoa, O‘ahu in 12 hours.

In addition to rainfall, an increase in thunderstorm activity is occurring. Most recently, on May 3, 2011, Windward O‘ahu experienced an intense electrical storm that resulted in nearly 26,000 recorded lightning strikes in a 24-hour period according to the NWS.

Periods of intense rainfall can also obscure longer-term precipitation trends. If a given area has an average annual rainfall of 40 inches, but in a given year a quarter of that is attributable to a single event, the total rainfall for that year may seem normal but actually disguises a possible drying trend, and equally as problematic declining groundwater recharge, as much of the episodic rainfall is runoff resulting in very little percolation to the groundwater aquifer.

E.4.b. [4] OCEAN ACIDIFICATION

Ocean acidification results from increased volumes of carbon dioxide mixing with seawater. Measurements at a monitoring station (Station ALOHA) over two decades document that the surface ocean around Hawai'i has grown more acidic at exactly the rate expected from chemical equilibration with the atmosphere. Continued acidification may have a host of negative impacts on marine biota, and as the potential to alter the rates of ocean biogeochemical processes. [Fletcher; ibid, page 4] However as noted above, the marine resources study conducted for the SEIS identified no significant change to marine biota in the region (other than an increase in turtle and Hawaiian monk sea populations).

E. 5. Soils

Eleven soil types have been described and mapped in the SEIS Lands (Foote *et al.* 1972). These consist of beach sands, coral outcrops, Jaucus sand (0-15% slopes), Pearl Harbor clay, Waialua silty clay (0-3% and 3-8% slopes), Kaloko clay, Lahaina silty clay (7-15% slopes), Mokulē'ia loam and clay loam, and Kaena clay (2-6% slopes). The distribution of these soils is shown in Figure 2-26.

Jaucus Sand is the most widespread sediment, which encompasses 277 acres, or 33% of the SEIS Lands. It is exposed along the coastal margins and is characterized by well-drained single-grained sand to depths exceeding more than 60 inches. Permeability is rapid, runoff is very slow to ponding, and the erosion hazard is slight. It is considered suitable for pasture, sugarcane, truck-crops, and urban development.

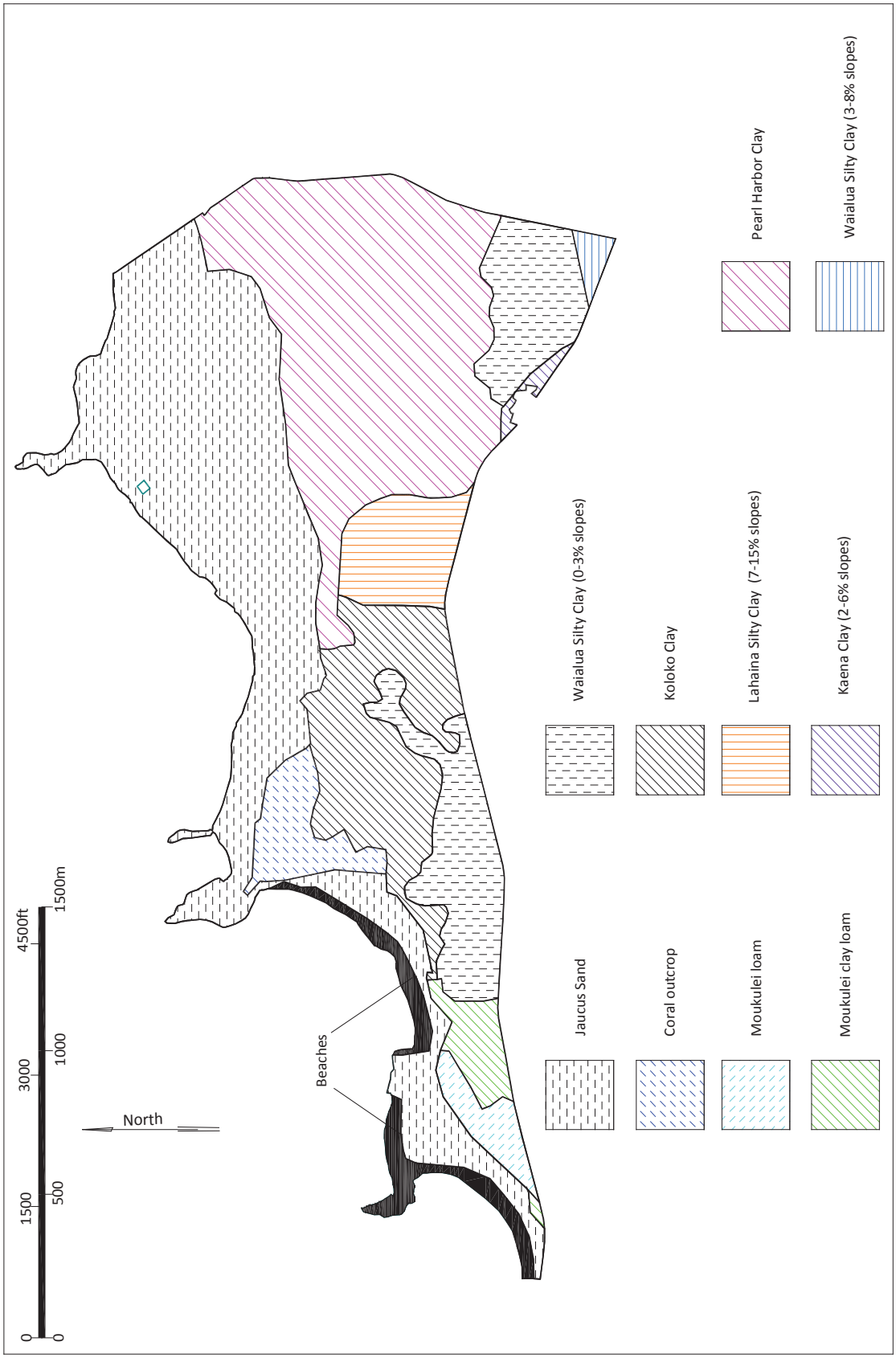
Pearl Harbor Clay is the next most extensive sediment, encompassing 227 acres, or 27% of the SEIS Lands. It largely coincides with the former extent of Punaho'olapa Marsh and consists of poorly drained, mottled clay overlying mottled clay subsoil, formed on layers of muck or peat. Permeability is very slow, runoff is very slow to ponding, and the erosion hazard is slight. Pearl Harbor clay is classified as suitable for pasture, sugarcane, taro and bananas.

Waialua Silty Clay covers 105 acres, or 12% of the total on gentle slopes in the southeastern corner of the SEIS Lands. It is moderately well drained and characterized by a silty clay surface layer overlying a subsoil of blocky silty clay formed on a mottled silty clay substratum. Permeability is moderate, runoff is slow, and the erosion hazard is slight. It is suitable for pasture, sugarcane and truck crops.

Kaloko Clay covers 96 acres, or 11% in the central portion of the SEIS Lands. It is developed in alluvium derived from igneous rock and is poorly drained. It consists of clay overlying multiple layers of clay and silt clay. Permeability is moderately slow to slow, runoff is slow to very slow, and the erosion hazard is slight. It is classified as suitable for pasture and sugarcane.

Lahaina Silty Clay covers 39 acres (5%) in the east-central portion of the SEIS Lands. It is derived from weathered igneous rock and is well drained, and is typically exposed on slopes above the coastal plain. The surface layer is severely eroded and overlies a blocky silty clay and silty clay loam subsoil, formed on weathered igneous parent material. Permeability is moderate,

Figure ~~2-26~~ 2-31: Distribution of soils within the project area



runoff is medium, and the erosion hazard is moderate. It is classified as suitable for sugarcane and pineapple.

Coral (Limestone) Outcrops cover 27 acres, or 2% of the SEIS Lands, inland of Kuilima Point. The outcrops are composed of crushed and cemented coral or calcareous sand that formed in shallow ocean waters when the sea levels were higher. It is classified as suitable for military installations, quarries and urban development.

Mokulēʻia Clay Loam encompasses 20 acres or 2% of the SEIS Lands, and **Mokulēʻia Loam** comprises 18 acres, another 2% of the SEIS Lands. Both soil types are located in the southwest portion of the SEIS Lands. This soil is characterized as well-drained clay loam surface layers, over sand and loamy sand subsoils. Permeability is moderate, runoff is very slow, and the erosion hazard is slight. These soils are classified as suitable for pasture, sugarcane and truck crops.

Beaches cover 19 acres or 2% of the total SEIS Lands and are restricted to Turtle Bay and Kawela Bay. The coastal strands in these bays are characterized as sandy, gravelly or cobbly and are classified as suitable solely for recreation. Permeability is moderate, runoff is very slow, and the erosion hazard is slight.

Kaena Clay encompasses 6 acres, or 1% of the SEIS Lands, and is found only along the southeast edge of the Resort. The clay is very deep, poorly drained, and is exposed on alluvial fans and talus slopes. It is characterized by a clay surface layer overlying clay subsoil and formed on a highly weathered gravel substratum. Permeability is slow, runoff is slow, and the erosion hazard is slight. It is classified as suitable for pasture and sugarcane.

Waialua Silty Clay encompasses 5 acres, or 1% of the SEIS Lands, and is found in the southeastern corner of the Resort. It is moderately well drained and characterized by a silty clay surface layer overlying a subsoil of blocky silty clay formed on a mottled silty clay substratum. Permeability is moderate, runoff is slow, and the erosion hazard is slight. It is classified as suitable for sugarcane and truck crops.

E. 6. Agricultural Productivity

Agricultural productivity was discussed on page 38 of the 1985 Revised Final EIS. Pursuant to Section 11-200-28, that information is included here by reference. There have been no changes to the Agricultural Lands of Importance to the State of Hawaiʻi (ALISH) designations on the property.

E. 7. Terrestrial Vegetation

Given the amount of time that has passed since the 1985 EIS was prepared, a new botanical inventory survey was conducted by Rana Biological Consulting to determine if any significant changes to the vegetation have occurred. Two surveys were conducted; one in late March 2011 (wet season), and one in mid-September 2011 (dry season). A survey report is presented as Appendix F of the SEIS and is summarized below.

E.7. a. Historical Transformation

The SEIS Lands can be generally characterized as a disturbed area that has been subjected to periodic development and redevelopment since the late 1700s as detailed elsewhere in the SEIS.

E.7. b. Existing Conditions

The present-day vegetation of the SEIS Lands can be characterized as either developed landscape plantings (all hotel/Resort grounds, golf courses, and appurtenant facilities) or naturalized, non-native scrub and forest on previously disturbed lands. Areas of wetland vegetation associated with Punahoʻolapa Marsh are extensive. Coastal strand and dune vegetation zones occur along most coastal portions of the SEIS Lands. For the most part, the dune vegetation is also dominated by non-native, naturalized species and merges inland with either inland scrub/forest or Resort landscaping. In contrast, the most seaward part of the coastal strand, together with an area of active dunes in the east end of the SEIS Lands, support a relatively narrow strip of native vegetation.

A total of 226 species of vascular plants was identified in the survey area. For the purposes of description, the survey divides these plants into six vegetation types: Landscape, Forest, Shrub-scrub, Other Scrublands, Wetland, and Strand (a long narrow zone at the coast). The Forest vegetation type is the most complex on the property, consisting of trees forming a closed or nearly closed canopy. These cover a considerable portion of the SEIS Lands and vary in composition from place to place. For mapping purposes, the Forest vegetation is therefore subdivided into Ironwood Forest, Mixed Forest, and Cook Island Pine Forest.

The Ironwood Forest is the dominant Forest type in the SEIS Lands and found particularly close to the coast. Ironwood grows on dunes and immediately behind the beach (or rocky shore) in some places. Ironwoods are very tolerant of the conditions that set the Strand apart from the inland plant communities. Because their needles accumulate on the ground, most other species are prevented from germinating and forming an understory in the Ironwood Forest. Although obviously a useful species for the dry Kahuku Point area, and widely incorporated into the landscape of the developed areas including the golf courses, ironwoods are considered to be invasive in the two most sensitive vegetation types: Strand and Wetland.

Areas of forest not dominated by ironwood (Mixed Forest) tend to comprise several common, mostly non-native tree species: Christmas berry (*Schinus terebinthefolius*); *Macaranga tanarius* (no common name); *milo* (*Thespesia populnea*); *koa haole* (*Leucaena leiucocephals*); Java plum (*Syzygium cumini*); and *hau* (*Hibiscus tiliaceus*) as monotypic stands in a few low-lying areas. Ironwood may also be present in these, but is not dominant. Many other species of trees, shrubs, and herbs occur in various parts of these forests, but tend not to dominate. The understory typically includes Chinese violet (*Asystasia gangetica*), Guinea grass (*Pacnicum maximum*), and sourbush (*Pluchea indica* and *P. carolinenesis*).

Koa haole grows as a shrub or small tree and can reach high densities. In areas where *Koa haole* is the dominant species, the tall woody plants approach a forest type, but are distinguished in the

survey as Shrub-scrub. The areas of purest Shrub-scrub are areas of former sugar cane lands that have not been developed. Typical understory plants in Shrub-scrub are Guinea grass, Chinese violet, and gycine vine (*Neonotonia wightii*). Other Scrublands occur inland from the Strand and are dominated by *Pluchea* spp.

Wetlands on the SEIS Lands are to two types: 1) former wetlands that were part of the Punahoʻolapa Marsh and 2) wetlands and aquatic features associated with the golf course hazards. The latter were either constructed during the grading of the golf courses, or incorporated (perhaps dredged) from prior exist wetlands or stream courses. Most of the features identified as "wetlands" on the property are, in fact, open golf course ponds or moat-like ponds. Some, but not all of these ponds, support wetland vegetation around their margins. The Wetland vegetation type (as opposed to ponds) is present at Punahoʻolapa Marsh, at an area east of the mean entrance adjacent to Kamehameha Highway, in the lower part of the main drainage swale, and as a shallow man-made wetland/pond west of the latter (just northeast of Kuilima Estates). These Wetland areas are not, or are only minimally, maintained. From a botanist's point of view, Punaho`olapa Marsh is the most interesting of the wetlands as it is part of a large complex of wetlands that existed in the distant past on the Kahuku Plain.

Nearly all of Punahoʻolapa Marsh is overgrown with herbaceous vegetation. Many areas supporting tree growth are evident as well, including areas of *hau* forest. There are, however, extensive interior areas supporting *koa haole* Shrub-scrub and Ironwood Forest. These areas were not visited during the surveys, and therefore unknown is how much of the area enclosed by moats in the Wetland remains as wetland (only one open pond area is seen in satellite images).[4]

Starting close to ~~Along~~ the shore, the substratum of the SEIS Lands varies between consolidated ~~beach rock and sandy beaches~~ limestone (rocky shore including beach rock) and sand deposits (beaches; see Photo 1 below). Very few higher plant species can tolerate direct immersion in sea water or the shifting nature of sand deposits subjected to wave action. A number of environmental factors brackish or saline groundwater, salt spray, absence of humus in the soil substratum, exposure to winds are sufficiently harsh so as to limit the species that can survive in the Strand vegetation areas. Strand vegetation occupies a zone of variable width immediately inland of the ocean shore. Some of the vegetation grows on the upper part of active beaches (notably the vine, *pōhuehue* or *Ipomoea pes-caprae*) and *ʻakiʻaki* grass or *Sporoblus virginicus*, seeding and or invading down the beach by rhizomal growth. Mostly, this vegetation is found on sand moving slowly inland under the influence of the wind (which is predominantly onshore at this location) forming dunes, which where active (that is where sand is actively on the move) might be mistaken for beach rather than ~~wind (or in some cases, storm wave) deposited material~~ dune. The difference is mostly a function of where, moving inland from the water's edge, the sand is deposited mostly by normal or storm waves (beach sand) or mostly by wind (dune sand). As far as plant growth is concerned the difference is one of stability. Where the

[4] It was determined at the outset of the SEIS analysis that the value of leaving this interior wetland area undisturbed outweighed the value of inventorying its constituent plants.

sand is actively moving about at a fairly good rate (waves constantly rework~~ing~~ the beach sand), plants cannot get established, or are buried (or the roots exposed) and die.

Photo 1 - View of the shore showing sand and limestone substrata. All the plants visible here are part of the Strand vegetation type. Note ironwoods on right are invasive of the strand.

The width of the Strand vegetation or distance the Strand extends inland from the beach or ~~beach~~ rock ~~areas~~ shore is highly variable along this coastline and depends ~~on~~ upon several factors: 1) how far inland the dunes extend, 2) how marked are salt air effects on ~~extant~~ the vegetation, and 3) disturbances that damage the vegetation or the substratum. In most areas along the coast of the SEIS Lands, the width of this vegetation zone is too narrow to indicate on a map (see Appendix F, Fig. 3).[4A] The widest areas of ~~Strand~~ strand vegetation occur at the rocky points (Kahuku and Kuilima) and behind the ~~shoreline~~ shore extending east from Kahuku Point. Narrow strand areas are places where either development close to the shore has curtailed dune formation or dunes that are still present are thoroughly invaded by trees or shrubs that effectively stabilize the sand movement. The distribution of Jaucus Sand (Figure 2-26) provides an indication of the historical extent of dunes on SEIS Lands.

The typical Strand plant community is one dominated by several native species *naupaka kahakai (Scaevola taccada), ʻakoko (Euphorbia degeneri), ʻakiʻaki (Sporobolis virginicus), hinahina (Heliotropium anomalum var. argenteum), maʻu (Fimbristylis cymosa)* and at least one non-native

[4A] In reality, the strand probably does extend inland where the substratum is dune sand. However, these areas- where a strand is too narrow for mapping have either development or ironwood forest close behind the shore.

tree (beach heliotrope or *Tournefortia argentea)*. These plants are adapted to the harsh conditions described above that define the Strand. They are not species that tolerate much shading or root competition for limited ground moisture. A number of introduced (non-native) plants are able to invade seaward across dunes. *Kiawe (Prosopis pallida)* is a prime example on leeward coasts throughout the Hawaiian Islands. Ironwood is the best example at Kuilima/Turtle Bay. In dune areas where groundwater is close to the surface (*makai* edge of the marshlands), *hau (Hibiscus tiliaceus)* can invade the dunes as well. The result in this area is that whereas dunes (deposits of sand) are still present inland of the beach in many places on the SEIS Lands, these dunes are not active (inland movement of sand is much reduced or eliminated) and this stabilization plus shading by invasives limits the occurrence of native strand vegetation.

Photo 2 - Northeast corner of the SEIS lands showing the coastal Strand vegetation zone (STr; *makai* of light orange band).

Along much of the shore, the area formerly occupied by dunes has been developed or ironwood trees ~~grown~~ grow nearly down to the shore; while these trees are a part of the Strand vegetation, they are also a part of the Ironwood Forest and Mixed Forest that extend yet further inland. Thus, there is no simple way to differentiate the ~~Strand~~ strand or the extent of active and inactive dunes on the basis of vegetation alone where ironwoods predominate. As noted above, ironwoods can be invasive in ~~the Strand~~ this vegetation type. Photo 2 (above) is an enlarged portion of the vegetation map (Fig. 3 in Appendix F) showing the northeast coast of the SEIS Lands. The Strand vegetation zone is marked by an orange band along its *mauka* boundary (the *makai* boundary is essentially the edge of the vegetation just above the ocean shore). Even within this zone, and particularly in the more *mauka* parts, the Strand vegetation and dune area is being invaded by a number of non-native plants.

Approximately twenty percent of the 226 species of vascular plants identified on the SEIS Lands are ornamentals, meaning landscape plants that have not become naturalized in Hawai'i. A much higher percentage (thirty six percent) of the vascular plants are actually serving landscape purposes at Resort, since many naturalized species are also used for landscaping.

Approximately eleven percent of the vascular plants in the SEIS Lands is Hawaiian natives and includes indigenous or endemic plants. A majority of these occur in the wetland and coastal strand vegetation, making these two areas the most sensitive botanical areas in the SEIS Lands. Another three and a half percent are early Polynesian introductions (technically not native but so-called "canoe" plants that have been in the islands for several thousand years). Only four native species were recorded in the developed and/or landscaped areas of the Resort.

However, eleven percent of the total number of plant species should not be misinterpreted as constituting eleven percent of the vegetation at the Resort. Indigenous plants such as *hala* (*Pananus tectorius*), *naupaka* (*Scaevola taccada*), and *niu* (coconut or *Cocus nucifera*) are prominent species in the landscaping of the Resort. The same is true for the wetland and the most seaward part of the strand vegetation, where native plants tend to dominate.

E.7. c. Comparison of 1984 and 2011 Surveys

The flora survey conducted for the Resort and presented in the 1985 EIS categorized the vegetation types slightly differently that the 2011 surveys as summarized below. However, they are not dissimilar in their approach.

The 1985 EIS distinguished among disturbed areas by characterizing them as grassy clearings (e.g. roadway shoulders), agricultural fields, existing Resort and residential areas while the 2011 survey combined all disturbed areas into a single category called "Landscape". The description of shrub/scrub areas was fairly consistent between the two reports. The various types of forest identified in 2011 were all grouped together under the Ironwood Groves in 1985. The Punaho'olapa Marsh area was treated much differently in 2011 than in 1984. In 1984, the moat around the marsh had not yet been excavated and the marsh was, therefore, less defined that it is today. Thus, while the 2011 report presents considerable detail about the plants in the marsh, it does not attempt to categorize them as separate vegetation types. In addition, the 2011 report distinguishes between golf course wetlands and marsh. Finally, the 2011 report characterizes the dune system as a transition area among various vegetation types (forest and shrub), but calls out the Coastal Strand as a distinctive and sensitive area, while the 1984 report included the strand in the dune system almost as an afterthought.

Neither the 1985 EIS nor the 2011 surveys identified any endangered, threatened, or candidate botanical species on the property. Further, there is no federally delineated Critical Habitat present on ~~or adjacent~~ to the SEIS Lands. The James Campbell National Wildlife Refuge is adjacent to the eastern side of the SEIS Lands.

Table 2-7: Comparison of Flora Surveys at Turtle Bay Resort (1984 & 2011)

1984	2011
Grassy clearings	Landscape
Agricultural fields	
Residential Communities	
Resort Facilities	
Scrub thickets and airstrip vegetation	Shrub-scrub
	Other Scrublands
Ironwood Groves	Forest:
	Ironwood Forest
	Mixed Forest
	Cook Island Pines
Marshlands:	Wetland:
Shrub thickets	Punaho`olapa Marsh
Marshlands	wetlands
Mudflats	
Open Water	
Dune vegetation	Coastal Strand

E. 8. Fauna

Avian and mammal surveys of the property were conducted by Rana Biological Consulting at the same time as the botanical survey discussed above. The complete report is presented in Appendix F and is summarized below.

E.8. a. Avian Population

A total of 1,735 individual birds of 27 species, representing 19 different families, were recorded during the course of the wet and dry season surveys. Three of the species recorded, Common Gallinule (*Gallinula galeata sandvicensis*), formerly known as the Common Moorhen (*Gallinula choloropus*), Hawaiian Coot (*Fulica alai*), and Hawaiian Stilt (*Himantopus mexicanus knudseni*) are endemic endangered waterbird species. One species recorded, Black-crowned Night-Heron (*Nycticorax nycticorax hoactli*) is an indigenous water obligate species, and four, Pacific-Golden Plover (*Pluvialis fulva*), Wandering Tattler (*Tringa incana*), Bristle-thighed Curlew (*Numenius tahitiensis*), and Ruddy Turnstone (*Arenaria interpres*) are indigenous migratory shorebirds protected under the migratory bird Treaty Act (MBTA). The remaining 19 species detected are considered to be alien to the Hawaiian Islands.

There was very little difference between the results of the wet and dry season surveys. Two additional migratory shorebird species recorded during the fall were not recorded during the earlier spring survey. All of the species recorded in the spring survey were also recorded in the fall.

Avian diversity and densities are in keeping with the vegetation and current usage of the SEIS Lands, most of which are golf course, condominium units, apartments, hotel, or open maintained parkland. Four species, Common Waxbill (*Estrilda astrild*), Red-vented Bulbul (*Pycnonoyus cafer*), Zebra Dove (*Geopelia striata*), and Japanese White-Eye (*Zosterops japonicas*) accounted for 51 percent of all birds recorded, with the Common Waxbill being the most common.

A total of 26 adult and two sub-adult Hawaiian Gallinule, three Hawaiian Coot, five Hawaiian Stilt, and one domestic Muscovy (*Cairina moschata*) were recorded within water and wetland features on the property. The presence of the two sub-adult Hawaiian Gallinule may indicate on-site nesting activity. The two sub-adult birds were each seen with two separate sets of adults. No nests were observed in any of the water features, though unobserved nests could have been present with Punahoʻolapa Marsh, which in its current state is not readily searchable for nesting waterbirds.

E.8. b. Existing Mammals

Eight terrestrial and one marine mammalian species were detected on site during the course of the survey. With the exception of the endangered Hawaiian monk seals (*Monachus schauinslandi*) seen hauled out on the beach during both the spring and fall surveys, all of the mammals recorded on site are alien to the Hawaiian Islands. These alien mammalian species included European house mouse (*Mus musculus domesticus*), Domestic dog (*Canus f. familiaris*), Small Indian mongoose (*Herpestes a. auropunctatus*), House cat (*Felis catus*), Domestic horse (*Equus c. caballus*), Donkey (*Equus a. asinus*), Mule (*Equus asinus x Equus caballus*), and Pig (*Sus s. scrofa*).

The findings of the mammalian survey were consistent with the current habitat present on site and the land usage of the areas surveyed. Although three species of rodents found on Oʻahu (roof rat – *Rattus r. rattus*; Norway rat – *Rattus norvegicus*; Polynesian rat – *Rattus exulans hawaiiensis*; and European house mouse – *Mus musculus domesticus*) were not detected during the course of the surveys, it is likely they use various resources found within the general project area on a seasonal basis. These three human commensal species are drawn to areas of human habitation and activity. All of these introduced rodents are deleterious to native ecosystems and the native faunal species dependent on them.

No Hawaiian hoary bats were detected during the course of these surveys. Given the paucity of documented records of this species on Oʻahu, this finding was not unexpected. (USFWS, 1998; David 2011).

There is no federally delineated Critical Habitat present or adjacent to the SEIS Lands within the Resort. However, the James Campbell National Wildlife Refuge, which is identified as Critical Habitat, is located on the eastern side of Marconi Road. In addition, Punahoʻolapa Marsh, as well as the Kuilima Wastewater Treatment Plant setting ponds *mauka* of Kamehameha Highway are identified as Supporting Habitat of several species of endangered waterbirds.

E.8. c. Stream Biota

The density of native aquatic species is generally low in Oʻahu's streams. Regular stream flow is critical for streams to maintain a population of native stream organisms. Most native stream species spend part of their life in the stream and part of their life in the ocean. Both Kawela Stream and ʻŌʻio Stream are generally perennial, meaning that stream flow occurs year round. However, stream flow in the SEIS Lands, that constitute the lowest reach of the streams, generally occurs only during the wet season or after heavy rainfall events in the mountains. For this reason, the streams may serve as intermittent avenues of migration between the sea and upstream perennial reaches, but not as permanent habitat for native fishes, crustaceans, and mollusks.

As the lower reach of ʻŌʻio Stream exists as a grassed swale across the Palmer Golf Course that is dry for much of the year, no survey of its biota has been conducted. However, in 2006 a biological survey of Kawela Stream was conducted by AECOS, Inc. The survey identified fourteen different aquatic species of mollusks, crustaceans, insects, amphibians, and fishes in the stream. Four species are endemic, including *Eleotris sandvicensis*, one is indigenous, and nine species are naturalized.

None of these aquatic species is listed as threatened or endangered, or otherwise would be considered rare or special by the State or Federal governments (DLNR, 1998; Federal Register, 2005; USFWS, 2005, 2006).

F. Contextual Human Environment

Following is a description of those aspects of the environment that are directly influenced by human activities, past and present. A discussion of the Proposed Action's impacts on the human environment is presented in Chapter Five of the SEIS.

F. 1. Archaeological Resources

The following discussion of archaeological resources represents a summary of the Supplemental Archaeological Inventory Survey (SAIS) conducted for the project by Haun & Associates, and presented in its entirety in Appendix C. The document has been submitted to the State Historic Preservation Division of DLNR for review and approval. Once approved, it will be relabeled as a Final SAIS.

F.1. a. Previous Studies

Between 1977 and 2006, twenty-one separate reports have been prepared documenting archaeological investigations at the Resort.

Table 2-8: Kawela Stream Biota

INVERTEBRATES:
Mollusks MOLLUSCA, GASTROPODA THIARIDAE (*Melanoides tuberculata*): red rimmed melania – Naturalized/Exotic
Crustaceans ARTHROPODA, CRUSTACEA PALIEMONIDAE (*Macrobrachium grandimanus*): *`opae `oeha`a* – Endemic
ARTHROPODA, CRUSTACEA PALIEMONIDAE (*Macrobrachium lar*): Pacific prawn – Naturalized/Exotic
Insects ARTHROPODA, INSECTA ODONATA, COENAGRIONIDAE (*Ischnura ramburii*): Rambur's forktail – Naturalized/Exotic
VERTEBRATES:
Amphibians VERTEBRATA, AMPHIBIA RANIDAE (*Rana catesbeiana*): bullfrog – Naturalized/Exotic
VERTEBRATA, AMPHIBIA RANIDAE (*Rana catesbeiana*): tadpole – Naturalized/Exotic
Fishes VERTEBRATA, PISCES ELEOTRIDAE (*Eleotris sandvicensis*): *`o`opu akupa* – Endemic
GOBIIDAE (*Stenogobius hawaiiensis*): `o`opu naniha - Endemic
CICHLIDAE (*Sarotherodon melanotheron*): black chin tilapia – Naturalized/Exotic
KUHLIIDAE (*Kuhlia xenura*): *aholehole* – Endemic
MUGILIDAE (*Mugil cephalus*): `ama`ama – Endemic
POECILIIDAE (*Gambusia affinis*): mosquito fish – Naturalized/Exotic
POECILIIDAE *(Poecilia Mexicana*): Mexican molly – Naturalized/Exotic
POECILIIDAE *(Poecilia reticulate*): guppy, rainbow fish – Naturalized/Exotic

The Bernice Pauahi Bishop Museum (BPBM) conducted the first systematic archaeological survey of all undeveloped Resort property (649 acres) in 1977 for Prudential Insurance Company (Dye 1977). This pedestrian survey was followed by a series of subsurface testing projects conducted by Paul H. Rosendahl, Ph.D. Inc. (PHRI) in the mid-1980s. Beginning in 1984, PHRI (Bath *et al*. 1984) conducted a subsurface reconnaissance survey of thirteen areas throughout the Resort property including further investigation of subsurface deposits initially identified by Dye. The initial reconnaissance-testing project was followed by three intensive subsurface testing surveys conducted in 1986 that focused on cultural deposits identified by Bath *et al*. at Kawela Bay (Walker *et al*. 1988a), Kahuku Point (Walker *et al*. 1988b), and Punahoʻolapa Marsh (Davis *et al.* 1986).

In 1987, PHRI prepared an archaeological Data Recovery Plan (DRP; Walker *et al*. 1987) to mitigate the effect of Resort expansion on archaeological sites at Kawela Bay, Kahuku Point, and Punahoʻolapa Marsh. The Plan was incorporated into a Memorandum of Agreement (MOA) executed in 1988 by the U.S. Army Corp of Engineers – Honolulu District (COE), the Hawaiʻi State Historic Preservation Department (SHPD) Officer, the Office of Hawaiian Affairs (OHA), the Advisory Council on Historic Preservation (ACHP), and the City and County of Honolulu (CCH). In addition to implementation of the DRP, the MOA required development and implementation of plans for archaeological monitoring and for burial disinterment and reburial. PHRI prepared the plans for monitoring and burial treatment (Jensen 1989b) that were approved by the Department of Land and Natural Resources (DLNR) State Historic Preservation Program Director in 1990 (January 9, 1990 letter from Don Hibbard to Paul Rosendahl).

The archaeological data recovery work and monitoring were conducted by PHRI from late 1990 to 1991. After initial data recovery excavations at the Kahuku Point Site were initiated, the landowner decided to halt further work and preserve the site. Monitoring fieldwork results were reported in a series of monthly status reports prepared by PHRI (Sullivan 1990, 1991; Dunn 1991; Donohue 1991). Corbin (2003) reported the full descriptive findings of the PHRI data recovery and monitoring fieldwork and subsequent analyses. DLNR-SPHD approved the Corbin (2003) report in 2005 (letter from Melanie Chinen to Paul Rosendahl March 11, 2005 LOG NO: 2005.0110; DOC NO: 0501SC05).

In 1992, PHRI prepared a Burial Treatment Plan (Maly and Rosendahl 1992) for the reburial and preservation of remains recovered during previous data recovery and monitoring. The plan was prepared to comply with legislation enacted in 1990 pertaining to the treatment of traditional Hawaiian burials under Hawaiʻi Revised Statutes (HRS) Chapter 6E:43, Act 306. The plan also included reburial of remains inadvertently discovered in 1992 near the Resort hotel (Kennedy 1992) and in the mid-1980s at Kahuku Point (Neller 1984, 1989). The MOA-mandated osteological analysis of human remains by PHRI is reported by Kalima (1993).

In 1996 and 1999, a report on inadvertent discovery of additional burials was prepared by Archaeological Consultants of the Pacific (ACP) for human remains inadvertently discovered in 1996 (Carson *et al*. 1996, 1999). Cultural Surveys Hawaiʻi (CSH) conducted archaeological monitoring for golf course refurbishment in 2001 but encountered no cultural deposits (Borthwick *et al*. 2001).

In March 2003, PHRI submitted a report to State Historic Preservation Division (SHPD) documenting the mitigation work conducted up until then at the Resort. On March 11, 2005, SHPD responded with a letter that the PHRI adequately fulfilled the mitigation plans previously provided to SHPD. On August 15, 2006, Cultural Surveys Hawaii submitted a Mitigation Plan addressing the proposed Resort expansion to the SHPD for approval. (An approved mitigation plan is essentially the last step in the archaeological process that begins with an approved archaeological inventory plan, then moves through an approved inventory survey to an approved preservation plan and burial treatment plan, before concluding with an approved mitigation plan.)

On October 25, 2006, SHPD responded, in part, that based on the Mitigation Plan, "…there is a high probability that one or more of the proposed hotel sites is located in an area within which numerous (as yet undiscovered) subsurface burials are located…We recommend that the Master Plan be revisited and revised, including the consideration and proposal of alternative design schemes in order to avoid all or most of the burial areas, in particular."

On November 16, 2006, CSH responded to the SHPD letter by withdrawing the Mitigation Plan from further consideration. However, as the result of further discussions between the Resort property owner at the time (Kuilima Resort Company) and SHPD, on May 31, 2007, SHPD wrote to TBR's attorney to "…clear up any confusion that ensued as a result of [the] October 25, 2006 letter…" noting that the recommendations contained within the letter were not legal recommendations.

F.1. b. Current Efforts

The current property owners subsequently reviewed the entire record and after consultation with community and cultural leaders in the Kahuku region, concluded that the previous archaeological work was not sufficient to address the Proposed Action. Haun and Associates was retained to prepare a plan for the SAIS, submit it to SHPD for approval, and once approved, execute the plan. On December 12, 2011, SHPD approved the SAIS Plan.

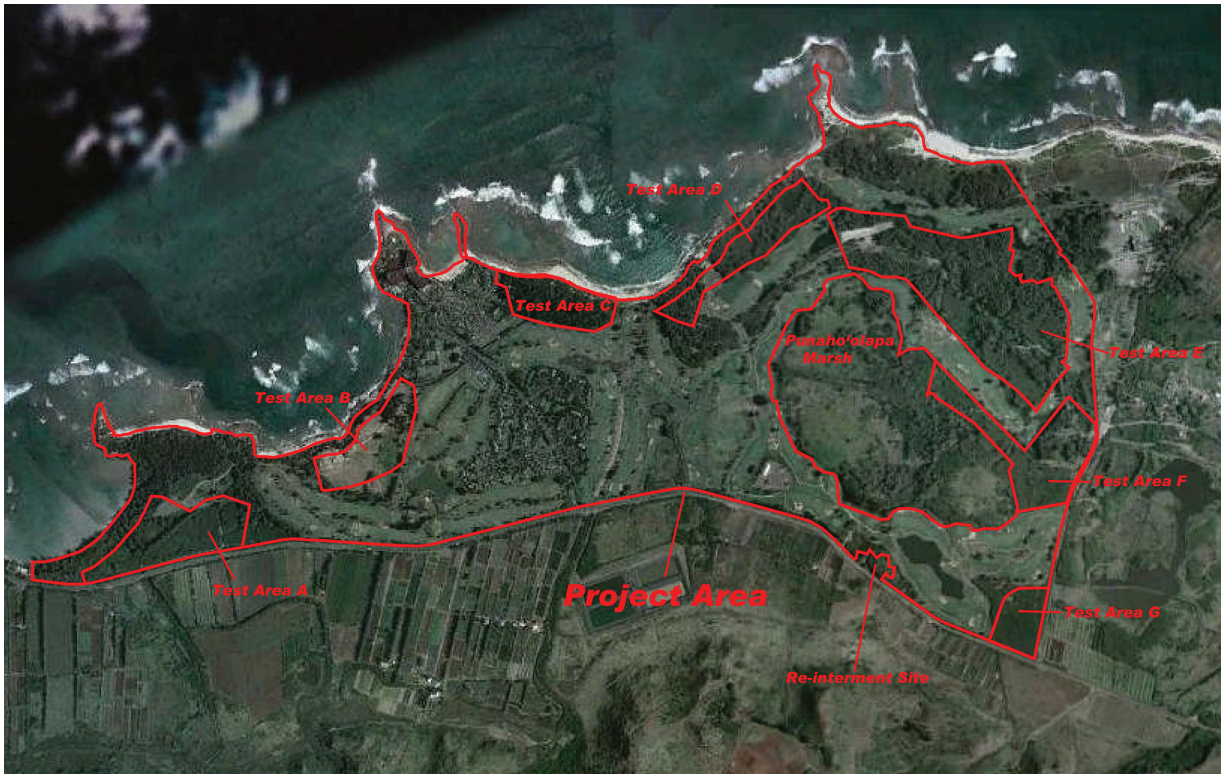
The SHPD-approved Supplemental Archaeological Inventory Survey Plan (SAIS Plan)(Haun *et al.* 2011) is presented in Appendix G. It includes a thorough summary of previous land use for the Resort property, beginning with traditional Hawaiian land use through World War II and subsequent developments. The SAIS Plan was prepared in advance of the SAIS fieldwork, in accordance with the requirements for an Archaeological Inventory Survey Plan detailed in Hawai'i Administrative Rules (HAR) §13-13-284-5(c) and §13-13-276-5 (a) and (b). The Plan presents the results of historical documentary and archaeological background research for the general Kahuku area and specifically for the project area. The Plan also provides a synthesis of the background information and provides a research design with a methodology to guide the proposed SAIS fieldwork. The reader is referred to Appendix G for this background information.

F.1. c. Subsurface Testing

In early January 2012, Haun and Associates began implementing the SAIS Plan, which called for the systematic excavation of 314 trenches for the purpose of sub-surface testing of proposed development sites within the Proposed Action along with surface surveys (systematic pedestrian survey of a given area).

On February 2, 2012, the surface surveys and sub-surface testing were completed in seven separate development areas; test areas A-G (see Figure ~~2-27~~ 2-32). Additional surface survey work was conducted within the Kahuku Point Preserve and along the forested areas surrounding Kawela Bay.

Figure ~~2-27~~ 2-32: Aerial view of project area showing Test Areas

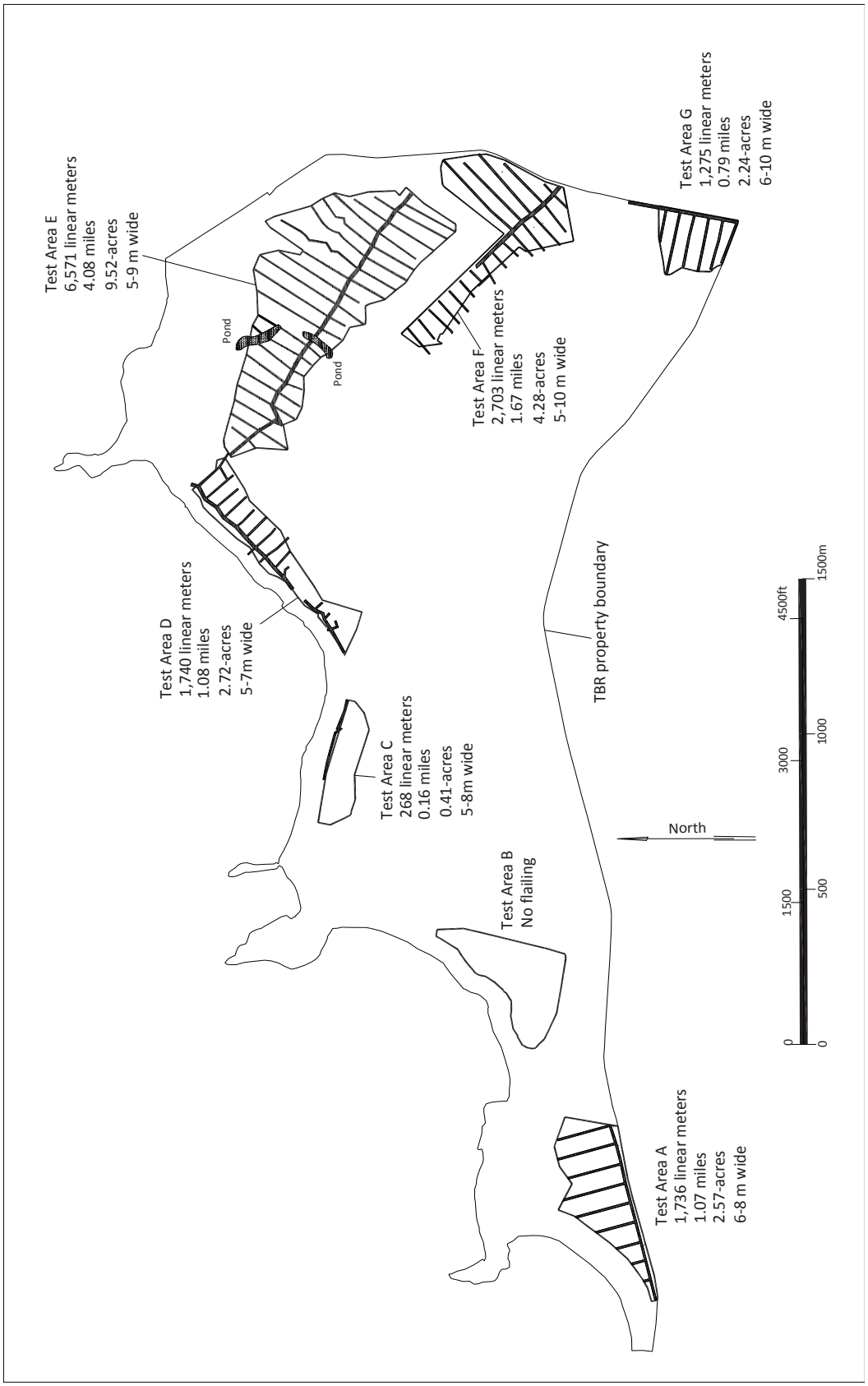


No testing was proposed for parks and other open spaces where development impacts are anticipated to be minimal, primarily consisting of landscaping that would have very shallow, less than 1 ft (30 cm) deep impact. (All ground disturbing activity in the open space areas was subject to archaeological monitoring done in accordance with a monitoring plan prepared for SHPD review and approval.)

Moderate to dense vegetation covered all of the test areas, except Areas B and C. To facilitate access by excavating equipment, most transects were mechanically cleared prior to trenching. The initial clearing effort for all test areas, except Area B, involved clearing a baseline that paralleled the long axis of each test area. Next, transects were laid out perpendicular to the baseline. Transects were sequentially numbered as were the trenches within each transect. (For example, BT-A-1-1, indicates backhoe trench (BT), Area A, Transect 1, Trench 1.)

Baselines and transects were cleared using a mechanical flail attached to a Komatsu PC130 excavator. A total of 14,293 linear meters or nearly 9 miles of transect were cleared. Transects varied in width from 5.0 to 10.0 m. The extent of vegetation clearing is presented in Figure 2-28. No clearing was necessary for Test Area B because it is open lawn and occupied by an equestrian facility. Test Area C is relatively open beneath a canopy of ironwood trees and mechanical clearing was limited to the baseline.

Figure ~~2-28~~ 2-33: Extent of mechanical flailing



Previous archaeological studies for the Resort property established a higher potential for encountering subsurface cultural remains including burials in mapped Jaucus Sand and Pearl Harbor Clay deposits. These two soil types were subjected to higher intensity testing. Lower intensity testing sampled the various clay and loam soil types elsewhere on the Resort property.

Low density testing of 1 trench per acre sampled the Waialua/Mokulēʻia Clay soils at Kawela Bay (Test Area A) and the planned residential housing development (Test Area G). The remaining test areas are characterized by Jaucus Sand and Pearl Harbor Clay sediments, where high-intensity testing density of 2 trenches per acre were sampled. Figure ~~2-29~~ 2-34 presents an overlay of the test areas on the project area's soil types.

The SAIS Plan proposed additional discretionary trenches as needed for:

- specific areas that might be missed by the systematic transect trenching such as Land Commission Awards (LCAs);
- the location of a former plantation worker housing (Camp 3) in Area B;
- areas where subsurface cultural remains[5] were documented by previous archaeological studies (Areas D and E);
- segments of the proposed Kaihalulu Drive outside the potential test excavation areas that are undeveloped; and
- defining the extent of subsurface cultural deposits identified in systematically placed trenches.

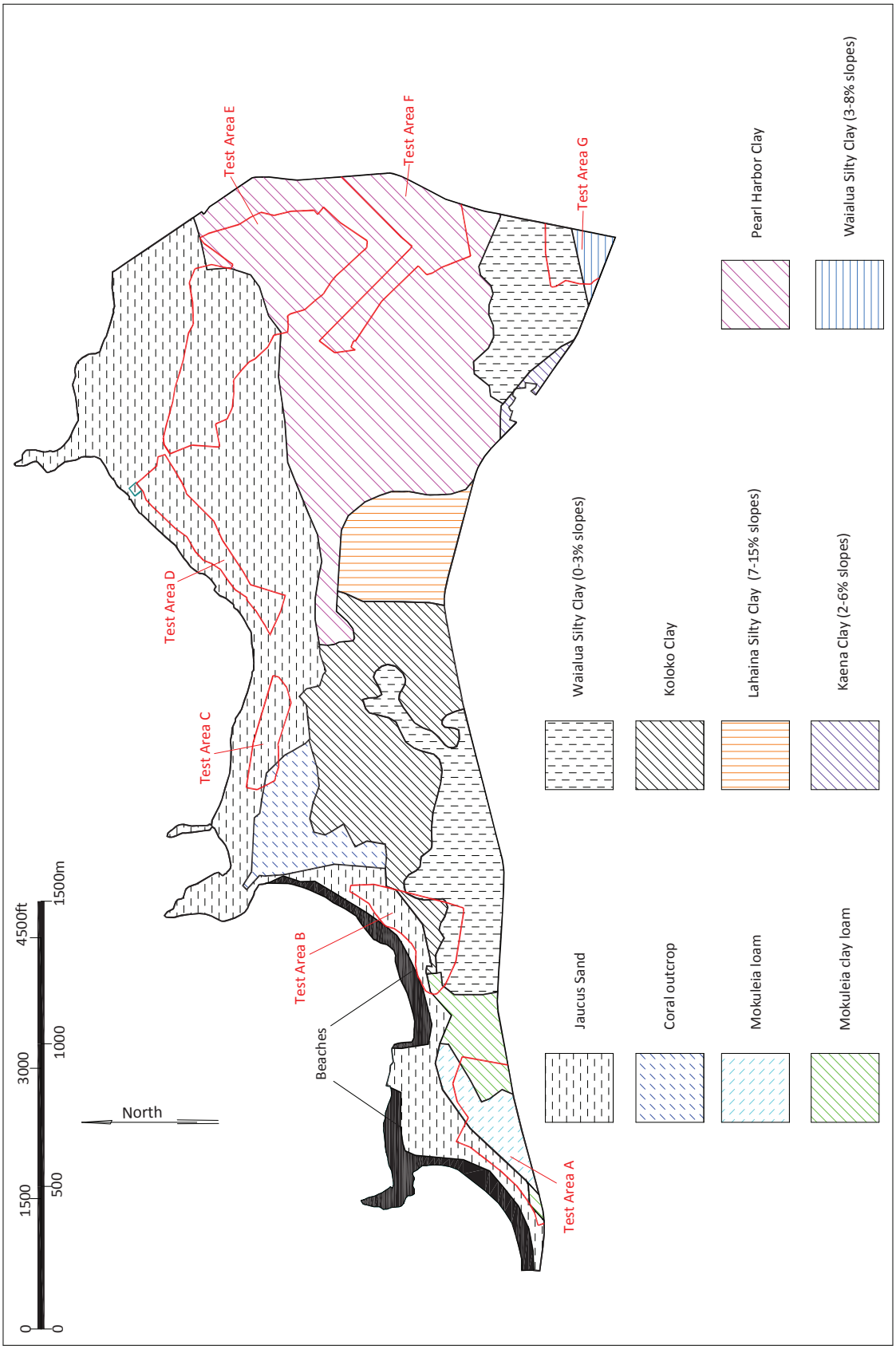
Field conditions required some adjustments to test area extent and trench placement. No segments of the proposed Kaihalulu Drive were tested because undeveloped sections were either in tested areas or developed portions of the Resort. These modifications are discussed below.

Following is a summary of the seven Test Areas:

Test Area A was reduced in size from the 24.4-acre area proposed in the SAIS Plan to 20.8-acres to accommodate a wider (300 ft) coastal setback included in the Proposed Action. Prior archaeological excavations in and adjacent to Test Area A reached a maximum depth of 1.15 m below surface without identifying any cultural layers (Walker *et al.* 1988b, Bath *et al.* 1984). Prior testing identified two to three non-cultural sand layers in the seaward portion of Area A and three non-cultural sandy clay and clay loam layers in the inland portion. Evidence of plowing was observed in the eastern portion of the area where the test excavations reached the water table. The plow zone is a 0.35 m thick clay loam underlain by two layers of sand. The SAIS Plan proposed excavation of 25 systematically placed trenches and five discretionary trenches for Area A. Two discretionary trenches were proposed to test areas within adjacent LCA parcels,

[5] In archaeological terms, a "cultural deposit", "cultural remains", or a "cultural layer" refers to an identifiable layer within the subsurface soil strata that indicates disturbance as the result of human habitation and containing traces or remains of human activities. The thickness of the cultural layer varies depending mainly upon the length and intensiveness of human activity at a given site.

Figure ~~2-29~~ 2-34: Distribution of soils within the project area



and three were proposed to test sand areas along the seaward side of Area A. These discretionary trenches were excluded during the fieldwork because the shoreline setback was expanded to 300 ft. Twenty-four trenches were excavated during the SAIS fieldwork in Test Area A and no intact cultural deposits were identified.

Test Area B was increased from 16.5 to 17.5-acres by the inclusion of additional areas along the south and west sides. No cultural layers were observed in prior excavations conducted adjacent to the west side of Test Area B (Bath *et al.* 1984). Previous excavations extended to a maximum depth of 2.1 m below the surface, exposing 3-4 layers of sand. The SAIS plan proposed excavation of 33 systematically placed trenches in Test Area B and two discretionary trenches: one in the eastern portion of the area where an LCA parcel (LCA 235M) is located and one where Kahuku Plantation Camp 3 was formerly located. Thirty-seven systematically placed trenches were excavated in Test Area B. Slight deviations in trench orientation and placement were necessitated by the equestrian stables, corrals and associated facilities. No discretionary trenches were necessary because the systematically placed trenches adequately sampled the LCA parcel and the plantation camp.

Test Area C was reduced from 14.4 to 8.3-acres as a result of an increase in the shoreline set back from 150 ft to 200 ft and other adjustments along the southern boundary, where a golf course fairway and other facilities are located. Previous excavations by Bath *et al.* (1984) in Test Area C documented three sand layers extending to a depth of 2.1 m below the surface in Test Area C. These sand deposits were highly disturbed; containing mixed prehistoric and modern debris. Site 4488 is located in the western portion of this test area, where past sand mining led to the inadvertent discovery of several burials that were documented by Kennedy (1992) and Carson *et al.* (1996). The SAIS Plan proposed excavation of eight or more manual test units in the vicinity of Site 4488. These test units were to be excavated manually until the stratigraphy in this area was well documented and the potential for encountering additional burials was evaluated. Twenty-nine systematically placed trenches were also proposed for Test Area C, with one discretionary trench to be excavated at the west end of Area C.

Several large deep depressions were identified in Test Area C, where sand mining occurred in the past. It was apparent from these deep depressions, and from a TBR-provided topographic map, that the sand deposit in some areas exceeded 6 m in depth. The depth and unconsolidated nature of the sand deposit rendered unfeasible the SAIS Plan proposal to manually excavate test pits. The alternative test excavation strategy employed was manual excavation of sand pit sides to expose vertical faces for profile documentation. Accompanying mechanical excavations adjacent to the manual profiles were used to expose the deepest portions of the deposit and the underlying bedrock. As a result of the reduced area and modified testing strategy, a total of ten manual profiles and 18 systematically placed and mechanically excavated trenches documented the subsurface deposits in Test Area C.

Test Area D retained its original size (15.9 acres) and its configuration was not changed during fieldwork. Previous excavations within and adjacent to this area documented multiple (2-6) sand layers extending to a maximum depth of 1.6 m below the surface (Walker *et al.* 1988b, Bath

et al. 1984, Corbin 2003). An intact cultural deposit was identified at the northeast end of Area D (Site 6411, Feature C), consisting of black loamy sand that varied in depth from 1.16 to 1.41 m. The central portion of Area D contains highly disturbed sand deposits with at least some cultural material, although Corbin (2003) does not indicate which layer(s) contained cultural material. Two non-cultural sand layers are present in the southwest portion of Test Area D (Corbin 2003).

The SAIS Plan proposed 33 systematically placed trenches for Test Area D and additional discretionary trenches in the eastern and central portions to further examine previously identified cultural deposits. During the SAIS fieldwork, 36 systematically placed trenches and 3 discretionary trenches were excavated. The systematic trenches identified the inland extent of the previously identified cultural deposits along the shoreline. The discretionary trenches were excavated in the western portion of the area to define the extent of a subsurface cultural deposit.

Test Area E was increased from 66.8 to 68.9-acres by the inclusion of additional areas along the east and west sides during the SAIS fieldwork. Previous excavation in and adjacent to the area reached a maximum depth of 3.6 m below surface (ibid.). Most of the test excavations reached bedrock. An intact cultural layer was identified in the southeast portion of the area (Site 6414). This deposit was described by Corbin (2003) as dark brown silty clay loam that varied in depth from 0.59 to 0.89 meters. Remnant wetland deposits were present at the northwest and west ends of the area. Sediments were impacted by the historical airfield construction at the north end. Relatively shallow Pearl Harbor Clay deposits border Area D to the east, west and south.

The SAIS Plan proposed excavation of 133 systematically placed trenches for Test Area E and least three discretionary trenches in former LCA parcels (LCA 2698:3, 2880:2, and 3958:2). During fieldwork, 137 systematic and 20 discretionary trenches were excavated. The systematically placed trenches identified the remnants of five cultural deposits, but none of these can be correlated with previously identified Site 6414 cultural deposit. The discretionary trenches were excavated at three of the five cultural deposits to define cultural deposit extent.

Test Area F was increased from 25.6 to 26.6 acres as a result of the additional areas along the northwestern side. Prior excavations adjacent to Area F extended to a maximum depth of 4.93 m below the surface. Most of these excavations extended to bedrock or the water table (Bath *et al.* 1984, Davis *et al.* 1986, Corbin 2003). Stratified cultural deposits were identified in excavations adjacent to the northeast end of the area (Site 6422). The upper cultural deposit consisted of a very dark grayish brown silty clay loam that is 0.12 to 0.31 m in depth over a brown silty clay loam cultural layer that is 0.31 to 0.42 m in depth. The SAIS Plan proposed excavation of at least two discretionary trenches next to the reported location of the stratified deposits. Remnant wetland deposits associated with Punahoʻolapa Marsh are located west of Area F and non-cultural Pearl Harbor Clay is present to the north and northwest.

The SAIS Plan proposed excavation of 52 systematically placed trenches and the two previously mentioned discretionary trenches. Fifty-eight systematically placed trenches were excavated during fieldwork. No intact prehistoric cultural deposits were identified in Test Area F.

Test Area G was increased slightly from 9.6 to 9.9-acres by the inclusion of additional areas along the west side during the SAIS fieldwork. No previous excavations were conducted in or near Test Area G. The closest prior test excavations consist of two cores located more than 100 meters to the northwest by Bath *et al.* (1984). These cores extended to a depth of 3.6 m and identified multiple layers of loam, clay and silt with an intervening peat layer. No cultural deposits were present. The SAIS plan proposed 10 systematically placed trenches in Area G. Twelve trenches were excavated. No intact cultural deposits were identified in Test Area G.

A total of 345 trenches were excavated among the seven development areas, consisting of 322 systematically placed trenches (excavated by backhoe) and twenty-three discretionary trenches. These trenches varied in length from three to twenty-three meters with an average length of six meters (approximately eighteen feet). Approximately 1.2 miles of trenches were excavated for the purpose of determining if any cultural deposits, including burials, were present. In addition to the backhoe trenches, ten manual profiles were documented within previously excavated sand borrow pits in Test Area C.

An archaeologist monitored all mechanical trench excavations. The trenches were excavated using Komatsu PC 130 and Hitachi ZX200 excavators. Most trenches were excavated either to a basal limestone deposit or the water table. Two were terminated when human remains were identified (BT B-6-2 and BT D-2-1b) and two trenches were terminated when conditions made further excavation unfeasible (BT E-15-6 and F-3-4). Trenches that measured greater than 1.0 m in depth were widened and stepped for safety. Trench location was determined with a Magellan Mobile Mapper using Global Positioning System (GPS) data.

Following excavation, the trench walls were manually scraped to examine and document the stratigraphy. A profile drawing was prepared using the Munsell soil color notation system and U.S. Soil Conservation Service descriptive terminology. The depth, time and date when the water table was encountered was recorded, if present. If no intact cultural deposits were present, an average 1 meter-wide profile drawing was prepared depicting the representative stratigraphy. Larger sections of trench wall, and in some cases, the entire trench wall was documented when cultural deposits or unique atypical features or complex stratigraphy were encountered.

When cultural deposits were observed, these layers were carefully examined for portable remains. Collected remains were placed in paper bags labeled with the appropriate provenience information. When charcoal was encountered it was deposited in an aluminum foil pouch and placed in a layer bag. Following their documentation, the trenches were backfilled as expeditiously as possible. Following completion of fieldwork, analysis of all recovered remains and data followed standard archaeological methods. All recovered artifacts were analyzed to determine morphological type, condition/degree of completion and material. Metric measurements included weight, length, width, and thickness. Standard typological classifications were used for all artifacts. Food remains were identified to the Family level, or to the Genus/species level, when possible. Quantitative analysis included a determination of total weight and total number of fragments (TNF) per taxon. All cultural material and samples collected

during fieldwork are presented in the project Accession Record in Appendix D of the SAIS (see Appendix C).

Human remains were identified in three locations during the SAIS. These consist of *in situ* burials noted in trenches in Areas B and D, and a secondarily deposited human metatarsal identified on the surface of a sand pit in Area C. Trench excavations were immediately terminated when human remains were identified and the find was immediately reported to the SHPD. Profiles of the trenches were prepared and the remains carefully and respectfully documented. No photographs were taken of any burial or isolated human bone. The *in situ* burials were carefully backfilled following consultation with SHPD. After consultation with SHPD, the isolated and displaced human metatarsal was collected for temporary storage at the adjacent TBR office trailer to protect it because it was lying on the ground surface in an area frequented by hotel guests and the general public. The Kahuku Burial Committee was also consulted concerning identification of all human remains. Committee members provided appropriate cultural protocols.

Another SAIS fieldwork task was relocation and documentation of previously identified archaeological sites. This task sought to evaluate the current status of seven sites. These consist of sites that were previously assigned State Inventory of Historic Places (SIHP) site designations and ones that retain the original field temporary designations. The four SIHP sites are the Site 5791 OR&L railroad grade, a walled pool (Site 6421), and two stone walls (Sites 6424 and 6426). Sites with no prior SIHP site designation consist of Kahuku Army Airfield remnants, including a concrete structure (Site T-4), the Site T-2 wall and the Site T-3 cattle enclosure. The relocation effort confirmed the presence of the OR&L railroad grade (Site 5791), the Site T-4 military structure and portions of the Kahuku Army Airfield. Site T-4 and the airfield remnants were assigned SIHP site designations during this project. The remaining previously identified sites were determined to have been destroyed, presumably by golf course related construction activity.

During the mechanical clearing of transects for subsurface testing, it became apparent that there were a number of concrete structures and structural remains that were not documented during earlier surveys. The lack of documentation was likely because these remains are mostly World War II era military-related features that had not attained sufficient age (50 years) to be considered historic resources when the earlier surveys were conducted in late 1970s to mid-1980s. To rectify this situation, the seven test areas and adjacent undeveloped lands, Kahuku Point Archaeological Preserve and the Kawela Bay shoreline were subjected to 100% pedestrian archaeological survey prior to commencing subsurface testing.

F.1. d. Surface Survey

The pedestrian surface survey methodology involved walking survey transects spaced approximately 10 meters apart. Identified site locations were plotted with the aid of a hand-held Magellan Mobile Mapper GPS device using the NAD 83 datum. The accuracy of this GPS device for a single point is less than one meter. Intact or predominately intact structures were subjected to detailed recording consisting of mapping, preparing standardized site and feature forms and photographic documentation. Displaced structural remnants were described and photographed,

but no plan maps were made. Sites were flagged with pink and blue flagging tape and a metal site tag was placed at each site datum and the tag location was plotted on the site plan map.

F.1. e. Findings

The SAIS fieldwork documented extensive disturbance that has occurred throughout the Resort property. The land altering impacts to the project area (see Figure ~~2-30~~ 2-35) begins with historic cultivation of sugarcane that occurred throughout the inland portions of the project area. Coastal areas where sand was unsuitable for cultivation and areas that were too wet in the vicinity of Punahoʻolapa Marsh were the focus of World War II-era development including the construction and use of the expansive Kahuku Army Airfield complex (see Figure ~~2-31~~ 2-36) and the subsequent development of the Resort and golf course facilities.

F.1.e. [1] SURFACE SURVEY FINDINGS

The survey identified 29 surface sites with 35 features. These sites are summarized in Table 2-9. The features consist of 9 concrete structures, 8 concrete blocks, 5 concrete slabs, 3 asphalt pavements, 2 artifact scatters and one each of the following: transit bus, concrete cylinder, a pair of metal gateposts, metal tank, railroad grade, revetment, stone mound and wall. Feature function includes antenna support (8), foundation (4), gun position (4), transportation (3), trash disposal (2), storage (2), gate (1), livestock control (1), possible agriculture (1), possible light fixture base (1), pavement (1), runway remnant (1), water storage (1) and indeterminate (5). The majority of the sites are associated with the World War II era use of the area as an Army Airfield.

The surface sites were distributed among Test Areas A, E and F, the Kahuku Point Archaeological Preserve and the northern portion of Kawela Bay. No surface sites were present in Test Areas B, C, D or G. The absence of sites in these areas is due primarily to extensive ground altering activities associated with historic agriculture, ranching and golf course-related construction.

The SAIS Plan called for re-identification and evaluation of seven previously identified surface sites. These consist of the OR&L railroad grade, remnants of the Kahuku Army Airfield, the Site 6421 walled pool, the Site 6424 and 6426 rock walls, the Site T-2 wall, the Site T-3 cattle enclosure and the Site T-4 military structure (See Figure ~~2-31~~ 2-36). The OR&L railroad grade and the Kahuku Army Airfield runway were depicted on maps of the area by various researchers, but were never formally documented. Sites 6421, 6424 and 6426 were previously reported by Corbin (2003). Sites T-2, T-3 and T-4 were identified by Bath *et al.* (1984).

The surface survey relocated portions of the OR&L railroad grade (Site 5791) and portions of the Kahuku Army Airfield (Sites 7275-7278, 7280-7281). An additional previously identified site (Site T-5), consisting of a stone wall (Bath *et al.* 1984) was also relocated. This wall was recorded and assigned a SIHP Site designation (Site 7299). The remaining previously identified sites have been destroyed, presumably by golf course-related construction. Detailed descriptions of the surface sites identified during the SAIS are presented in the SAIS document in Appendix C, beginning on page 21.

Figure ~~2-30~~ 2-35: Aerial view of TBR property showing former extent of sugarcane fields

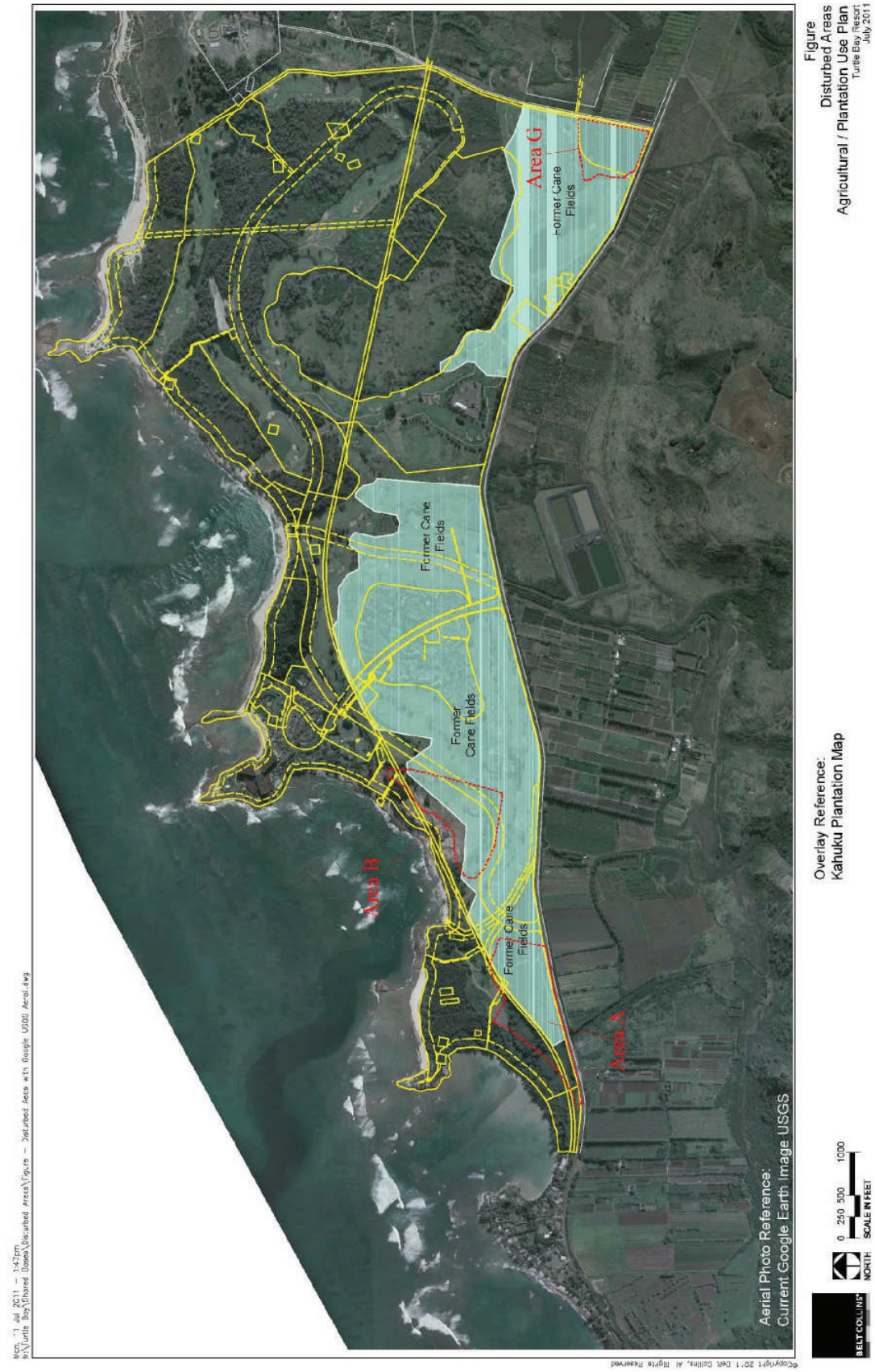


Figure ~~2-31~~ 2-36: Surface sites and Test Areas showing extent of Kahuku Army Airfield complex

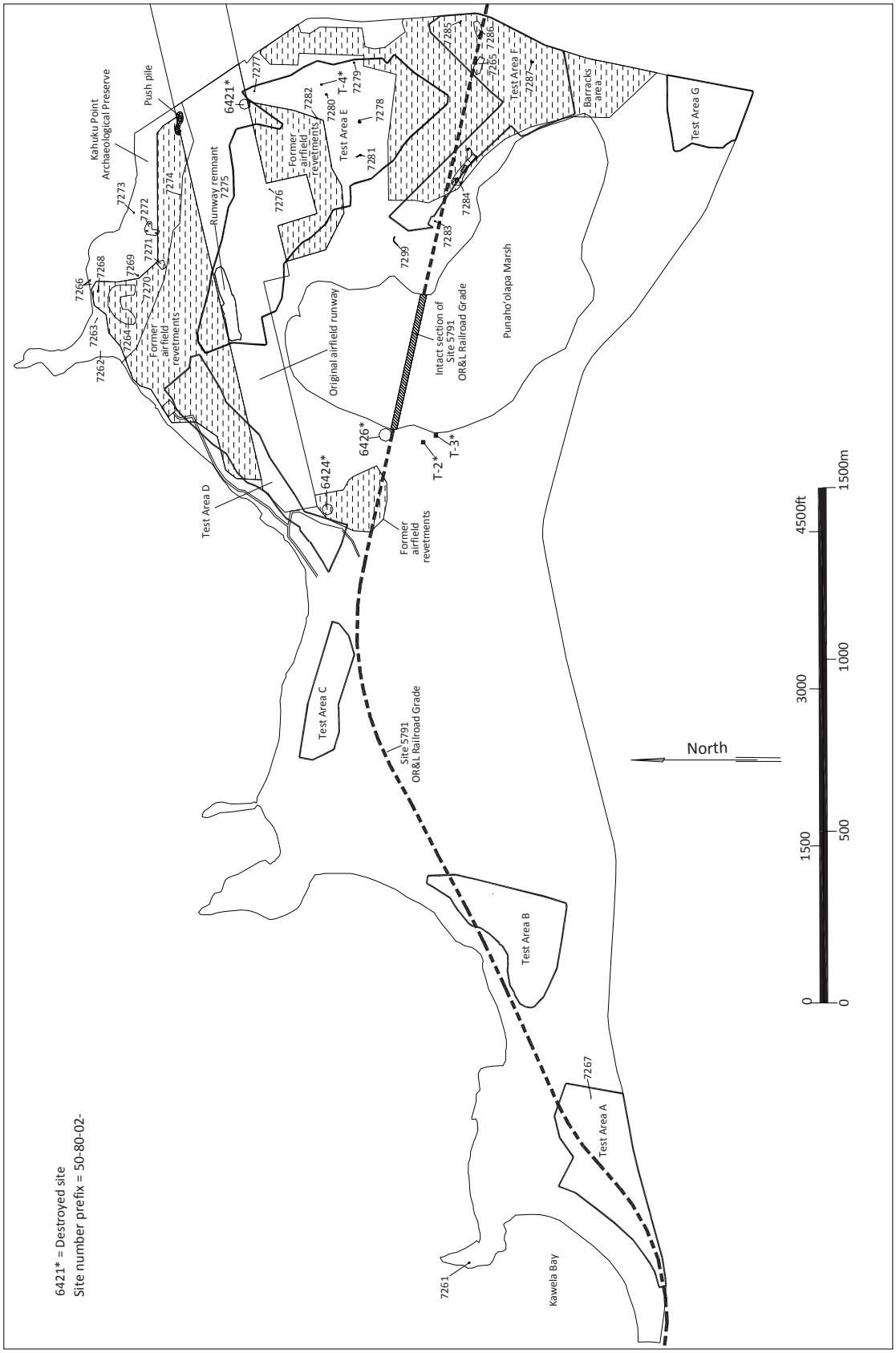


Table 2-9: Summary of identified sites

SIHP Site No.	Formal type	Function	Area	TMK	Age	No. of Features	Formal Type															Function																	H&A Temp Field No.
							Concrete structure	Cultural deposit	Concrete block	Concrete slab	Human remains	Asphalt area	Artifact scatter	Transit bus	Concrete cylinder	Metal posts	Metal tank	Railroad grade	Revetment	Stone mound	Wall	Habitation	Antenna support	Foundation	Gun position	Burial	Transportation	Trash disposal	Storage	Gate	Livestock control	Possible agriculture	Possible light fixture base	Pavement	Runway remnant	Water storage	Indeterminate	
4488	Human remains	Burial	C	5-7-01:013	Prehistoric/ early historic	1					1															1													
5791	OR&L Railroad grade	Transportation	A, B, F, Punaho'olapa Marsh	5-7-01:033	1899-1946	1												1									1												-
7261	Concrete structure	Gun position	Kawela Bay	5-7-06:23	1942-1946	1	1																		1														69
7262	Concrete slab	Indeterminate	Kahuku Point	5-7-01:033	1942-1946	1				1																												1	58
7263	Concrete pier block	Antenna support?	Kahuku Point	5-7-01:033	1942-1946	1			1													1																	60
7264	Revetment	Storage	Kahuku Point	5-7-01:033	1942-1946	1													1									1											70
7265	Concrete slab	Foundation	F	5-7-01:033	1942-1946	1				1														1															71
7266	Concrete pier blocks	Antenna support?	Kahuku Point	5-7-01:033	1942-1946	3			3													3																	63
7267	Transit bus	Transportation	A	5-7-01:033	1950s-1973	1								1													1												68
7268	Concrete structure	Indeterminate	Kahuku Point	5-7-01:033	1942-1946	1	1																															1	61
7269	Concrete structure remnant	Indeterminate	Kahuku Point	5-7-01:033	1942-1946	1	1																															1	56
7270	Metal tank	Storage	Kahuku Point	5-7-01:033	1942-1946	1											1											1										57
7271	Asphalt area	Transportation	Kahuku Point	5-7-01:033	1942-1946	1						1															1												51
7272	Concrete structure	Gun position?	Kahuku Point	5-7-01:033	1942-1946	1	1																		1														52, 55
7273	Concrete block	Indeterminate	Kahuku Point	5-7-01:033	1942-1946	1			1																													1	64
7274	Concrete cylinder	Possible light fixture	Kahuku Point	5-6-03:41	1942-1946	1									1																	1						53
7275	Asphalt area	Runway remnant	E	5-7-01:033	1942-1946	1						1																						1					6
7276	Concrete block	Anchor base	E	5-6-03:41	1942-1946	1			1													1																	10
7277	Concrete slab	Foundation	E	5-6-03:41	1942-1946	1				1														1															67
7278	Concrete structure	Gun position?	E	5-6-03:41	1942-1946	1	1																															1	18
7279	Concrete block	Antenna support?	E	5-6-03:41	1933	1			1													1																	19
7280	Concrete structure	Antenna support?	E	5-6-03:41	1930s	1	1															1																	65
7281	Concrete structure	Gun position?	E	5-6-03:41	1942-1946	1	1																		1														49
7282	Concrete block	Antenna support?	E	5-6-03:41	1930s	1			1													1																	46
7283	Stone mound	Possible agricultural	F	5-6-03:44	Prehistoric	1														1												1							37
7284	Complex	Barracks complex	F	5-6-03:44	1942-1946	5	1			2			2											2				2								1			32, 34, 35,
7285	Metal posts	Gate	F	5-6-03:44	1942-1946	1										1														1									21
7286	Asphalt area	Pavement	F	5-6-03:44	1942-1946	1						1																						1					20
7287	Concrete structures	Gun position?	F	5-6-03:44	1942-1946	1	1																		1														25
7288	Human remains	Burial	B	5-7-01:020	Prehistoric	1					1															1													BT-B-6-2
7289	Cultural deposit with human remains	Habitation/Burial	D	5-7-01:01	Prehistoric	2		1			1											1				1													BTs D-2-1, 2-1b, 2-1d
7290	Cultural deposit	Habitation	D	5-7-01:01	Prehistoric	1		1														1																	BTs D-5-, 6-1, 7-1
7291	Cultural deposit	Habitation	D	5-7-01:033	Prehistoric	1		1														1																	BTs D-12-2, 13-3, 14-2, 14-3, 15-3
7292	Cultural deposit	Habitation	E	5-7-1:033	Prehistoric	1		1														1																	BT-E-2-3, 3-2, 3-3, 4-1, 4-2, 4-2b, 4-3
7293	Cultural deposit	Habitation	E	5-7-1:033	Prehistoric	1		1														1																	BT-E-10-2
7294	Cultural deposit	Habitation	E	5-7-1:033	Prehistoric	1		1														1																	BT-E-13-6, 13-6b, 13-6c, 13-6d, 136e
7295	Cultural deposit	Habitation	E	5-6-03:041	Prehistoric	1		1														1																	BT-E-15-3, 15-3a, 15-3b, 15-3d
7296	Cultural deposit	Habitation	E	5-6-03:044	Prehistoric	1		1														1																	BT-E-22-4
7299	Wall	Livestock control	Punaho'olapa Marsh	5-6-03:044	pre-1900	1															1									1									5
						46	**9**	**8**	**8**	**5**	**3**	**3**	**2**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**8**	**8**	**4**	**4**	**3**	**3**	**2**	**2**	**1**	**1**	**1**	**1**	**1**	**1**	**5**	

F.1.e. [2] SUBSURFACE SURVEY FINDINGS

Of the 345 trenches excavated, ten subsurface sites were identified during the subsurface testing phase of the project. These consist of seven prehistoric cultural deposits (Sites 7290 and 7291 in Area D; Sites 7292-7296 in Area E), two prehistoric cultural deposits with human burials (Site 7288 in Area B; Site 7289 in Area D) and one isolated human skeletal element (Site 4488; Area C). In addition, widespread evidence of tsunami-related deposits, fill episodes (the depositing of fill material) associated with military and Resort related land modifications, and evidence of plantation era features were identified. Fill is present in most test areas as a result of prior land modification during World War II in the vicinity of the Kahuku Army Air Field and barracks, and subsequently during the development of Resort facilities.

Detailed descriptions of each trench excavation are presented in the SAIS report, beginning on page 76. The research design provided for a sampling strategy of two trenches per acre based on the previously mapped locations of Jaucus Sand and Pearl Harbor Clay deposits and one trench per acre in areas where these deposits do not occur (Areas A and G). Based on the results of the sampling strategy, the areal extent of soil deposits with increased potential to contain significant intact subsurface cultural deposits can be identified. Data collected during subsurface testing will be a valuable tool for future planning and development. Individual trench profiles are summarily illustrated in Appendix B of the SAIS, while specific details of individual trench stratigraphy and sedimentology are tabulated in Appendix C of the SAIS. Cultural materials recovered and analyzed during documentation of subsurface cultural deposits are tabulated in the project Accession Record in Appendix D of the SAIS. The raw data presented in the SAIS appendices form the scientific basis for the inferences, observation and recommendations made in the SAIS.

F.1.e. [3] CONCLUSIONS

The SAIS Plan made predictions regarding expected site types based on previous archaeological research and historical documentary evidence. As expected, prehistoric to early historic remains documented in the SEIS Lands include subsurface cultural deposits and subsurface features including a house floor, fire pit, post molds, and burials. Also as expected, historic remains dating to the 1800s to 1900s were documented, including the OR&L railroad and at least one probable Kahuku Ranch-related wall. Other expected sites are the extensive WW II military-related remains of Kahuku Army Airfield including the main runway, revetments, defensive fortifications and a variety of support facilities.

As previously noted, the SAIS fieldwork documented the extensive disturbance that has occurred throughout the Resort property. Despite this extensive disturbance, extant surface sites were documented in Test Areas E and F, the Kahuku Point Preserve, and shore of Kawela Bay; and subsurface archaeological remains were identified in Test Areas B, D and E.

The SAIS Plan guided-surface and -subsurface surveys documented thirty-nine sites consisting of 10 traditional Hawaiian habitation sites, 2-3 sites dating to the late 1800s, 3 sites associated with 1930s operation of Marconi Wireless Station, 22 sites that were part of the United States

Figure ~~2-32~~ 2-37: ~~Summary of identified sites~~ Location of sites Identified during SAIS Fieldwork

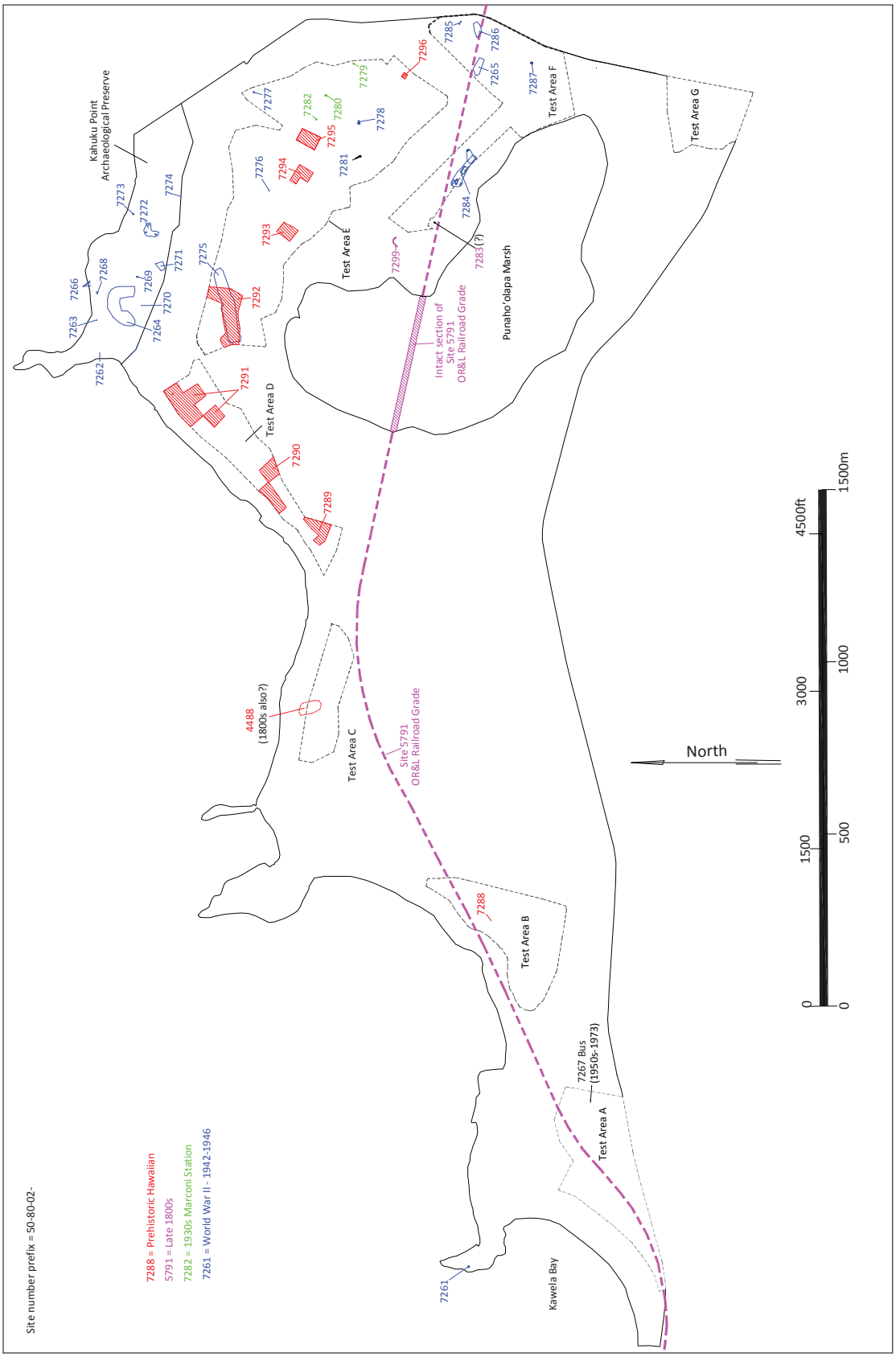


Table 2-10: SAIS identified and relocated sites

SIHP Site No.	Formal type	Function	Area	Age	No. of Features
4488*	Human remains	Burial	C	Prehistoric and early historic	1
5791*	OR&L Railroad grade	Transportation	Punaho'olapa Marsh	1899-1946	1
7261	Concrete structure	Gun position	Kawela Bay	1942-1946	1
7262	Concrete slab	Indeterminate	Kahuku Point	1942-1946	1
7263	Concrete pier block	Antenna support?	Kahuku Point	1942-1946	1
7264	Revetment	Storage	Kahuku Point	1942-1946	1
7265	Concrete slab	Foundation	F	1942-1946	1
7266	Concrete pier blocks	Antenna support?	Kahuku Point	1942-1946	3
7267	Transit Bus	Transportation	A	1950s-1973	1
7268	Concrete structure	Indeterminate	Kahuku Point	1942-1946	1
7269	Concrete structure remnant	Indeterminate	Kahuku Point	1942-1946	1
7270	Metal tank	Storage	Kahuku Point	1942-1946	1
7271	Asphalt area	Transportation	Kahuku Point	1942-1946	1
7272	Concrete structure	Gun position?	Kahuku Point	1942-1946	1
7273	Concrete block	Indeterminate	Kahuku Point	1942-1946	1
7274	Concrete cylinder	Possible light fixture base	Kahuku Point	1942-1946	1
7275	Asphalt area	Runway remnant	E	1942-1946	1
7276	Concrete block	Anchor base	E	1942-1946	1
7277	Concrete slab	Foundation	E	1942-1946	1
7278	Concrete structure	Gun position?	E	1942-1946	1
7279	Concrete block	Antenna support?	E	1933	1
7280	Concrete structure	Antenna support?	E	1930s	1
7281	Concrete structure	Gun position?	E	1942-1946	1
7282	Concrete block	Antenna support?	E	1930s ?	1
7283	Stone mound	Possible agricultural	F	Prehistoric	1
7284	Complex	Barracks complex	F	1942-1946	5
7285	Metal posts	Gate	F	1942-1946	1
7286	Asphalt area	Pavement	F	1942-1946	1
7287	Concrete structures	Gun position?	F	1942-1946	1
7288	Human remains	Burial	B	Prehistoric	1
7289	Cultural deposit w/ burial	Habitation/Burial	D	Prehistoric	2
7290	Cultural deposit	Habitation	D	Prehistoric	1
7291	Cultural deposit	Habitation	D	Prehistoric	1
7292	Cultural deposit	Habitation	E	Prehistoric	1
7293	Cultural deposit	Habitation	E	Prehistoric	1
7294	Cultural deposit	Habitation	E	Prehistoric	1
7295	Cultural deposit	Habitation	E	Prehistoric	1
7296	Cultural deposit	Habitation	E	Prehistoric	1
7299*	Wall	Livestock control	Punaho'olapa Marsh	pre-1900	1

*Relocated Sites

Table 2-11: Previously identified sites

SIHP Site No.	Other Site No. /Name	Site Type	McAllister (1933)	Dye (1977)	Bath et al. (1984)	Neller (1984)	Walker et al. (1988a)	Walker et al. (1988b)	Davis et al. (1986)	Kennedy (1992)	Kennedy (1996)	Sullivan (1990, 1991), Dunn (1991), Donohue (1991)	Haun and Henry (2001)	Corbin (2003)	Current Status
4488	-	Cultural deposit with burials								X	X				Burials removed and reinterred
5791/ 9714	-	Railroad Grade											X		Intact segment present across Punaho'olapa Marsh
6410	-	Cultural deposit with burials			X		X							X	Mitigated through Data Recovery; Burials removed and reinterred
6411	T-1	Cultural deposit with burials		X	X	X		X						X	Preserved
6412	-	Cultural deposit in Marsh with 3 sinkholes		X	X				X						Preserved
6413	TM-1	Cultural deposit										X		X	Mitigated through Data Recovery
6414	TM-2	Cultural deposit										X		X	Mitigated through Data Recovery
6415	TM-3	Enclosure										X		X	Mitigated through Data Recovery
6416	TM-4	Cultural deposit										X		X	Mitigated through Data Recovery
6417	TM-5	Cultural deposit										X		X	Mitigated through Data Recovery
6418	TM-6	Cultural deposit										X		X	Mitigated through Data Recovery
6419	TM-7	Cultural deposit										X		X	Mitigated through Data Recovery
6420	TM-8	Alignment										X		X	Mitigated through Data Recovery
6421	TM-9	3 pools with walls										X		X	Destroyed prior to SAIS
6422	TM-10	Cultural deposit										X		X	Mitigated through Data Recovery
6423	TM-11	Cultural deposit with burials										X		X	Mitigated through Data Recovery; Burials removed and reinterred
6424	TM-12	Stone wall										X		X	Destroyed prior to SAIS
6425	TM-13	Cultural deposit										X		X	Mitigated through Data Recovery
6426	TM-14	Stone wall										X		X	Destroyed prior to SAIS
7275*	Kahuku Army Air Field														Intact runway identified in Test Areas D and E
7299*	T-5	Stone wall			X										Preserved as part of Site 6412
	262	Kukio Pond	X					X							Destroyed prior to 1977
	T-2	Stone wall			X										Destroyed prior to SAIS
	T-3	Cattle enclosure			X										Destroyed prior to SAIS
	T-4	Antenna Support?			X										Destroyed prior to SAIS
	T-7	Gray sand layer in dune (determined to be historic)		X	X										Status undetermined, located within coastal setback

Army Airfield at Kahuku, and an abandoned 1950s Honolulu City and County transit bus (see Figure ~~2-32~~ 2-37 and Table 2-10. These sites include four sites identified by prior studies, including three that were not formally assigned site numbers by previous Resort studies (sites 5791, 7275, 7299; in Table 2-11).

Prehistoric Sites

The ten traditional Hawaiian sites documented are all likely prehistoric in age. Human remains were identified at three of these sites. Two sites (7288 and 7289) have intact, primary burials. The third site is Site 4488 where an isolated skeletal element was identified on the ground surface. Human remains representing at least 8 individual burials were previously discovered and recovered from Site 4488. At least one of these burials is likely historic (based on probable coffin remains consisting of wood fragments and square nails) and it is probable that most of the other burials are prehistoric. One site with a burial (7289) and seven other sites (7290-7296) have intact subsurface cultural deposits indicative of habitation-related occupations.

Archaeological and historical background research presented in the SAIS Plan (Haun *et al.* 2011:79-81) indicates that in late prehistory the Kahuku Point vicinity was well populated and extensively cultivated. There were permanent residences scattered along the coast. Larger settlements were present in areas such as Kahuku and Kawela Bay where sheltered ocean access was available. Temporary habitation, probably associated with agricultural activity and natural resource exploitation, occurred in inland overhangs, caves and walled shelters. Fishponds were present in sheltered areas and salt was collected from depressions along the shore. Fishing shrines and rock formations of legendary, and probably ritual significance were scattered along the coast. *Heiau* were sited on prominent topographic features overlooking the coast. Sand dunes and cliff face caves were used for burial.

Agricultural use included cultivation of taro in pond fields wherever topographically suitable locations could be provided with sufficient freshwater. The abundance of freshwater around Punahoʻolapa Marsh provided ideal conditions for wet taro cultivation with minimal labor investment compared to pond field development of stream drainages. Dryland gardens were present around the coastal residences and on the lower volcanic slopes where bananas, sweet potatoes, *wauke,* sugar cane, gourds, breadfruit, and other crops were cultivated. Upland areas were also farmed. Food remains from archaeological excavations include dog, pig, birds, and a wide variety of fish and marine invertebrates, representing activities such as animal husbandry, hunting, fishing and gathering.

Previous archaeological studies of Resort property produced 77 radiocarbon age range determinations on charcoal from cultural deposits that fall within the timeframes associated with Polynesian cultural occupation and later (Haun *et al.* 2011:71-77). Of these 77 results, 23 (30%) are from the Kawela Bay Archaeological Area (Site 6410), 25 (32%) are from the Kahuku Point Archaeological Preserve (Site 6411), and 29 (38%) are from Punahoʻolapa Marsh (Site 6412) and its environs (Sites 6414, 6416, 6417, 6422, and 6423). The earliest cultural deposits (i.e. prior to c. A.D. 1000) are to be found on the periphery of the Marsh. These early age ranges support the inference that the wetland was a highly desirable locale for initial settlement. The earliest cultural age range determinations were recovered from Site 6412 where a sample obtained from the east trench spans A.D. 645 to 979 and a sample from the north trench spans A.D. 785 to 1160 (Figure ~~2-33~~ 2-38). A second early cluster was obtained within and east of the Marsh from Site 6423. Age ranges from Site 6423 span A.D. 793 to ~~1105~~ 110.

Figure ~~2-33~~ 2-38: Pre-1800 chronology of occupation within project area

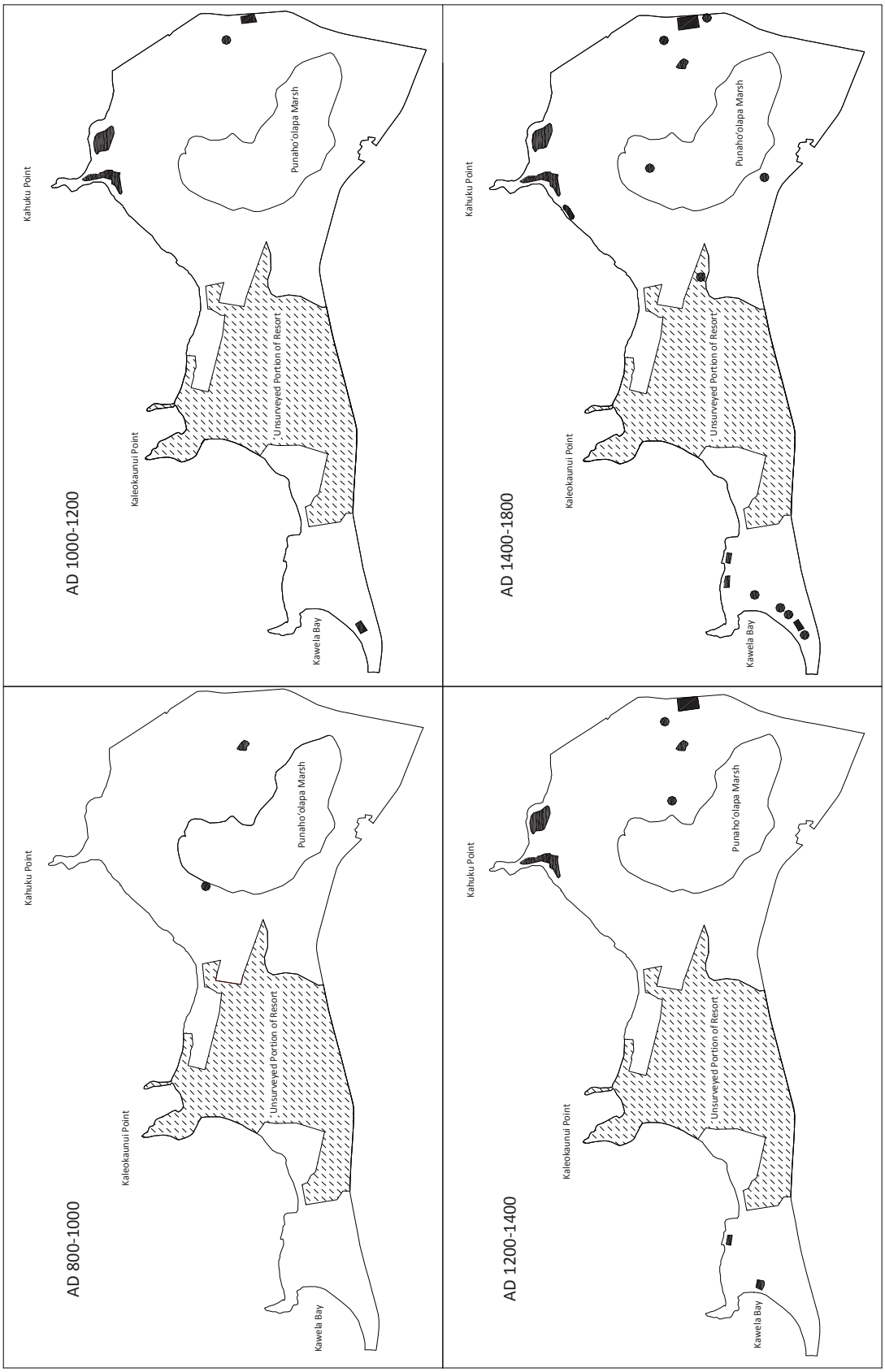


Figure 160. Pre-1800 chronology of occupation within project area

The A.D. 1000 to 1200-age ranges show continued use of the area east of Punahoʻolapa Marsh, along with settlements in the sand dunes east and west of Kahuku Point and around Kawela Bay. Settlement in these areas intensified in the period between A.D. 1200 and 1400. The earliest cultural deposits sampled along Turtle Bay post- date A.D. 1200. Sites dating to the period between A.D. 1400 to 1600 have been documented on the west and southwest of Punahoʻolapa Marsh, as well as southwest of Kahuku Point. Use of the area east of Punahoʻolapa Marsh, Kawela Bay and Kahuku Point continued as a population focal point into the A.D. 1600 to 1800s.

More than 100 Land Commission Awards (LCA) claims were awarded in the mid-1800s in the area spanning the region from Kawela to Kahuku (ibid.: 2011:17-27). Thirty-five LCA claims with at least 24 house lots were awarded in the project area. The LCA claim testimonies refer to numerous *loʻi* (taro pond fields) and cultivated plots of bananas, sweet potatoes, *wauke* (paper mulberry), sugar cane, bitter melon, *noni* (Morinda *citrifolia)* and an orange tree. Other named plants are *hala* (Pandanus) groves and *koa* trees for canoes. A brackish spring and a fishery also are mentioned in the testimonies.

Figure ~~2-34~~ 2-39 depicts the distribution of traditional Hawaiian sites and Figure ~~2-35~~ 2-40 illustrates the distribution of mid-1800s LCAs. The two distributions show a high degree of correlation and demonstrate that the historic LCA pattern reflects the earlier prehistoric settlement pattern. The only exception to this correlation is the lack of prehistoric sites on the coast immediately south of Kaleokaunui (Kuilima) Point where five LCAs are present. It is likely that prehistoric sites were also present there, but were destroyed by 1800s-1900s sugarcane cultivation and early 1970s resort development that occurred before any systematic archaeological surveys were conducted. The late prehistoric to early historic (mid-1800s) settlement pattern likely extends back to at least the 13th Century based on radio-carbon dating results (see Figure ~~2-37~~ 2-42) and potentially to the 11th Century.

The traditional Hawaiian sites primarily consist of subsurface cultural deposits. Previously identified Hawaiian sites at Kawela Bay, Kahuku Point and the areas surrounding Punahoʻolapa Marsh were, with the exception of Kahuku Point, previously mitigated through data recovery. After initial data recovery work the landowner elected to preserve the Kahuku Point site. The data recovery work documented stratified, cultural deposits at Kawela Bay and Kahuku Point that contained numerous soil features including post molds, burials and hearths; and abundant and diverse assemblages of artifacts and food remains. Data recovery at the inland sites generally encountered either isolated subsurface features or remnant subsurface deposits with limited quantities of food remains and artifacts.

The eight sites with cultural deposits documented by the SAIS study comprise more than 32,000 square meters and are situated in the remnant dunes along the coast southwest of Kahuku Point (Test Area D) and the lowlands northeast of Punahoʻolapa Marsh (Test Area E). The deposits in the dunes are usually stratified with two cultural layers and the inland ones typically have a single cultural deposit that was vertically truncated by World War II or subsequent land modification. The very limited sampling of these subsurface deposits recovered artifacts (basalt and volcanic glass stone debitage and tools), charcoal, *kukui* nutshells, and food remains

Figure ~~2-34~~ 2-39: Prehistoric Sites

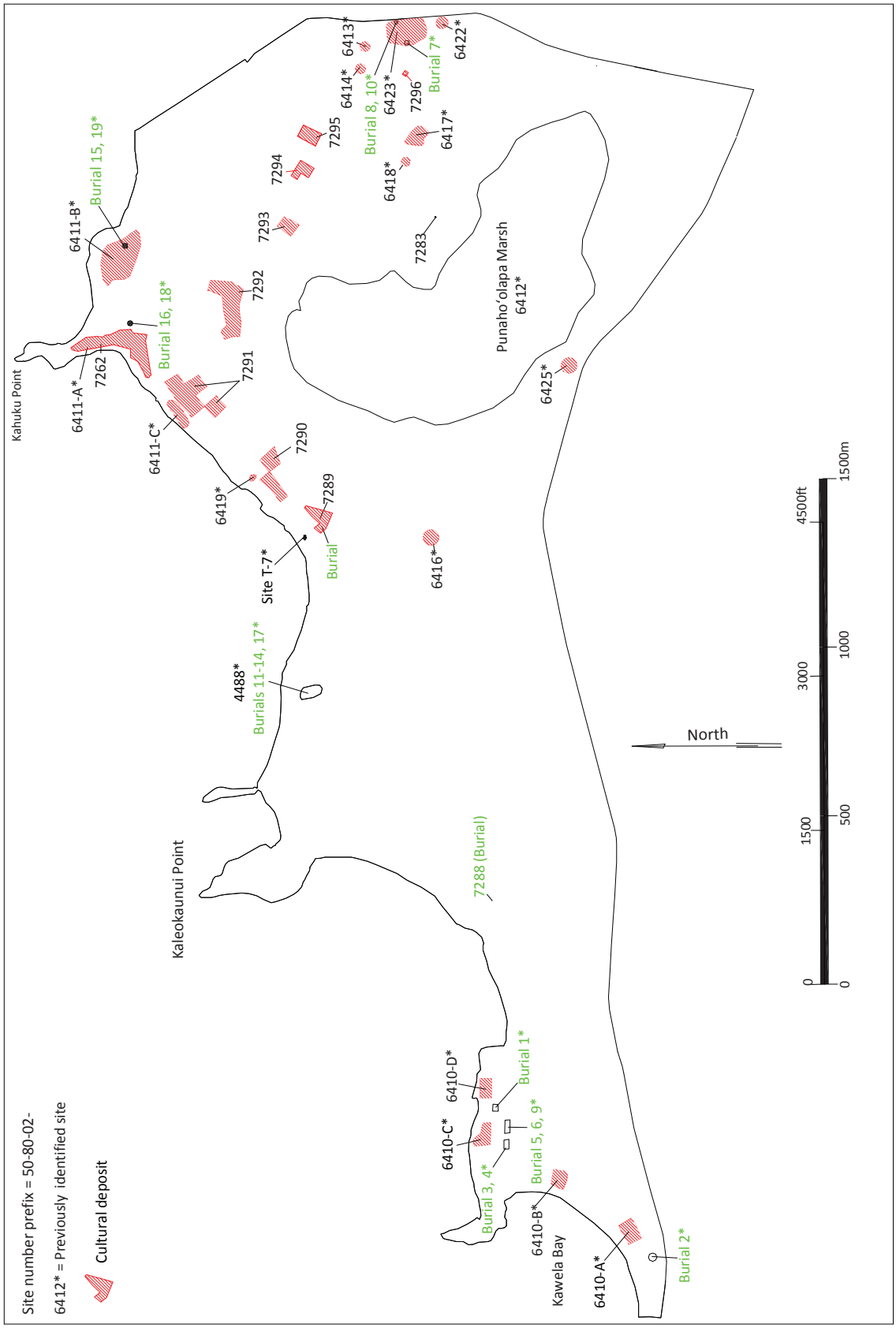
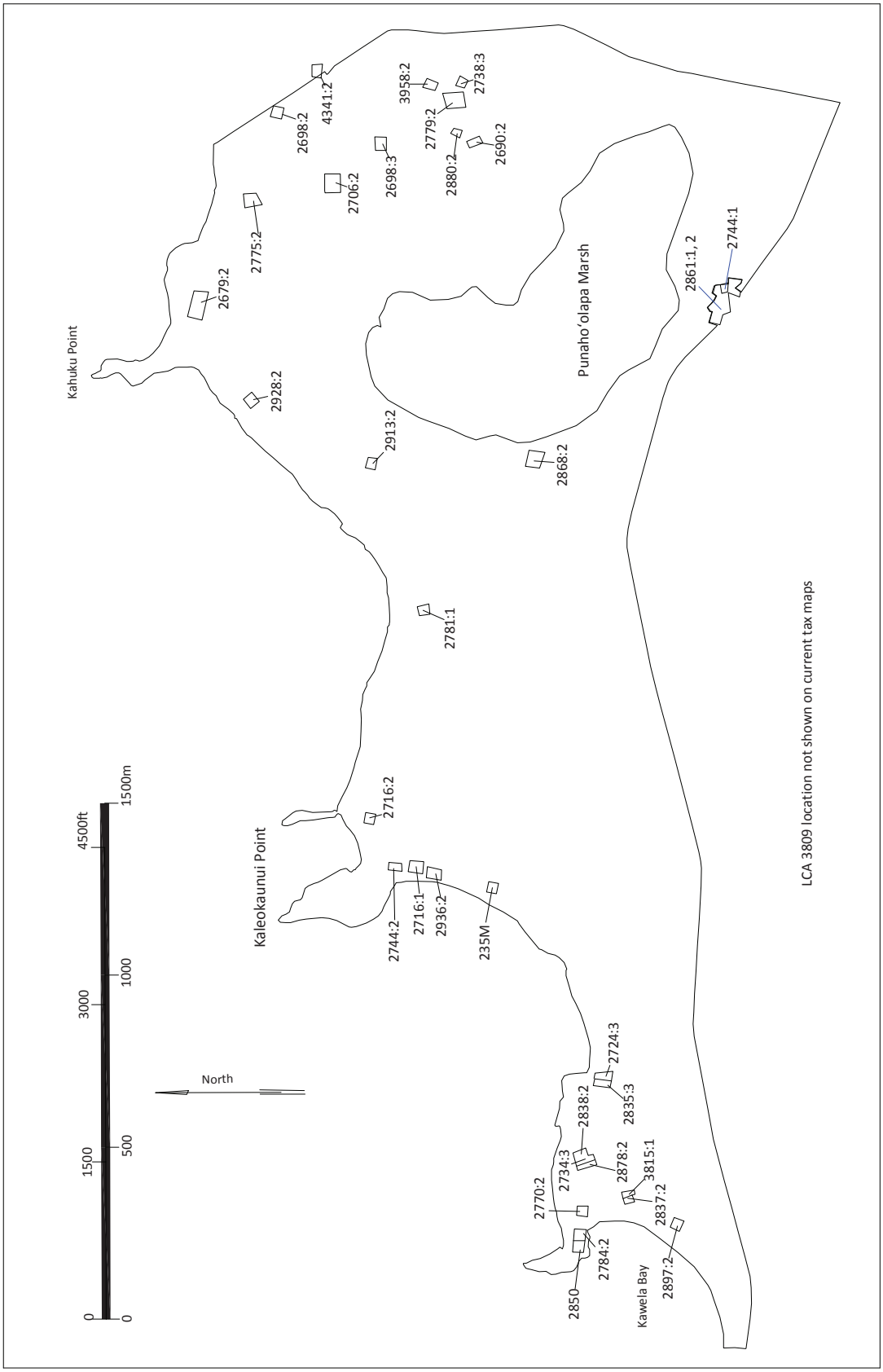


Figure ~~2-35~~ 2-40: Land commission awards within project area



including marine invertebrates (gastropods, bivalves, sea urchins, crustacean), fish bone and terrestrial vertebrate bone (dog, pig, bird). These cultural deposits reflect traditional Hawaiian habitation. Mortuary use was also documented. In Test Area B, an intact primary burial of probable Hawaiian ancestry was identified during subsurface testing (Site 7288). An isolated human metatarsal was identified in Test Area C that is likely from one of the eight individual burials that were previously discovered at Site 4488. Another intact primary burial was identified in Test Area D at Site 7289. This brings the total number of burials identified at the Resort to 27 (Table 2-12). The majority of the burials were found in coastal Jaucus Sand deposits near Kawela Bay and Kahuku Point (see Figure ~~2-38~~ 2-43). Three burials (Nos. 7-10) were discovered during archaeological monitoring in Pearl Harbor Clay east of Punahoʻolapa Marsh in Site 6423.

The SAIS subsurface testing consisted of both high density (2 trenches per acre) and low density (1 trench per acre) testing with high intensity testing for all Jaucus Sand and Pearl Harbor Clay sediments. All of the human remains identified during testing were encountered in Jaucus Sand. While traditional Hawaiian burials are potentially present in numerous soil types and topographic settings of sufficient age and integrity, there is an increased potential for such remains to be encountered in areas of intact Jaucus Sand deposits. In addition to burials there is an increased potential to encounter cultural deposits and other subsurface features such as post molds and hearths in intact Jaucus Sand deposits as well as intact Pearl Harbor Clay deposits.

Based on the density of test trenches for these soil types, the areal extent of any potential additional cultural deposits would be less than one half acre, and likely much smaller, consisting of isolated remnant deposits and truncated subsurface features. Following is an assessment of the future likelihood of additional archaeological finds.

Test Area A has a low potential for encountering intact subsurface cultural deposits or human remains during future excavations based on the results of subsurface testing. Any potential cultural deposits in Area A would be confined to the alluvial sediments overlying the marine-deposited sand. The alluvial deposits are no more than 0.66 m thick and most are substantially less, but the average thickness is 0.37 m. The alluvial deposits are surficial in some places and in others are buried by fill. Testing documented that the entire area has been disturbed by historic agricultural activity that would have destroyed the physical integrity of surficial prehistoric cultural deposits. Prehistoric agricultural use of the alluvial land along Kawela Bay is probable, but evidence for agricultural use is negligible.

Test Area B was formerly used as the staging area for equipment and material during construction of the Turtle Bay hotel and is currently used for generalized recreation-related activities, including horse stables and pasture. Most of the surface is relatively flat and grass-covered, punctuated by clumps of trees around the Test Area boundary, with a perceptible but gentle rise toward the shore. The relatively flat surface lacks visual evidence of the presence of deeply buried sediments. In fact, the limestone substrate at the south end is as shallow as 16 cm below the surface and overlain by minimal alluvial deposition. Trenches across the *mauka* half

Table 2-12: Summary of burials identified in TBR property

Site Number	Burial Number	Location	Number of Burials	Researchers	Description	Final Disposition of Remains
4488*	11-14, 17	West side of Kaihalala Bay - Test Area C	8	Kennedy (1992), Maly and Rosendahl (1992), Carson *et al.* (1996, 1999), Haun et al. (2012)	Burials 11-14 consist of 4 disturbed burials (3 sub-adults, 1 adult female) removed from dune south of Kulima Point (Kennedy 1992). Disturbed remains of 3+ adults and 1 bone from sub-adult noted by Carson *et al.* (1996, 1999) in same area and designated as Burial 17. Wood and nails suggesting a coffin were found in associated with one set of the Burial 17 remains. Burials 11-14 reinterred following Maly and Rosendahl (1992) BTP. Burial 17 curated with SHPD in 1996 and subsequently reinterred. Isolated metatarsal identified during SAIS	Burials 11-14, 17 Reinterred, Treatment of metatarsal to be determined by O'ahu Island Burial Council (OIBC)
6410	1	TU-20, Makai Test Area A	1	Bath et al. (1984), Walker et al. (1988a), Jensen (1989), Maly and Rosendahl (1992), Kalima (1993)	Adult female burial in wooden coffin within stone-lined cyst noted 1st by Bath et al. (1984), then Walker et al. (1988a). Burial disinterred following guidelines in (1989b) mitigation program. Osteological analysis by conducted by Kalima (1993). Burial reinterred at Reinterment Site as specified in Maly and Rosendahl (1992) Burial Treatment Plan (BTP).	Reinterred
6410	2	TU-9	1	Walker et al. (1988a), Jensen (1989), Maly and Rosendahl (1992), Kalima (1993)	Adult male burial in flexed position noted in pit feature (HF-45) by Walker *et al.* (1988a). Burial disinterred as part of Jensen (1989b) mitigation program. Osteological analysis by Kalima (1993). Burial reinterred following Maly and Rosendahl (1992) BTP.	Reinterred
6410	3, 4, 5, 6, 9	Makai Test Area A	5	Sullivan (1991), Jensen (1989), Maly and Rosendahl (1992), Kalima (1993)	Human remains noted during monitoring of grading for Hotel H-2. Two clusters of two burials found 15 m apart. Burial 3 is a juvenile, Burial 4 is a infant, Burials 5 and 6 are adults. Burials disinterred following guidelines in Jensen (1989b) mitigation plan. During osteological analysis of Burials 5 and 6 by Kalima (1993), single humerous of third individual was noted, designated as Burial 9. Burial reinterred following Maly and Rosendahl (1992) BTP.	Reinterred
6423	7	BT-1, TUs 11 and 13, East side TBR Property	1	Sullivan (1991), Jensen (1989b), Maly and Rosendahl (1992), Kalima (1993)	Human remains noted during monitoring at Site 6423 area, found within a natural sinkhole feature used as a burial pit (HF-12). Cranium and infracranial skeletal remains interpreted as those of female adult from 25 to 30 years of age. Burials disinterred following guidelines in Jensen (1989b) mitigation plan and analysis conducted by Kalima (1993). Burial reinterred following Maly and Rosendahl (1992) BTP.	Reinterred
6423	8, 10	TU-14, East side TBR Property	2	Sullivan (1991), Jensen (1989b), Maly and Rosendahl (1992), Kalima (1993)	Human remains noted during monitoring at Site 6423 area, beneath resort access road and west fork of Marconi Road. Remains were partially articulated and are those of adult female. Burials disinterred following guidelines in Jensen (1989b) mitigation plan and osteological analysis conducted by Kalima (1993). During analysis, fragmentary remains of an additonal sub-adult were found and designated as Burial 10. Both sets of remains reinterred following Maly and Rosendahl (1992) BTP.	Reinterred
6411	15, 19	East Kahuku Point Burial Area	5	Neller (1984), Walker *et al.* (1988b), Maly and Rosendahl (1992)	Burial 15 noted in dunes east of Kahuku Point was exhumed and examined by SHPD (Neller (1984) and determined to be two complete skeletons and one partial skeleton. Walker *et al.* (1988b) identified two burials (Burial 19) in pits in TU-2 in Area B. Burial 19 was re-buried in original location.	Reinterred (Burial 15), Left *in situ* (Burial 19)
6411	16, 18	West Kahuku Point Burial Area	2	Neller (1989), Walker *et al.* (1988b), Maly and Rosendahl (1992)	Burial 16 noted in dunes to west of Kahuku Point and exhumed by Honolulu Police. Remains were subsequently examined by SHPD (Neller (1989). Burial 18 identified by Walker *et al.* (1988b) in TU-24 in Area A. Burial 18 was re-buried in its original location.	Reinterred (Burial 16), Left *in situ* (Burial 18)
7288	-	Test Area B	1	Haun et al. 2012	Burial identified during trenching in Test Area B in BT-B-6-2 . Primary sub-adult burial, estimated age of 6 to 8 years, undetermined gender. Displaced remains reburied in original location	To be determined by OIBC
7289	-	Test Area D	1	Haun et al. 2012	Burial identified during trenching in Test Area D in BT-D-2-1b . Complete adult male primary burial. Displaced remains reburied in original location	To be determined by OIBC
		Total	**27**			

4488* - isolated metatarsal likely element of a previous identified burial

of Test Area B encountered abundant evidence of fill deposits, extending 1.80 meters deep in some places. It is on the *makai* side of Test Area A that aeolian sand deposits exceed 2.5 m and are capped by marine-deposited sand. This area constitutes the back slope of the coastal dune. Prior to development, alluvial sediments behind the bay front were covered by aeolian sand. Episodically deposited marine sand covered the dune and some alluvial deposits on the *mauka* side of the dune.

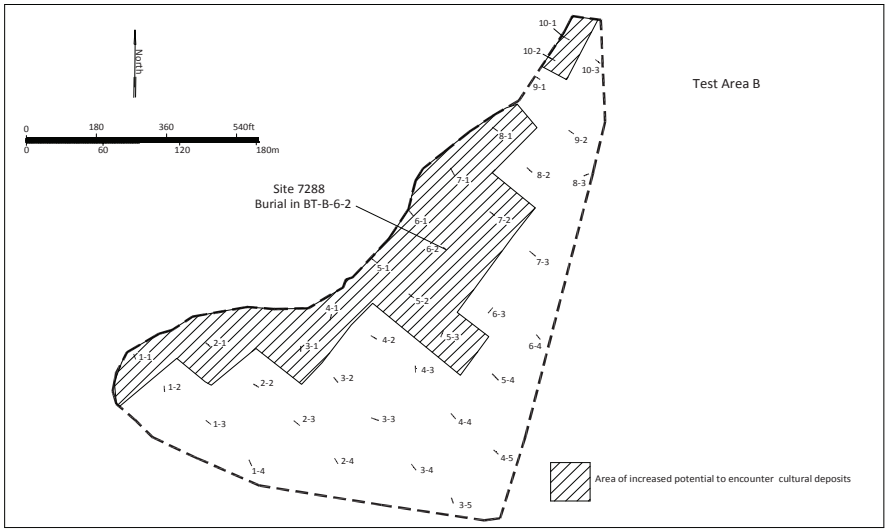
An intact subsurface human burial (Site 7288) was encountered in an aeolian sand deposit in Test Area B. The topographical setting of the intact burial at Site 7288 and location of sand deposits is the key to identifying areas of increased potential for encountering additional burials in Test Area B. The burial was preserved in an aeolian dune deposit 44 cm below the surface. The aeolian deposit was capped by about 25 centimeters of marine deposited sand. There was no evidence of an associated cultural deposit, *per se*. That is, no dark staining, no charcoal flecks, no cultural material other than the burial exposed in the trench wall. Yet, cultural materials characteristic of habitation deposits were recovered from the screened excavation deposits containing mixed Layer I and II sand while recovering bone fragments. The cultural materials are either associated with the burial or with the marine deposited sand, possibly in secondary context, since the burial is presumably in a pit underlying a cultural surface. In either case, intact sand deposits in Test Area B exhibit increased potential for encountering additional subsurface cultural deposits and subsurface features including burials. Figure ~~2-36~~ 2-41 illustrates the locations exhibiting increased potential for encountering subsurface cultural remains in Test Area B. These deposits encompass an area of approximately 23,600 square meters (5.8-acres) of Test Area B.

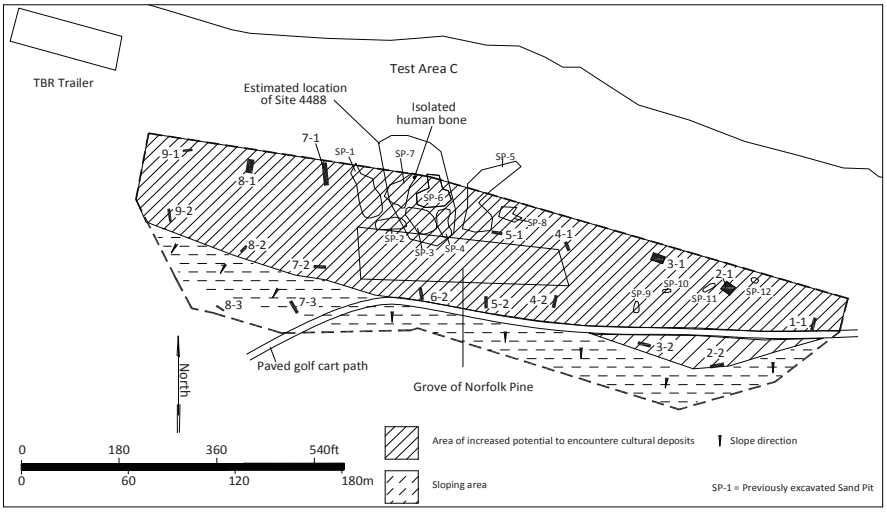
Test Area C is a forested coastal sand dune on the west side of Kaihalulu Bay, about 90-135 meters from the shoreline. The central *makai* side of the dune contains 4.75 to 6.7 meters of aeolian sand overlying the limestone substrate. The southwest side of the dune contains 1.0 to 2.60 meters of aeolian sand and fill overlying limestone. The southeast side of the dune was possibly mined for sand during WW II, and the pits subsequently filled with trash of the same era. In the late 1980s and early 1990s the north side of the dune was mined for sand in connection with Resort development; the pits remain as open holes to this day.

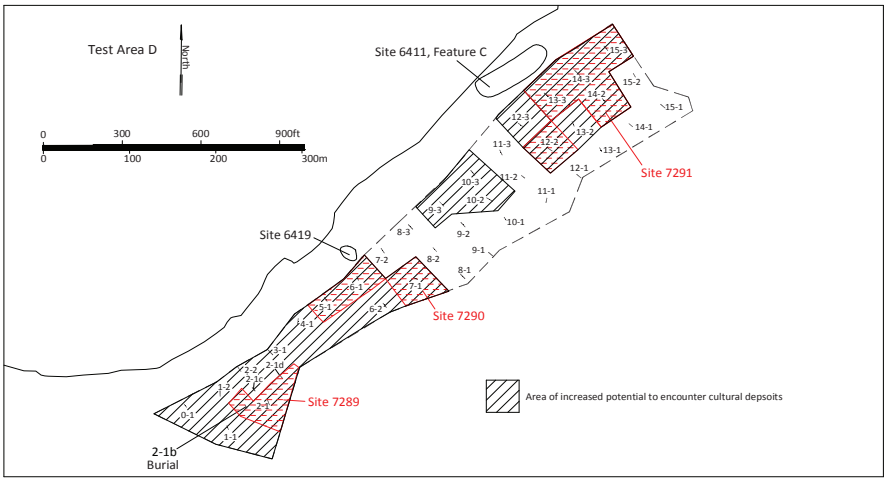
As many as 8 individual burials from the central portion of the dune (Site 4488) have been documented (Kennedy 1992, Carson *et al.* 1996) and an isolated skeletal element was recovered on the ground surface near SP-7 during fieldwork for the SAIS, presumed to be a bone displaced from one of the eight burials. The SAIS study identified relatively shallow disturbance (roads, trash pits, areas of fill) across the dune, but deep, intact aeolian and marine deposited sand deposits remain. The upper 1.5 meters of these intact sand deposits exhibit an increased potential for encountering cultural deposits in future excavations and encompass approximately 22,300 square meters (5.5-acres; 68.7%) of Test Area C. The area of increased potential for cultural deposits is depicted in Figure ~~2-37~~ 2-42.

Test Area D is located inland of the forested sand dunes parallel to the shoreline on the west

Figure ~~2-36~~ 2-41: Areas of increased potential for encountering cultural deposits in Test Areas B-D







side of Kaihalulu Bay and is undeveloped. The terrain is fairly level and varies in elevation from about 4 ft to 16 feet. The south one-third of Test Area D contains aeolian sand deposits to a depths exceeding 2.8 meters above the water table, overlying clay deposits. The northeastern two-thirds of Test Area D contain about 0.1 to 3.8 meters of tsunami deposits overlying alluvial deposition formed on tropical peat or the limestone substrate. The absence of surface sites in Test Area D can be attributed to widespread land modification associated with the Kahuku Army Airfield and the destructive effects of the 1946 tsunami. Subsurface cultural deposits were identified between 1988-1992 on the north side of Area D at Site 6411-Feature C and Site 6419.

Stratified subsurface prehistoric habitation deposits, including an adult burial, were documented in association with the aeolian deposition at the south end of Test Area D. These deposits are exposed from 0.30 to 0.80 meters at Site 7289. Intact stratified subsurface prehistoric habitation deposits were also documented in alluvial deposits in the center of Test Area D at Site 7290 from 0.17 to 0.85 meters below ground surface (bgs); Kahuku Army Airfield deposits (Site 7275) seal the underlying prehistoric deposits. Similarly, widespread subsurface prehistoric habitation deposits were documented at the north end of Test Area D, where Site 7291 was documented from 0.38 to 3.53 meters bgs in association with alluvial deposition and sealed by Airfield deposits or tsunami deposits. Buried alluvial A horizons that could contain subsurface cultural deposits were identified in an area between Sites 7290 and 7291. Because of the demonstrated association between prehistoric habitation deposits and burials, intact deposits around the prehistoric sites in Test Area D exhibit an increased potential to contain cultural deposits. These deposits and the areas of the three sites comprise approximately 36,500 square meters (9 acres; 56%) of Test Area D. The extent of these areas is presented in Figure ~~2-38~~ 2-43.

Test Area E is a relatively level, low lying and currently undeveloped ironwood and *haole koa* forest east of Punahoʻolapa Marsh. The ground surface of Test Area E was extensively modified during construction of the main NW-SE runway of the Kahuku Army Airfield (Site 7275) and peripheral support facilities. A sod farm and nursery formerly used by the Resort occupied the south end of Test Area E in the recent past. Testing in Area E documented widespread fill deposits associated with the Airfield overlying alluvial deposits and gley developed on the limestone substrate. WW II-era fill deposits vary in depth from 0.25 to 1.38 meters bgs. Where preserved, alluvial deposition was encountered 0.16 to 0.82 meters bgs, overlying gley or the limestone substrate. Many fill deposits directly overlie bedrock in Test Area E, but where no fill deposits were encountered, testing documented that alluvial deposits overlying gley or limestone were at least 0.45 to 0.82 meters deep. Five subsurface prehistoric habitation sites were identified as a result of testing in Area E (Sites 7292-7296). All are associated with buried alluvial deposition and overlying fill seals many of the cultural deposits. Prehistoric subsurface cultural deposits cover approximately 14,325 square meters (3.5-acres) or 5% of Test Area E.

Test Area F is characterized by widespread surface disturbance associated with 20th Century infrastructure for the OR&L railroad, the Kahuku Army Airfield barracks, the Palmer golf course and ancillary access roads. Although intact alluvial deposits are preserved across much of Test Area F, no evidence of prehistoric subsurface cultural deposits was encountered. It is possible that

Figure ~~2-37~~ 2-42: Mid-1800s to early 1900s sites

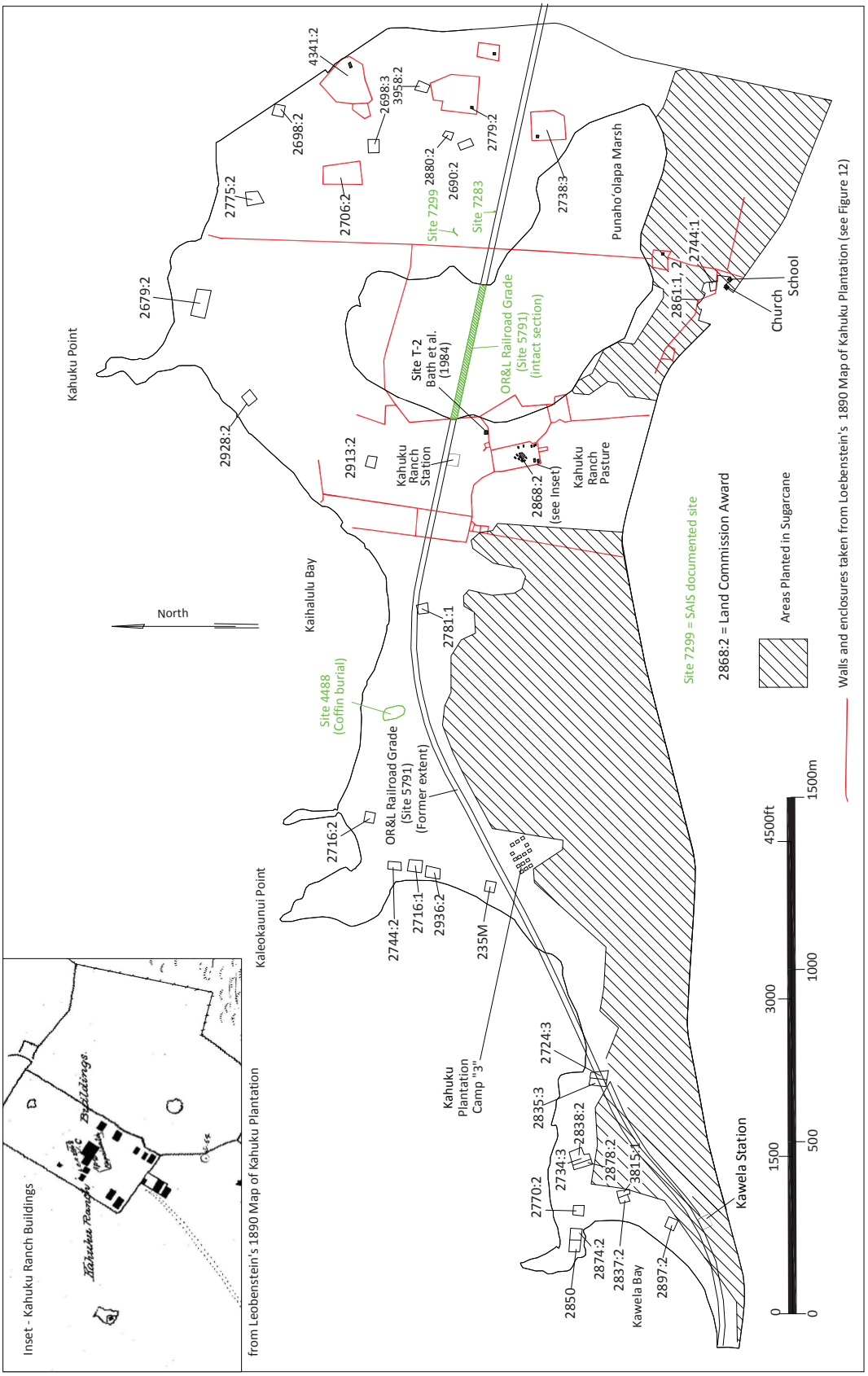
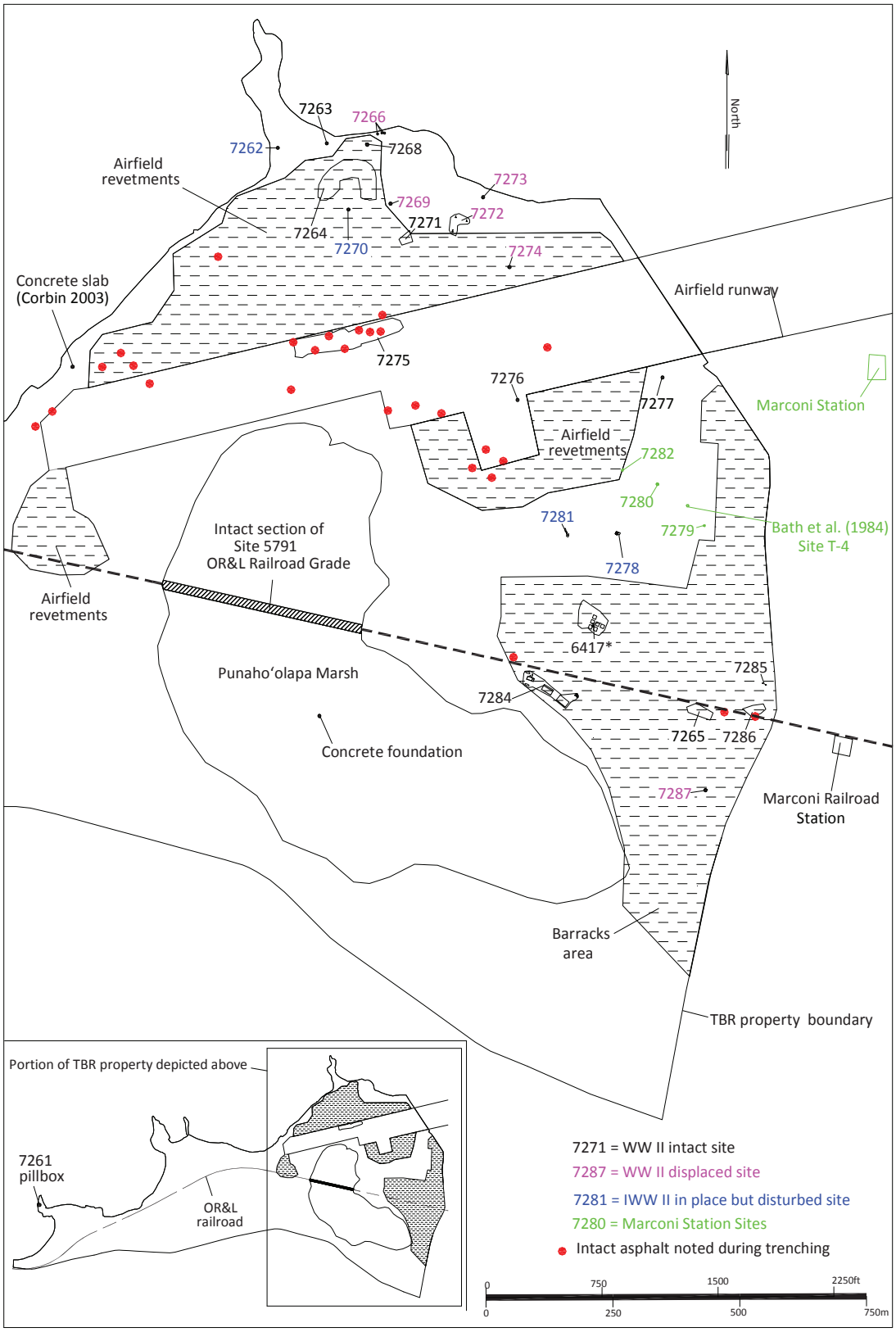


Figure ~~2-38~~ 2-43: World War II and Marconi Station sites



prehistoric cultural deposits were destroyed as a result of 20th Century land modification, but the potential to encounter intact prehistoric cultural deposits or burials in Test Area F is negligible.

Test Area G consists entirely of alluvial Waialua Silty Clay and was sampled by excavating one-trench per acre. The soil is more suitable for agricultural use rather than habitation and not surprisingly, no evidence of historic or prehistoric habitation was encountered. Test Area G exhibits very low potential for encountering subsurface cultural deposits or burials.

Historic Sites

Historic sites are those associated with human activity during the period between European Contact and the early 1960s (fifty years ago).

The first site that is potentially prehistoric to early historic in age is Site 7283, a possible agricultural mound.

One of the burials previously documented at Site 4488 was associated with coffin remnants including square nails that likely indicate interment in the 1800s.

A section of dry-stacked limestone wall (Site 7299), which probably functioned as a livestock wall associated with Kahuku Ranch was documented and likely dates to the mid- to late 1800s. Charles Hopkins purchased 8,000 acres at Kahuku in 1850-1851 from Kamehameha III and established the Kahuku Ranch (Haun et al. 2011:26-27). Forests were cleared for pasture for free-ranging herds of sheep and cattle, which soon plagued the small Hawaiian farms that were scattered throughout the area, eventually displacing many of the farmers. Hopkins land subsequently passed through a series of owners and was sold to James Campbell for $63,500.00 in 1876. In 1889, Benjamin Franklin Dillingham chartered the Oʻahu Railroad and Land Company (OR&L) and leased the Kahuku lands from James Campbell for 50 years (ibid.). Dillingham then subleased the lands to James Castle. Castle's Kahuku Plantation Company received its charter in 1890. The company began commercial production of sugarcane using pumped spring water, streams and rain for irrigation. The first sugarcane crop from 2,800 cultivated acres was harvested in 1892. Figure ~~2-41~~ 2-46 is based on an 1890 map of Kahuku Plantation and shows areas in sugarcane cultivation. A series of walled enclosures correspond to LCAs surrounding Punahoʻolapa Marsh. An old school and a church are located seaward of the Old Government Road and the Kahuku Ranch buildings are located in the central portion of the Resort property, immediately west of the marsh. The Site 7299 wall (see Figure ~~2-39~~ 2-44 initially identified by Bath et al. in 1984, that may be a remnant of a ranch wall shown on Figure ~~2-37~~ 2-42, extends from the inland side of the marsh to the coast east of Kahuku Point.

Bath et al. (1984:33) identified another wall site (T-2) on the east side of the marsh that probably was part of the Kahuku Ranch facility (see Figure ~~2-37~~ 2-42). Although not mapped, the site was described as "an L-shaped stacked coral wall. The SE leg is 30 meters long; the NE leg was not followed beyond 40 meters from the wall corner. It appears to go out into the present marsh" (ibid.). These walls described by Bath et al. are probably part of the complex of walls depicted on Figure ~~2-37~~ 2-42 on the east side of the Kahuku Ranch buildings based on Loebenstein's 1890 map of Kahuku Plantation (see inset Figure ~~2-37~~ 2-42).

By 1900, the OR&L Railroad line (Site 5791) extended from Honolulu to Kahuku. Site 5791 is an intact portion of the OR&L railroad grade that consists of a 475 meter-long causeway extending across Punahoʻolapa Marsh (see Figure ~~2-40~~ 2-45). By the early 1900s there were railroad stations at Kawela, Kahuku Ranch, and Marconi. A plantation camp was established along the railroad between Kawela and Kahuku Ranch Stations to house plantation workers by at least 1932 (see Figure ~~2-37~~ 2-42, "Camp 3"). Marconi Station was located just east of the Resort property at Punamanō Marsh.

Two sites, and potentially a third, date to the early 1930s operation of Marconi Station that was situated adjacent to the Resort property near Kahuku Point (Figure ~~2-42~~ 2-47). The wireless communication facility was established by the Marconi Company in 1914, and its operation was taken over by Radio Corporation of America (RCA) by the 1930s (Bennett 2011:52). The SAIS survey documented two concrete structures (Sites 7279, 7282; see Figures ~~2-41~~ 2-46 through ~~2-45~~ 2-50) that functioned to support the station's extensive antenna array (see Figures ~~2-46~~ 2-51 and ~~2-47~~ 2-52). Site 7280 is an unusual octagonal concrete structure that also potentially served to support an antenna and may also date to the station's operation in the 1930s (see Figure 2-48). A nearly identical octagonal structure was reported by Bath et al. (1984) in the same vicinity as 7280 (Site T-4), but differences in its reported dimensions and location indicates it is not the same feature identified at Site 7280, but rather a second one.

The majority of the sites (22 of 39) documented by the SAIS work are associated with the Kahuku Army Airfield (see Figure ~~2-38~~ 2-43). The SIHP Site Number 7275 is applied to the main runway in Area E, but is also used here generically to refer to the entire airfield facility (which covered the eastern portion of the Resort property and extended east, beyond the Resort property boundary). The airfield was a large military complex covering 12,000 acres that were initially transferred by the James Campbell Estate to the US Navy for use as a bombing range and subsequently to the US Army for use as an airfield. Construction on the runway began in December 1941 and the airfield was in use until March 1946, and was not returned to the landowner until sometime between June 1947 and March 1948 (Bennett 2011: 52, 59).

Figure ~~2-39~~ 2-44: Site 7299 wall

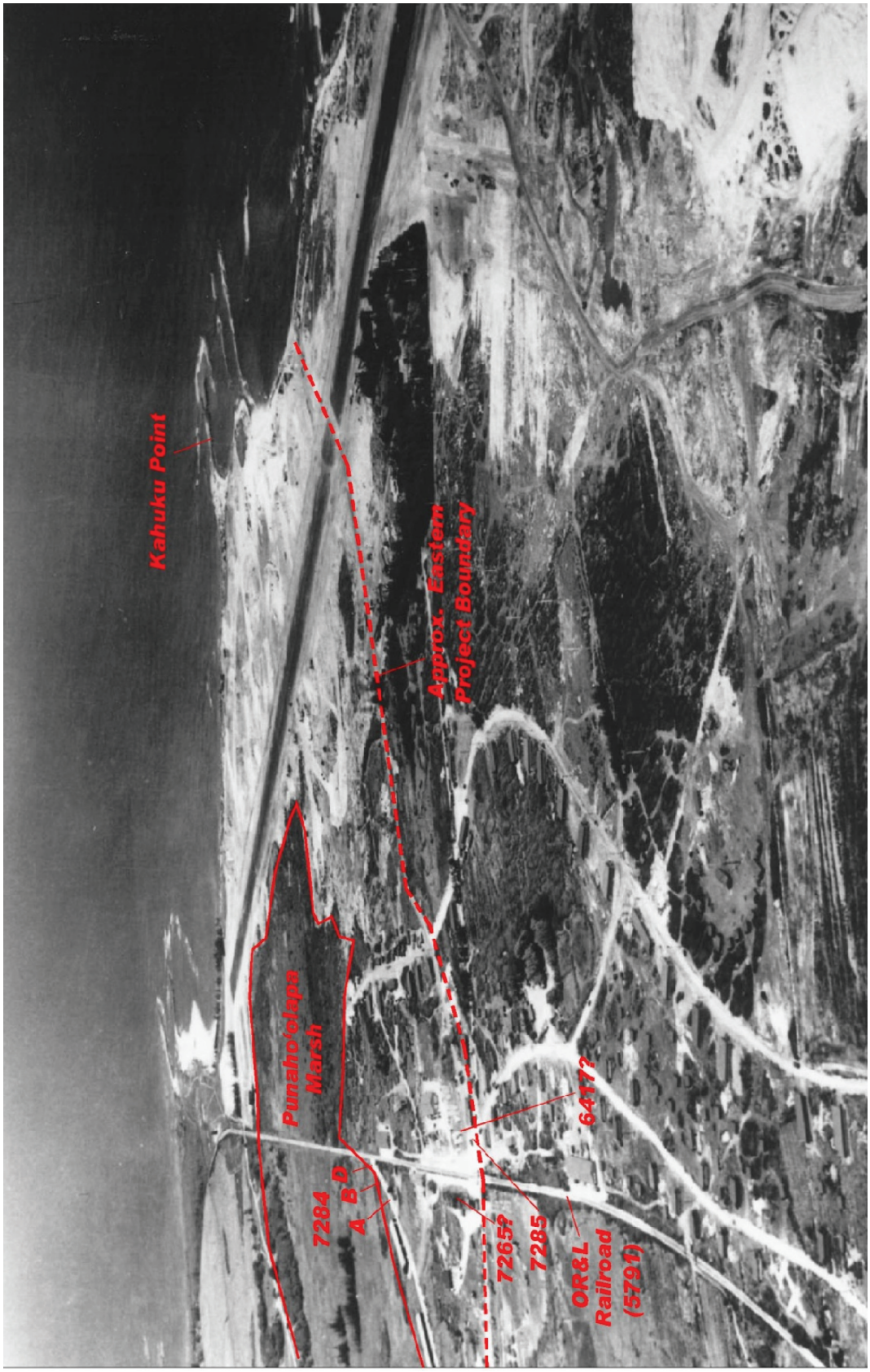


Figure ~~2-40~~ 2-45: August 20, 1942 photograph of Kahuku Army Airfield

David Trojan of the Hawaiian Aviation Preservation Society (Trojan, n.d.) presents a brief history of the construction and use of the airfield:

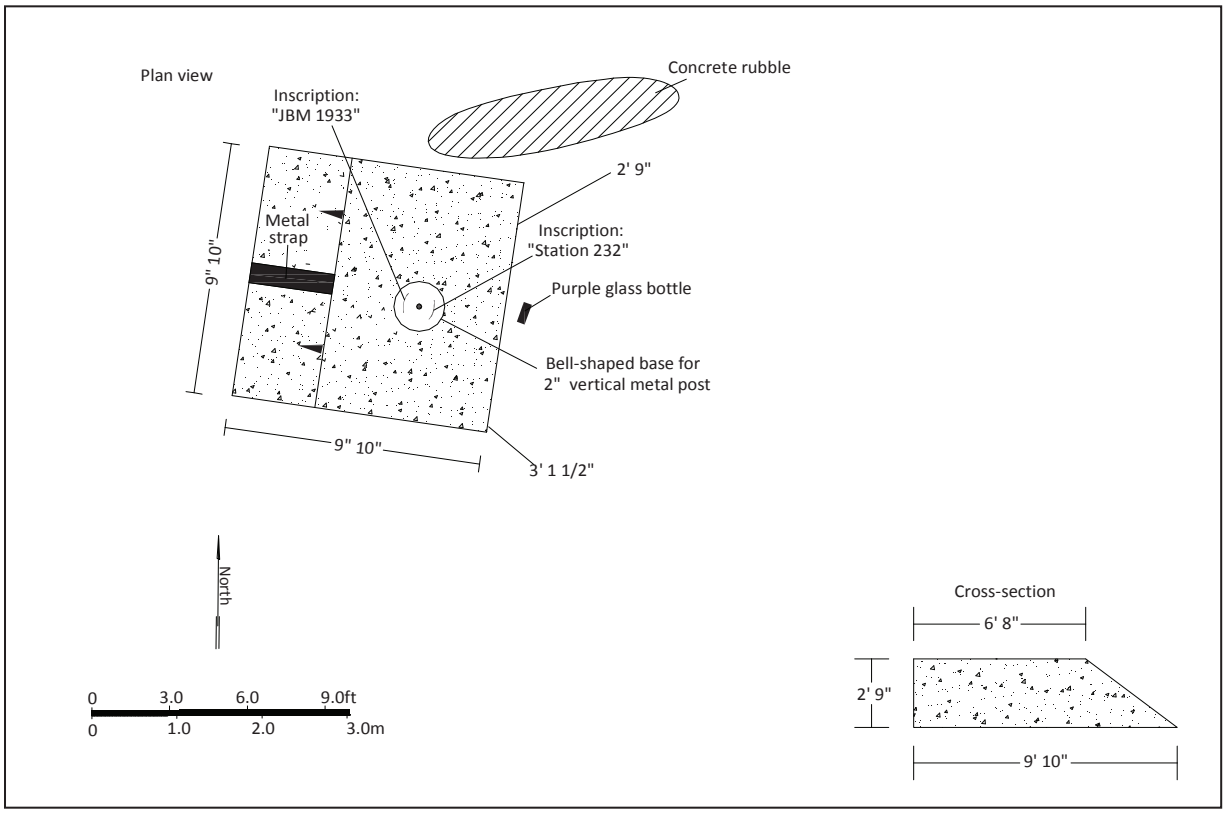
> ***There are references to Kahuku as an emergency field dating to the 1930's, but it was not until the United States entered World War II that the airfield was developed. Kahuku Army Airfield was classified as an auxiliary field and had a very short life span, from 1942 until it was closed in the late 1940's. Ground troops were stationed in the area to protect the airfield and man the shoreline fortifications. The northern tip of Oahu had a total of three airfields in close proximity during World War II. The Kahuku Point Airfield was located near the tip of Kahuku Point, and was evidently the most elaborate. The Kahuku Army Airfields were used for training of pilots from Wheeler AAF for instrument flying on different types of aircraft. The airfield was ideal for training because it had a good approach, runway length, and take off clearance. This field was not over populated like Hickam or Wheeler. It is documented that the 18th Air base Group, 47th Pursuit Squadron was stationed there along with B-24s and B-17s that were based at Kahuku for short periods of time during World War II.***

The Airfield encompassed runways, taxiways, revetments, bunkers and artillery emplacements. A composite of three blueprint sheets of the airbase shows its various components (see Figure ~~2-49~~ 2-54); note the U-shape revetments used for airplane storage located adjacent to the runways. A recent aerial photograph of the Resort property (Figure ~~2-50~~ 2-55) shows the extent of the Kahuku Army Airfield facility superimposed on it as well as a large area for barracks and other facilities inland of the Airfield (see Figure ~~2-38~~ 2-43). The Airfield, revetments and barracks occupied approximately 195 acres (23%) of the Resort property.

The surviving remnants of the airfield recorded during the SAIS fieldwork consist of a concrete pillbox located at Kawela Bay (Site 7261), 11 sites located in the Kahuku Point Archaeological Preserve (Sites 7262-7264, 7266 and 7268-7274), six sites located in Test Area E (Sites 7275-7278 and 7280-7281) and five sites located in Test Area F (Sites 7265 and 7284-7287). Although many of the structures are displaced and badly damaged, likely by tsunami in 1946 and 1957 and during the construction of the golf course, intact remnants of the complex are present. Figure ~~2-38~~ 2-43 depicts the distribution of all World War II era sites documented by the SAIS and prior studies.

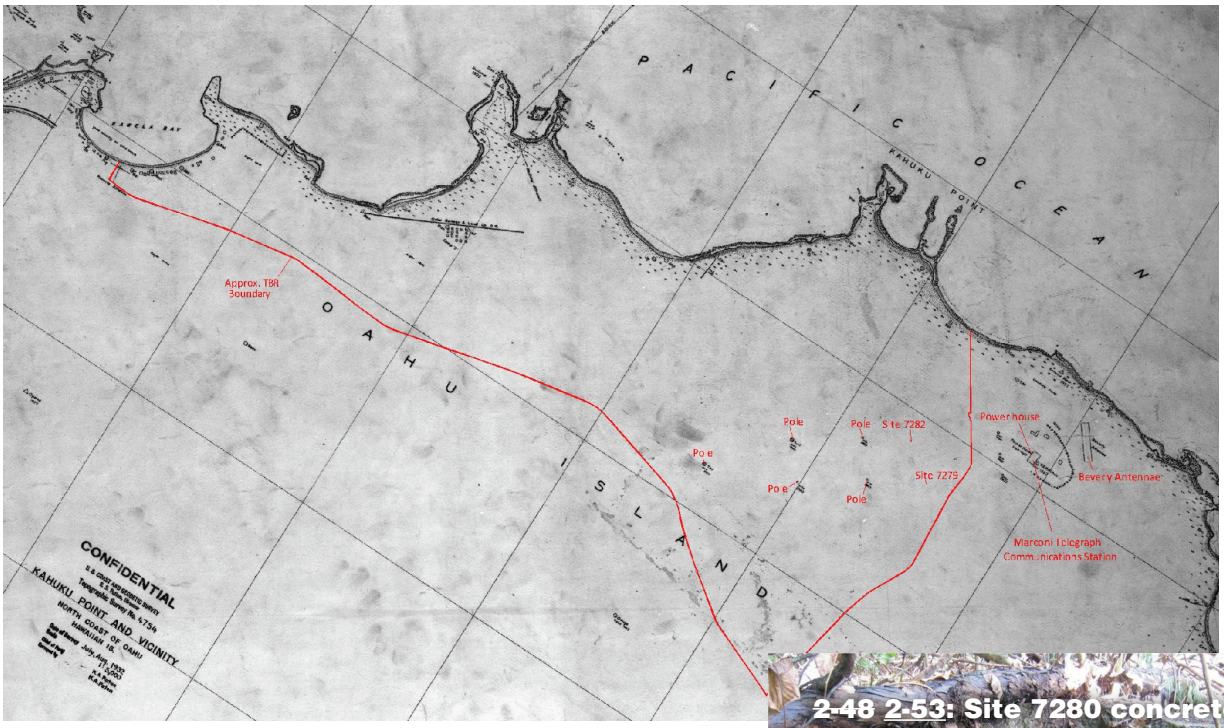
The central feature of the Airfield facility is Site 7275, a 717' long section of the original 6,500' long airfield runway. The NE-SW main runway served as the primary feature of the airfield and was used for pilot training. Following the war, the runway was used as a racecourse and as a civilian airfield. An intact earthen revetment (Site 7264) that is present to the north of the runway was used for the storage and protection of the military aircraft. It is the only documented revetment of 32 or more that were situated on the north and south sides of the main runway. As is illustrated in Figure ~~2-38~~ 2-43, the extant exposed portion of the runway represents a tiny portion of the overall surface. The SAIS subsurface testing encountered intact asphalt pavement in 27 locations that are depicted as red dots on Figure ~~2-38~~ 2-43. The dots shown within the area of the Site 7275 portion of the runway are surface exposures of the

Figure ~~2-41~~ 2-46: Site 7279 plan map



These photos show the remains of a Marconi wireless radio station discovered near Kahuku Point.

Figure ~~2-46~~ 2-51: 1932 U.S. Coast and Geodetic survey map



~~2-48~~ 2-53: Site 7280 concrete structure

Figure ~~2-47~~ 2-52: Transmitting aerials at Marconi Telegraph Communication Station

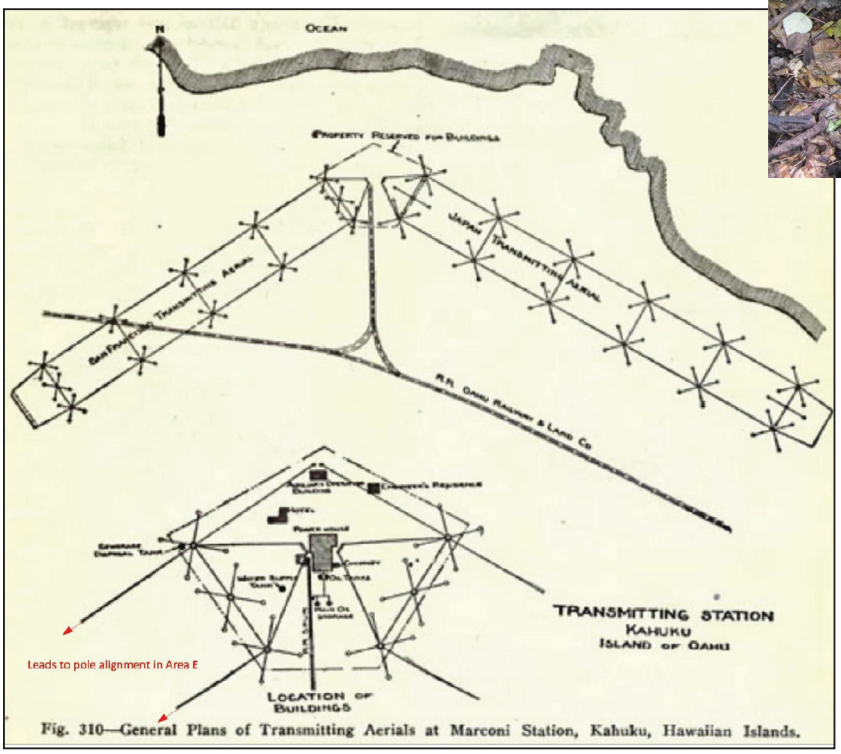
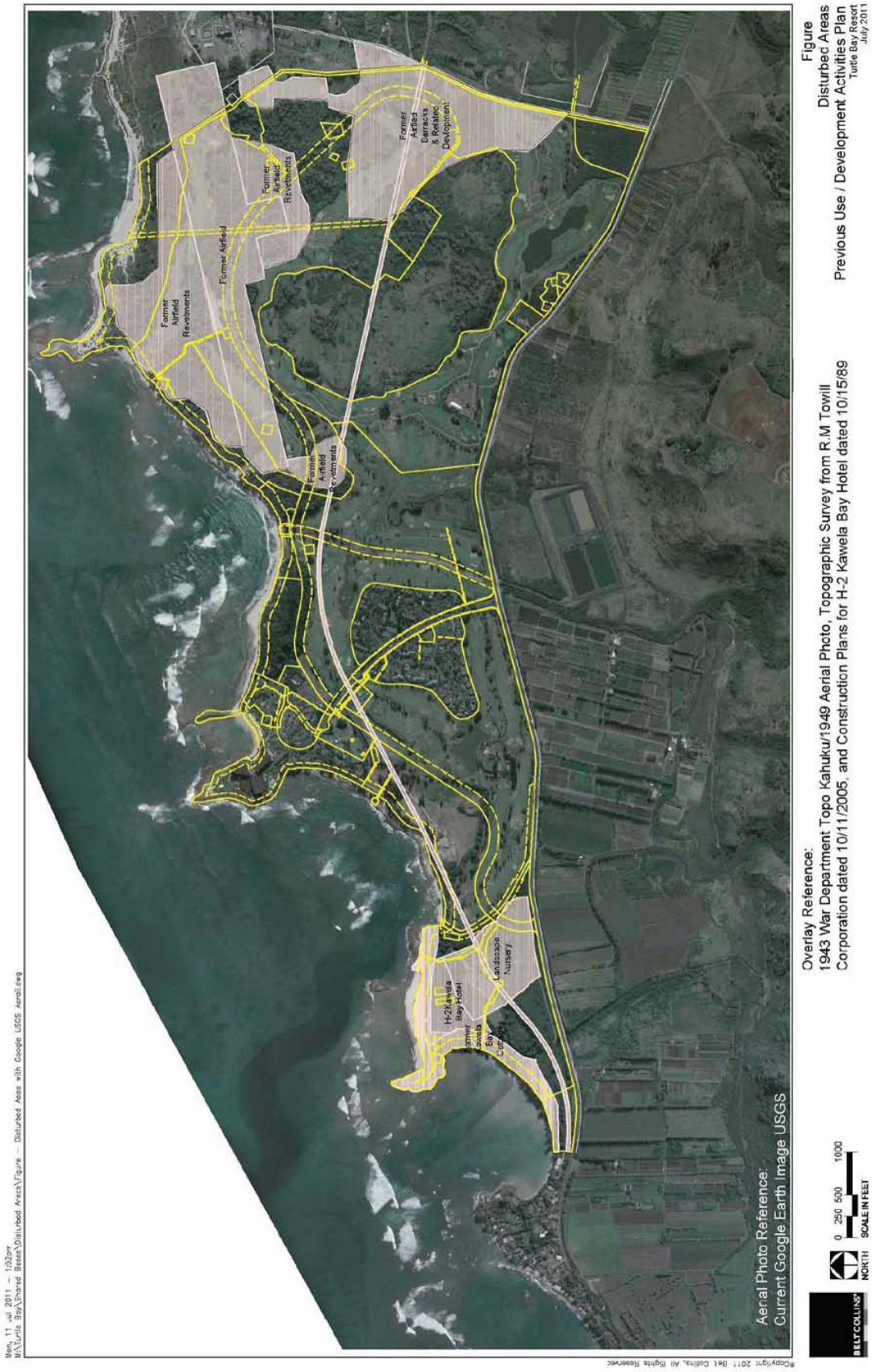


Fig. 310—General Plans of Transmitting Aerials at Marconi Station, Kahuku, Hawaiian Islands.

The concrete structure above may have been a base for one the station's many antennas, which were laid out in vast arrays.

Figure ~~2-49~~ 2-54: Composite map of Kahuku Army Airfield

Figure ~~2-50~~ 2-55: Disturbed Areas, Previous Use/Development Activities Plan



pavement and the other red dots denote intact runway pavement in subsurface contexts in test trench walls. The dots within the runway foot-print shown on Figure ~~2-38~~ 2-43 were part of the main runway and the ones situated elsewhere represent remnants of taxiways, service aprons, roads, and other paved areas; however, no attempt was made to correlate these with specific features.

Figure ~~2-38~~ 2-43 color codes the Airfield SIHP site numbers with degraded physical integrity, in which pink indicates displaced remains, and blue indicating in place, but damaged features. All except for one of the displaced sites are situated adjacent to the shoreline and probably represent structural remnants that were displaced by the 1946 and/or 1957 tsunamis. The one displaced structure situated inland is Site 7287, located in the airfield barracks area (see Figure ~~2-51~~ 2-56). The structure is situated upside down on a mechanically-piled berm of boulders and other debris. Site 7287 appears to be identical to a relatively intact concrete structure, Site 7278 (based on dimensions and other construction attributes), situated in the central portion of the airfield facility in between the main runway and the inland barracks area (see Figures ~~2-52~~ 2-57, ~~2-53~~ 2-58 and ~~2-54~~ 2-59). Two other sites consist of concrete structural remnants that probably are from the same type of structure (Sites 7272 and 7281). The structures all are interpreted as possible gun positions, potentially open revetments for anti-aircraft guns, based on their morphology and locations around the periphery of the main runway facility.

Figures ~~2-40~~ 2-45 and ~~2-55~~ 2-60 show the locations of several sites associated with the Airfield. Figure ~~2-40~~ 2-45 is a 1942 aerial photograph showing the Airfield facility as originally constructed. It shows the OR&L Railroad line (Site 5791) extending through the facility and the probable locations of several sites along the rail line. The railroad was used to transport troops to base (Bennett 2011). A group of faintly visible structures potentially includes a cluster of six concrete pads recorded as Site 6417 by Corbin (2003; see Haun et al. 2011:63, figure 32). Figure ~~2-55~~ 2-60 is a 1943 map of the main cantonment, or barracks area from Bennett (2011:54). It shows the same area depicted in the Figure ~~2-40~~ 2-45 aerial photo.

The map (see Figure ~~2-55~~ 2-60) also shows the location of the most intact group of Airfield structures on the Resort property. These are the foundations of three buildings at Site 7284 (Features A, B and D) that were apparently constructed in 1943 based on their absence in the aerial photograph from the previous year. Also shown are the locations of the Site 7265 concrete slab and Site 7286 pavement. The concrete slab apparently was the foundation for a large building, probably a warehouse situated on the inland side of the OR&L railroad. The Site 7286 asphalt pavement is correlated with an expanse of pavement at a road intersection on the seaward side of the railroad grade. (SAIS Trench F-3-9 was excavated on the inland side of the pavement and encountered an asphalt pavement overlying probable railroad grade fill indicating the Site 7286 pavement also served as a railroad crossing.) The gate posts recorded as Site 7285 probably were positioned on either side of a main road leading from this paved intersection seaward toward the main runway. The estimated locations of the slab, pavement, and gate posts are also shown on the Figure ~~2-44~~ 2-49 aerial photograph.

The remaining site identified during the SAIS fieldwork is an abandoned 1950s era bus in Test Area A (see Figures ~~2-56~~ 2-61 through ~~2-59~~ 2-64). The Site 7267 bus was operated by the

Figure ~~2-51~~ 2-56: Site 7287 displaced concrete structure remnant

Figure ~~2-53~~ 2-58: Site 7278 concrete structure

Figure ~~2-52~~ 2-57: Site 7278 plan map

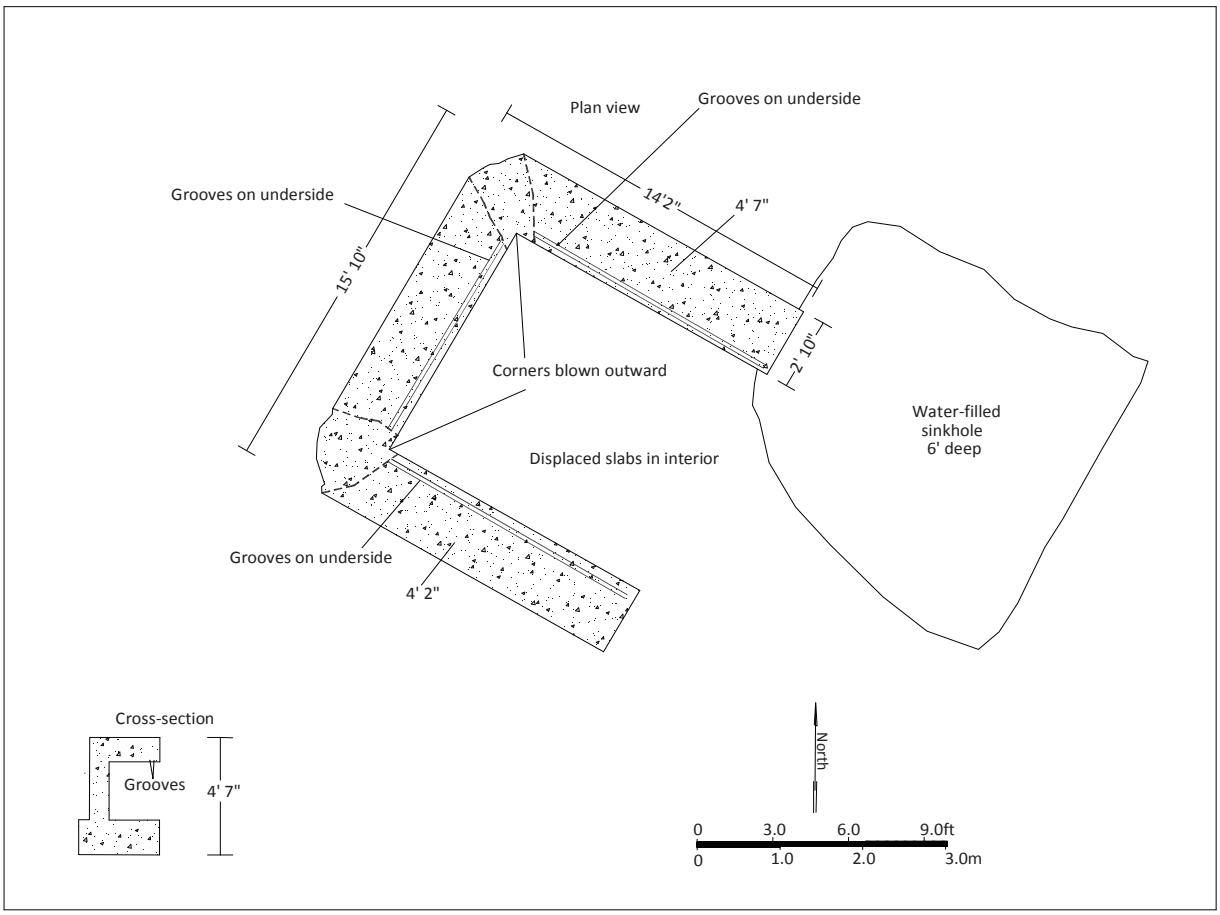


Figure ~~2-54~~ 2-59: Site 7278 blown out corner of concrete structure

Honolulu Rapid Transit Company for the City and County of Honolulu until at least 1973. Sugarcane cultivation continued until 1971 when the Resort and golf course were constructed. Some inland portions of the property continued to be used for vegetable farming until the 1980s.

F. 2. Cultural Resources

A Cultural Impact Assessment (CIA) of the Proposed Action was prepared by Pacific Legacy Inc. and is included in the SEIS as Appendix D. The CIA is divided into three parts; 1) a discussion of the cultural and archaeological history of the project and the surrounding region based on archival research; 2) the identification of current cultural practices on the property based upon oral history interviews conducted as part of the CIA, and 3) an analysis of the project's anticipated impacts upon identified cultural practices.

F.2. a. Archival Information

Because the archaeological information presented in the CIA is too voluminous to present here in detail, the reader is directed to Sections 3 and 4 of the report (Appendix D) for this background information. The CIA also replicates much of the archaeological information presented in the Supplemental Archaeological Inventory Survey conducted in 2012 for the project and presented in Appendix C. Following is a summary of the information presented in the CIA.

Archival research has revealed that, in general, the SEIS Lands and surrounding areas have a long and interesting history. From the archaeological record, traditional stories and myths, and historic documents attributed to this vast area, it is evident that these lands have been the stage of many significant acts in the long drama of Oʻahu's pre- and post-Contact history. Oral traditions and historical references to the specific area are ubiquitous as found in the CIA and previous historic investigations (Silva 1984; Wong-Smith 1989).

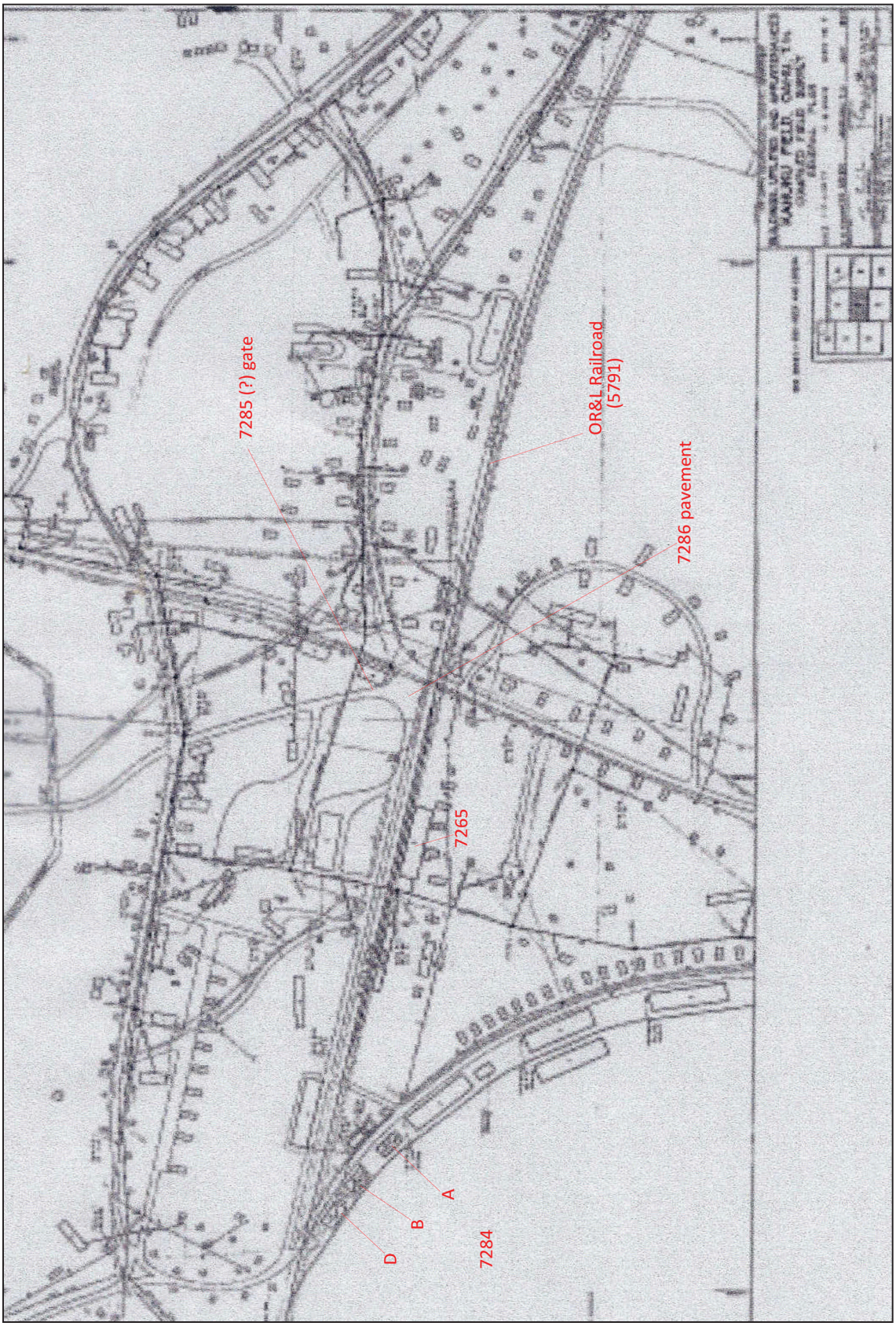


Figure ~~2-55~~ 2-60: Main cantonment of Kahuku Army Airfield

Figure ~~2-56~~ 2-61: Surface of Test Area A

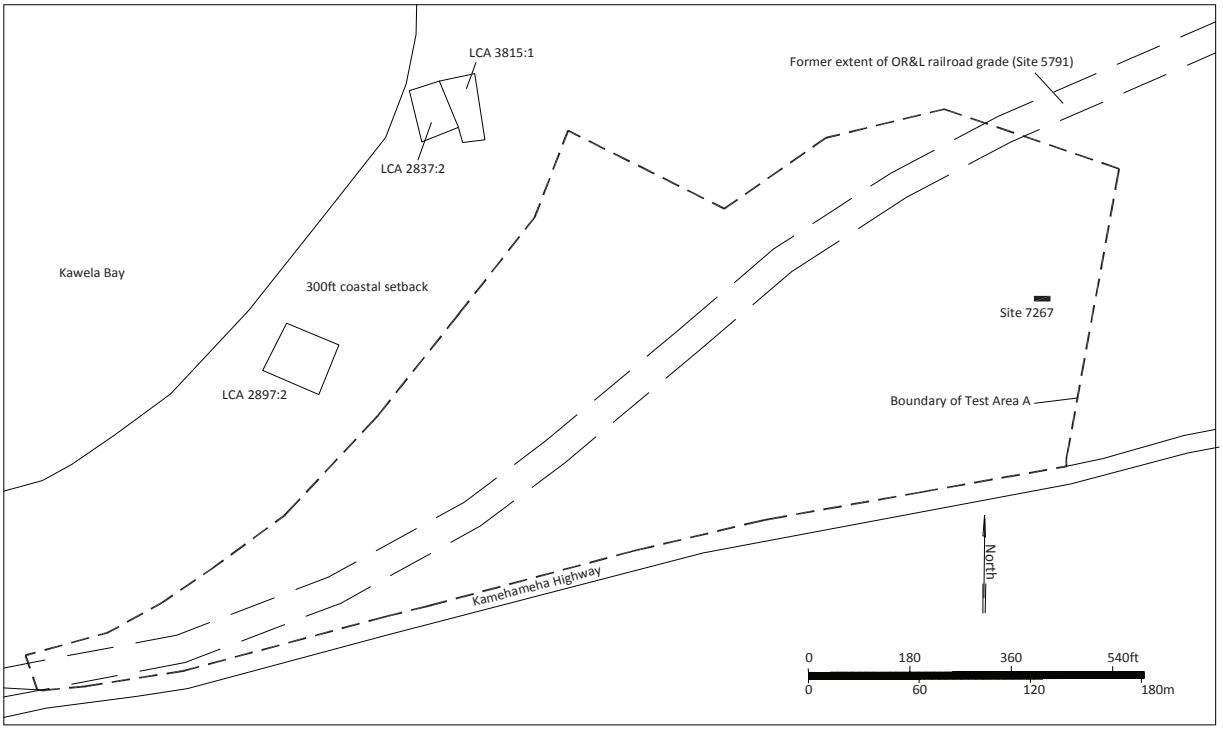


Figure ~~2-57~~ 2-62: Site 7267 bus

Figure ~~2-58~~ 2-63: Honolulu Rapid Transit Company brochure

Figure ~~2-59~~ 2-64: Site 7267 license plate

Two previously written reports (Silva 1984; Wong-Smith 1989) provide excellent summaries of the legendary and historical background of the project area. As a component of the 1985 Kuilima Resort Expansion Revised Environmental Impact Statement, Silva (1984) compiled mythological and historical records for the *ahupuaʻa* of ʻŌpana, Kawela, Hanakaʻoe, ʻŌʻio, Ulupehupehu, Punalau, and Kahuku (Group 70:1985). That information is included in the SEIS by reference. Another noteworthy historic research document was composed by Wong-Smith (1989) on the lands of Kahuku. This document was intended as a component of the Archaeological Inventory Survey, Punamanō and Malaekahana Golf Courses (Jensen 1989). Both Silva (1984) and Wong-Smith (1989) manuscripts are provided in Appendix B of the CIA.

The Resort has been the subject of numerous archaeological investigations between 1977 and 2006, resulting in 21 individual reports. These archaeological investigations have documented 19 archaeological sites providing data from 291 auger tests excavations, 121 controlled excavations, 78 radiocarbon dates, 50 pollen samples, and substantial midden and artifact collections. The concordant Supplemental Archaeological Inventory Survey (SAIS) adds a significant amount of data to the existing archaeological record for the project area.

F.2. b. Oral History Interviews

The purpose for oral interviews is to acquire information from *kūpuna* and local knowledgeable individuals about the background and contemporary cultural use, if any, of the subject property that could be adversely affected by the Proposed Action.

Concerted attempts were made by Pacific Legacy to identify and locate persons knowledgeable about traditional practices that took place in the past or that are currently taking place in the Turtle Bay area and potentially impacted by the expansion project. In addition to prior CIA reports written about the Kahuku area (Collins and Nees 2006; Hammatt 2008), the State Office of Environmental Quality Control (OEQC) and Office of Hawaiian Affairs (OHA) were consulted for a listing of Cultural Assessment Providers. Various Neighborhood Boards, civic clubs, and other North Shore community associations were also contacted to obtain cultural informants. Appendix C of the CIA provides a listing of potential cultural informants and their detailed contact history. Of the 68 individuals recommended by others informants or identified through research as potential cultural informants, contact information was found for 52 individuals, all of which were solicited for participation. While no response was received from 15 of those asked to participate, 37 individuals responded and 16 interviews were secured. Many of those who responded to interview requests did not wish to be interviewed, but recommended other, more knowledgeable individuals or community groups to interview. One cultural informant, Cathleen Piʻilani Mattoon, wrote a letter on behalf of the Koʻolau Loa Hawaiian Civic Club outlining the organization's concerns with the development rather than opting to participate in an interview (Appendix F of the CIA).

A total of 16 interviews were conducted between 4 May and 11 April 2012. All interviewees had a personal association with the Resort area, most of which were repeatedly recommended by various sources in the community. Most informants are active in the local community and well respected for their leadership and knowledge of the project area and its history.

Table 2-13 provides a list of the consulted parties, their association with the Resort project area, and form of interview.

During the typical interview, a basic questionnaire (Appendix D of the CIA) was used as a guide to solicit interviewees' knowledge of the area and biographical information. Maps of the Turtle Bay project area were used to further assist the interview process and gain specific information about locations of resources and/or cultural practices. After the interview, an interview summary was created. The interview summary was then shared with the interviewee for review, which allowed them the opportunity to correct, add, and/or delete information in their testimony. These interviews were occasionally supplemented with subsequent personal and telephone conversations with informants for clarification and additional information. When the interview summary met their approval, the interviewee was asked to sign an Oral History Release Form. Copies of release forms are provided in Appendix E of the CIA. Summaries of the resulting interviews are presented in Section 6.1 of the CIA.

Ethnographical evidence obtained through community consultations upholds the archival research findings that the Resort property was abundant in cultural resources and lore, though much has changed throughout time. These community consultations also verified the existence of cultural practices, such as the gathering of various traditional marine and terrestrial resources. Out of the sixteen interviews performed, information from 15 interviews is represented in the CIA report, omitting testimonial information from one individual who requested that the interview not be included. From the thirteen interviews a variety of cultural resources in the Resort property were identified, including a total of 40 species of flora and fauna as well as *paʻakai* (sea salt) (Figure 22; Tables 7 and 8 in the CIA).

F.2. c. Identified Traditional Cultural Resources

From the Resort coastline and coastal waters, 32 marine species, including 17 species of fish, six crustacean, one mollusk, two gastropod, two sea urchin, and four sea weed species were identified as cultural resources, as summarized in the table below. A total of six plant species and two tree species were identified as collected from inland areas of Resort. These resources are currently being gathered by an array of Hawaiian cultural practitioners for a variety of traditional activities, including *lāʻau lapaʻau* (herbal healing), *kālai kiʻi* (wood carving), *lei* making, cordage making, and consumption. While none of the informants claimed that any of these cultural resources were the last of their kind or this was the only place to collect them, the majority of those interviewed shared that these resources have drastically declined in their lifetimes and are now found in diminutive numbers. Further, the locations of many resources are guarded secrets according to many informants who fear over-harvesting to the point of extinction.

With regard to cultural practices being performed in and around the Resort property, other than the gathering of marine and terrestrial resources, no traditional *activities* were reported as occurring at the present. While surfing and paddling occur in waters around the project area, according to Kahu Helemano, Ms. Napeahi, and Mr. Pawn, none of the thirteen interviewees held this area as being a traditional or culturally significant surf spot. The lack of reference to

Table 2-13: Persons Consulted for the Cultural Impact Assessment

Name(s)/Title	Association	Form of Interview
Ralph Makaiau, Kupuna	Senior Project Manager of Turtle Bay Development; Native Hawaiian area descendent; Kahuku Burial Committee	Person-to-person, at Turtle Bay
Nova-Jean McKenzie, Kupuna	Kuleana land owner in Turtle Bay property; Native Hawaiian area descendent; Kumu of Hawaiian Studies, Retired	Person-to-person
John Colburn, Kupuna	Native Hawaiian area descendent; Kuleana land owner (east of Turtle Bay property)	Person-to-person, joint with Pua Colburn
Pua Colburn, Kupuna	Kahuku Burial Committee, member; Kuleana land owner (east of Turtle Bay property)	Person-to-person, joint with John Colburn
Junior Primacio, Kupuna	Fourth Generation Kahuku Village resident; Former plantation worker; Koʻolau Loa Neighborhood Board, Chair on Agriculture and Parks and Recreation Committees	Person-to-person, joint with Gladys Pualoa-Ahuna
Gladys Pualoa Ahuna, Kupuna	Seventh-generation resident of Lāʻie; Member of Koʻolau Loa Neighborhood Board	Person-to-person, joint with Junior Primacio
Carol Anamizu, Kahuna Lāʻau Lapaʻau	Former resident of Kuleana east of project area; collects traditional Hawaiian medicinal plants within the Turtle Bay property; Native Hawaiian cultural practitioner	Part I: Person-to-person, Part II: tour of traditionally used plants in the Resort; Part III person-to-person
Butch Helemano, Kahu	Native Hawaiian area descendent and cultural practitioner; Master Hawaiian wood carver; collects plants and wood within the Turtle Bay property; Former resident of Turtle Bay	Person-to-person
Raymond "Buddy" Ako, Kupuna	Community Liaison for Turtle Bay Resort Development; Longtime employee of Turtle Bay Resort; Former resident of Kahuku; educated in Kahuku	Over-the-phone
Dawn Wasson, Kupuna	Educator of Hawaiian traditional practices; collects medicinal plants within the Turtle Bay property; Former resident of Kahuku	Person-to-person
Robert Nakata, Reverend, Kupuna	Former Hawaiʻi State Senator; member of Koʻolau Loa Neighborhood Board and other civic associations	Person-to-person
Mark Kahuokapono Manley	Commercial Fisherman; Native Hawaiian Cultural practitioner; Long-term resident of Kawela Bay; combines modern and traditional fishing methods	Person-to-person
Wayne Gemeno	Fisherman; fishes on Turtle Bay coast regularly for 50+ years; Plantation descendent	Person-to-person, at Turtle Bay
Kylie Matsuda	Managing Director, Kahuku Farms; Inc. Fourth generation at Kahuku Farms; plantation descendent	Person-to-person, withdrawn
Josanda Napeahi	Recreation and Security Officer at Turtle Bay Resort, eleven years; Native Hawaiian cultural informant	Person-to-person, at Turtle Bay
Marshall Pawn	Recreation and Security Officer at Turtle Bay Resort, seven years; Lifelong resident of Hauʻula; cultural informant; plantation descendent	Person-to-person, at Turtle Bay

this activity in the archival research upholds this idea as well. As Aunty Pua noted, the waters in this area are much too rough most of the year and there are better surf spots to the west. This was echoed by Kumu McKenzie during her interview.

Table 2-14: Cultural Resources Identified at the Turtle Bay Resort Property

	Hawaiian Name	Common Name	Scientific Name
Marine Resources	*ʻAʻawa*	Hawaiian hogfish, Table boss	*Bodianus bilunulatus*
	Āholehole	Hawaiian flagtail	*Kuhlia sandvicensis*
	ʻAmaʻama	Striped mullet	*Mugil cephalus*
	ʻAnae	Mullet	Mugilidae spp
	ʻĀweoweo	Bigeye, glasseye	Pricanthidae spp.
	Kala	Unicorn fish	Acanthuridae spp.
	Manini	Convict Tang	*Acanthurus triogus sandvicensis*
	Moi	Six-fingered threadfin	*Polydactylus sexfillis*
	Nunue	Sea chub, rudderfish	Kyphosus spp.
	ʻŌʻio	Bonefish	Albula spp.
	Palani	Eyestripe surgeonfish	*Acanthurus dussumieri*
	Weke	Goat fish	Mullidae spp.;
	Puhi	Moray eel	Gymnothorax spp.
	Toʻau	Blacktail snapper	*Lutjanus fulvus*
	Uhu	Parrotfish	Scaridae spp.
	Ulua (juv. *Pāpio*)	Jack, Trevally	*Carangidae spp.*
	ʻŪʻū	Soldierfish, menpachi	Myripristis spp.
	ʻAʻama	Natal lightfoot crab	*Grapsus grapsus tenuicrustatus*
	Kuahonu	*Haole* crab	*Portunus sanguinolentus*
	Lolo	Sand crab, Ghost crab	Ocipodidae spp.
	Pāpaʻi kualoa	Kona crab	*Ranina ranina*
	ʻUlaʻula (also *ʻula*)	Spiny lobster	*Panulirus marginatus*
	ʻUla pāpapa	Slipper lobster	*Arctides regalis*
	Heʻe	Octopus and squid	Cephalapoda spp.
	Pipipi	Nerites	*Nerita picea*
	ʻOpihi	Limpets	Patellidae spp.
	Wana	Sea urchin	Echinoidea spp.
	Hāʻukeʻuke	Shingle urchin	*Colobocentrotus atratus*
	Limu kohu	None	*Asparagopsis taxiformis*
	Limu maunawea	*Ogo, ogonori (Japanese)*	Gracilaria spp.
	Limu waiwaiʻole	None	*Codium edule*
	Limu ʻopihi	None	*Grateloupia*, *Polyopes*, and *Gymnogrongus* spp
Terrestrial Resources	*Hala*	Pandanus, screw pine	*Pandanus tectorius, Pandanus odoratissimus*
	Hinahina	Native heliotrope, beach heliotrope	*Heliotropium anomalum*
	Koali	Morning-glory	Ipomoea spp.
	Lauwaʻe	Creeping fern, maile-scented fern	*Phymatosorus scolopendria*
	Naupaka	Scaevolas, fan-flowers, half-flowers	*Scaevola* spp.
	Pōhuehue	Beach morning glory	*Ipomoea pes-caprae subsp. brasiliensis*
	Kamani	Beach mahogany, oil nut tree	*Calophyllum inophyllum*
	Milo	Portia Tree	*Thespesia populnea*

F.2. d. Iwi Kūpuna

Adding to the cultural significance of the Resort property is the existence of several other cultural connections[6] of the Hawaiian community to these lands. As evidenced by previous archaeological investigations, inadvertent discoveries, as well as community consultations there are known human burials within the property, specifically in sand dune areas.

Iwi kūpuna are the ancestral skeletal remains of Native Hawaiians. These remains are highly revered by contemporary Hawaiians. It is believed that, upon death, the *na iwi* of a person become the repository of the *mana* (power, authority) they possessed in life. The method of Hawaiian burials varied with an individual's rank, changed through time, and differed from one area to another. Coastal properties, especially where there are areas of sand, were common grounds for Native Hawaiian burials. Traditionally, the *kuleana* (responsibility, privilege) of caring for *na iwi* was a sacred task. In general, today's Native Hawaiians strongly believe that *iwi kūpuna* should not be disturbed and rest in the original place of burial. However, there can be mitigating circumstances such as erosion that result in the re-interment of threatened remains to be considered. In these cases, the guidance of lineal descendants or, in their absence, *kupuna* with a spiritual connection to the land may be sought.

Sensitivities regarding the *iwi kūpuna* are high, given the past disturbances. Obviously, for those with ancestral ties to the land, the *iwi kūpuna* represent and reinforce spiritual ties to the land. Several interviewees objected to any disturbance of *iwi kūpuna*. Also mentioned in several interviews were manifestations of ancestor spirits and supernatural phenomenon within the property. In the testimony of Ralph Makaiau, as a child he experienced a supernatural force on this property that seemed to challenge his very being and ties to the land, yet his father contested this force, successfully warding off or placating the conflicting force. This act solidified Mr. Makaiau's spiritual connection to his ancestral lands. Another example is the existence of "Night Marchers," which are widely held by locals to traverse through the property. Mr. Makaiau suggested that the very name of the *ahupua'a* "'Ōi'ō" or "'Oi'o", which translates as "Procession of ghosts of a departed chief and his company," refers to this path (Pukui and Elbert 1986:280). Kahu Butch Helemano maintains that these warrior spirits are the ancestors of his and others who have roots in this area. This is upheld by Aunty Dawn Wasson's account of the hotel being built in the location of an ancient *heiau* that was demolished prior to its construction. Aunty Dawn holds that harmful consequences of disturbing this site have already occurred and could transpire in the future.

Since the initial construction of the hotel in the early 1970s, the inadvertent discovery and treatment of *iwi kūpuna* has been a point of contention at the Resort. Traditionally, the *kuleana* (responsibility) to *mālam*a (take care of) the *iwi kūpuna* was in the hands of the descendents and/or the *konohiki*. However, these lands have had many owners and withstood many developments, which has made it difficult for the proper treatment of *iwi kūpuna*. Further, as a

[6] For the purposes of the SEIS, the preservation and custodial care of *iwi kūpuna* is considered to be a cultural connection to the past, rather than a specific "activity".

Burial Treatment Plan (BTP) was not required by law until the late 1980s, the treatment of *iwi kūpuna* was discretionary until that time. In most cases, inadvertently discovered *iwi kūpuna* were removed from Resort property and held in a State Historic Preservation Division repository until a suitable location for re-interment near to the original burial location was decided.

In response to *iwi kūpuna* that had been exposed in the Kahuku area over the years and not properly cared for, a group of local *kūpuna* formed a committee to deliberate over the proper treatment of their ancestral remains. This group eventually formed the Kahuku Burial Committee (KBC), which is currently entrusted with the decision making process over the proper treatment of disturbed and displaced *iwi kūpuna* by the general community of Kahuku and surrounding *ahupuaʻa*. Distinguished members of the KBC are well respected *kūpuna* and cultural practitioners with ties to area, by blood and *hānai* (traditional Hawaiian practice of adoption), such as Richard and Lynette Paglinawan, Pua Colburn, Ralph Makaiau, Nova-Jean McKenzie, and several other prominent *kūpuna* of the greater Kahuku area. While individuals who claim relations by *hānai* are currently not recognized by the Oʻahu Island Burial Council (OIBC), many Native Hawaiians have *hānai* family members and would not think of them as anything but family.

Several years ago, TBR consulted with the KBC over *iwi kūpuna* encountered on Resort property with the main goal of proper treatment of *iwi kūpuna* and privacy of the descendents. From that period on, KBC has met regularly for several years with TBR, deliberating over the most proper and peaceful resting places of the *iwi kūpuna* – preferably within the *ahupuaʻa* of origin and in a context that allows the descendents access and privacy. Great care is taken during these deliberations to examine each case and look into every reburial option to ensure that the treatment is *pono* (righteous) for each *iwi kūpuna.* Furthermore, KBC has committed to securing permanent re-interment locations within the *ahupuaʻa* of origin under the TBR proposed *ahupuaʻa* configuration of ʻŌpana-Kawela, Hanakaʻoe, and Kahuku, which will ensure that inadvertent discoveries are reinterred in a suitable location within a reasonable timeframe that is discrete and accessible to the descendants. Currently, TBR is drafting a BTP with the aid of KBC, which will then be submitted to the State Historic Preservation Division (SHPD) and the OIBC for approval. While the official decision over how the *iwi kūpuna* are finally laid to rest is left to the OIBC, the KBC is the consultant body to which the OIBC will likely defer.

The archaeological documentation of *iwi kūpuna* was summarized by Haun (2011:68), where the discovery, recordation, and treatment of *iwi kūpuna* (ancestral skeletal remains) has been compiled for the project area from 1984 to 1993 (Bath *et al.* 1984; Neller 1984, 1989; Walker *et al.* 1988a, 1988b; Sullivan 1990; Kennedy 1992; Carson *et al.* 1996, 1999). According to the SAIS conducted by Haun & Associates in 2012, the skeletal remains of 27 individuals have been discovered in the project area during sand mining of dunes, vehicular disturbances to sand dunes, subsurface testing, and archaeological monitoring of hotel construction activities. Following is a summary of the identified burials. Of the 27 individuals, two (2) were discovered during the 2012 supplemental archaeological inventory survey, as discussed in Section I.1.e.1 above.

Table 2-15: Burials Identified in the SAIS for Turtle Bay Resort

Site Number	Sequential Burial Number	Number of Burials
4488*	11-14, 17	8
6410	1	1
6410	2	1
6410	3-6, 9	5
6423	7	1
6423	8, 10	2
6411	15, 19	5
6411	16, 18	2
7288	(Haun 2012)	1
7289	(Haun 2012)	1
		Total: 27

F.2. e. Contemporary Cultural Use of the Land and Sea

The following contemporary cultural uses of the property have been identified, based upon the archival research and oral history interviews conducted for the CIA.

As cultures are neither static, nor impervious to outside influence, the SEIS Lands and surrounding lands and waters are currently used for Hawaiian traditional practices, traditional practices from abroad, modern practices, modern versions of traditional practices, and any manner of combination or hybrid of these practices. Thus, the lines between traditional cultural practices as they exist in modern times have become obscured. This section provides a summary of traditional Hawaiian and non-traditional cultural activities associated with the subject area as they are practiced in the modern era.

Traditional Practices: An array of traditional activities are currently being practiced on the Resort coast and surrounding areas.

Fishing and Marine Resource Gathering: Fishing as well as the collecting of shellfish and *limu* (seaweed) were crucial activities in maintaining the traditional Hawaiian diet. While pig, dog, chicken, and wild birds were sources for protein in the diet, fish and shellfish were the main protein sources (Titcomb 1977). According to John Clark (2003), the Resort coast contains several popular and/or traditional fishing sites, including:

- **Kauhala:** Located on the eastern extreme of what is now referred to as Kuilima Bay, next to Kahuku Point (John Clark 2003:167).

- **Ono Ledge (also known as "The Ledge").** This ledge follows the 240-foot marine contour line between Kahuku and Ka'ena Points. Trolling for *ono,* or wahoo, is common here (John Clark 2003:272).

Fishing in these waters has numerous forms, including: pole, throw-net, netting, trapping, spearing. While a significant portion of fishermen and women are local, a diverse group of people come from near and far to fish using traditional methods in these waters.

Swimming and Diving: *Au or ʻaukai* (swimming) for sport, referred to as *hei-hei-au*, is an ancient Hawaiian tradition according to anthropologist, Stewart Culin (1899:211), where males were known to race each other in competition and at times for prizes or wagers. Diving, for sustenance has long been a tradition in Hawaiʻi. John Clark (2003) also lists a number of popular and traditional sites within the Resort coast to swim and dive, including:

- **Kahuku Ledge:** Located three-quarters of a mile off of Kahuku Point at 70 foot marine contour line and parallel to shore. Popular diving ledge (John Clark 2003:139).
- **Kalokoiki (also known as Keyhole):** A sandy beach and protected cove between Kalaeokaunu (Kuilima Point) and Kalaeokamanu (John Clark 2003:385).
- A swimming pond and beach located east of Kawela Bay (John Clark 2003:385).
- **Wild Beach:** Located between Kawela Bay and Kuilima Point. The name refers to the irregular or "wild" wave patterns during high surf. Swimming and diving (John Clark 2003:390).

Surfing: *Heʻe nalu* (surfing boarding) and *kaha nalu* (body surfing) are also longstanding Hawaiian traditions (Finney 1959). According to Pukui and Korn (1973:36), in ancient Hawaiʻi, surfing was a way of life and a "discipline for heroes."

The *papa heʻe nalu* (surfboard) was also an important possession in ancient times. Pukui and Korn (1973) maintain that "Both males and females regarded surfboards as prized pieces of property and selecting their names required much thought." (Pukui and Korn 1973:36). Culin (1899:212) describes the *papa heʻe nalu* of the historic era as made of wood from the *wiliwili* (*Erythrina corallodendrum*), *ʻulu* (breadfruit; *Artocarpus altilis*), or *koa* (*Acacia koa*) trees. He adds that the boards measured up to six feet long and a little over a foot wide, occasionally flat, but often slightly convex on top and bottom. These boards were typically stained black and after each use, it dried and rubbed down with coconut oil then wrapped in cloth and suspended in the owner's house (Culin 1899:212).

According to John Clark (2003), the Resort coast contains several surf breaks, including:

- **Gordieland:** Located off the north point of Kawela Bay (John Clark 2002:81).
- **Marconi:** Located between Kahuku Point and Kalaeuila, or High Rock (John Clark 2003:238).
- **John Jack:** Located adjacent to Kahuku Point (John Clark 2003:129).
- **Wilds:** Located between Kawela Bay and the Turtle Bay Hilton Hotel (John Clark 2003:390).

Canoeing: Canoe racing, or *he'e wa'a*, was also observed as a traditional Hawaiian sport in the late 1800s (Culin 1899:211), that has continued to be practiced today in waters off of the Resort's coasts. In the Historic period, "Two or more canoes race, usually out to sea, the course being a mile or a mile and a half out and around a flag buoy and return…" (Culin 1899:211). Paddlers, with outriggers ranging from single rider to crew size, continue this ancient tradition. One access location for canoe paddling is Kalokoiki (also known as Keyhole). People are permitted to launch larger outrigger canoes, but the access is small and crowded.

Contemporary Activities: While the Resort provides an array of recreational activities for its guests and visitors, the vast coastline and public access areas allow the local community to perform cultural practices as well as recreate on the Resort property. A number of popular and/or traditional activity areas are located along the Resort coast. Traditional activities include surfing, swimming, diving, and paddling. Other marine activities that are not attributed to traditional Hawaiian practices, but are now popular are snorkeling and kayaking.

Marine Activities: With such an extensive and varied coastline, in terms of water access, water conditions, presence or absence of reef or sand, etc., there are a plethora of marine sports and recreational activities that occur on the Resort's coast. Throughout this area, Resort guests, visitors, and area residents can be observed on any given day participating in the following activities, some of which are also performed by traditional cultural practitioners:

Some areas are key access areas for various marine sports and recreational activities. The cove known as Kalokoiki and Keyhole, between Kalaeokaunu (Kuilima Point) and Kalaeokamanu is easily accessible to canoes and kayaks.

With regard to wildlife, endangered species such as the *honu* (sea turtle) and *`ilioholoikauaua* (seal) are known to frequent the area, as documented in Chapter Two of the SEIS. While viewing these endangered species has become a popular activity for visitors as well as locals, these animals have, in the past, cultural significance to Native Hawaiians as a food source and in the case of the *honu*, an *`auma`kua* for some families and individuals as well as a source material for a variety of traditional tools (Maly and Maly 2003; Kittinger et al. 2011).

Fishing	Surfing	Motor Boating
Collecting	Kite Surfing	Tropical Fish Collecting
Swimming	Wind Surfing	Sunbathing
Snorkeling	Stand-Up Paddling	Picnicking
Scuba Diving	Paddling	Taking Photos and Video
Free Diving	Kayaking	Wildlife Viewing
Body Surfing	Canoeing	Walking/Jogging
Skim Boarding	Sailing	Body Boarding

Terrestrial Activities: The Resort offers several recreational activities on land for its patrons, including horseback riding, biking, Segway riding, jogging, walking for recreation and fitness, hiking, group fitness classes, tennis and golfing are all activities that are currently occurring on landside of the property. Weddings and memorials often take place on the property as well. In addition, film makers from near and far have used the property for films, television shows, and commercials.

F. 3. Socio-Economic Conditions

A Socio-Economic Impact Analysis, prepared by Belt Collins Hawaii LLC, was conducted for the Proposed Action and is included in the SEIS as Appendix H. Following is a summary of its findings concerning the existing social and economic setting. Chapter Five of the SEIS includes a summary of the report's findings concerning the Proposed Action's socio-economic impacts. Chapter Four of the SEIS includes a summary of the report's comparative evaluation of the Proposed Action and the Alternatives.

F.3. a. Regional Setting

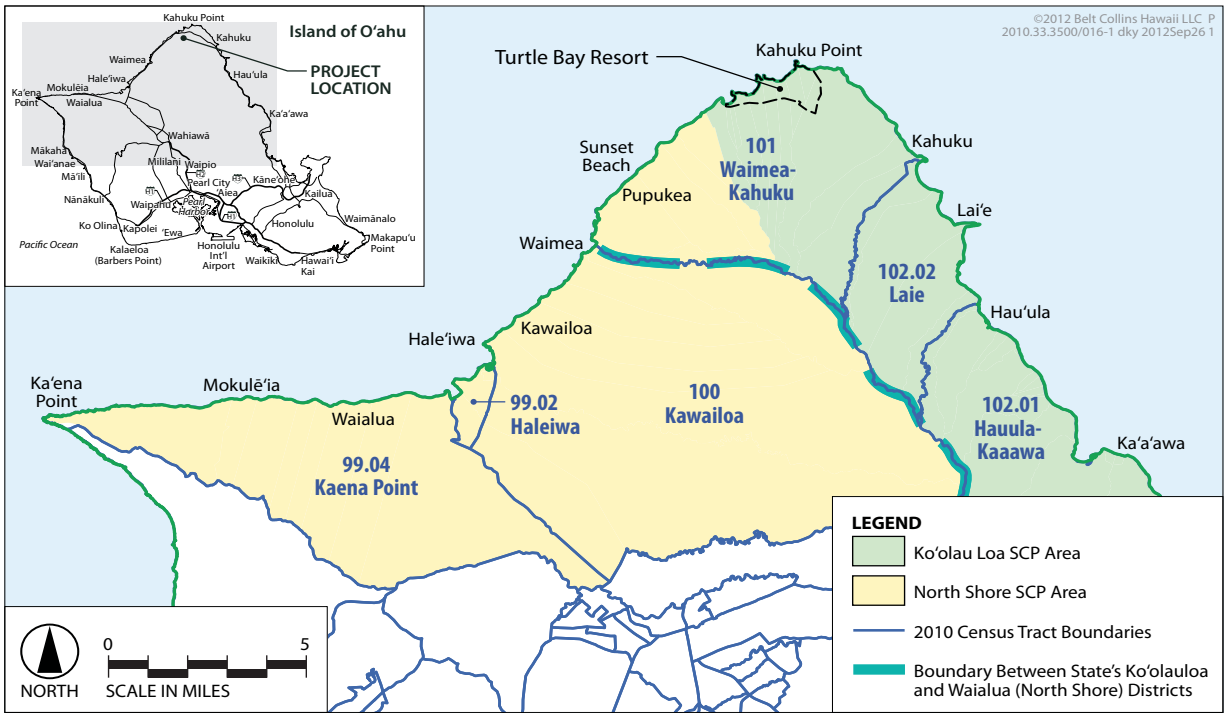
The Resort is located outside the town of Kahuku and near the boundary between the Koʻolau Loa and Waialua (or North Shore) Districts. For the purposes of the SEIS, the combined districts – the Koʻolau Loa/North Shore (KNS) region – will be treated as the area most likely to be affected by change at the Resort. However, the economic consequences of development would extend beyond the region to the remainder of the City and County of Honolulu and the State of Hawaiʻi. County and State governments are charged with providing public services to the region; they collect taxes and fees from the development.

Figure ~~2-60~~ 2-65 shows the region, major communities, and subareas recognized by the U.S. Census and local government. It shows also a source of possible confusion: State and City definitions of local regions diverge. The City and County of Honolulu recognizes Sustainable Communities Plan (SCP) Areas, with a boundary just west of the Resort; the State of Hawaiʻi recognizes judicial districts – and, following the state, the U.S. Census identifies census tracts – with Waimea Bay at the western limit of the Koʻolauloa District.[7]

The two SCP Areas, North Shore and Koʻolau Loa, can be contrasted, with Koʻolau Loa characterized as a network of small, rural communities, while the North Shore is deeply affected by its role as the surfing capital of the world. However, in many ways, residents of the region as a whole share a commitment to their area and to a rural lifestyle.

[7] Appendix A, Table A-1 of the Socio-Economic Impact Analysis identifies the relationship between specific communities and the various federal, state and county boundaries. The City and County of Honolulu uses the spelling Koʻolau Loa, while the State uses Koʻolauloa. The former spelling is used here except when referring to the State's judicial district. The City's approach, which treats Sunset Beach and Pupukea as part of the North Shore, rather than of Koʻolau Loa, seems to fit most regional residents' views better than the State's boundaries.

Figure ~~2-60~~ 2-65: Regional Map



F.3. b. The KNS Regional Economy

Local employers support at least some 6,200 jobs. (Many additional jobs exist in the region, but the employers – for example, the State Department of Education – are located elsewhere. In addition, agricultural jobs are not included in Table 2-16 because comparable data is not available.). Figure ~~2-61~~ 2-66 shows the Zip Code areas in the region.

The largest employers are found in the Lāʻie and Kahuku ZipCode tabulation areas. These include the Polynesian Cultural Center, BYUH, Kahuku Medical Center and Turtle Bay Resort. Kahuku, with the Resort and the Medical Center, has the highest average wage. Haleʻiwa is home to mid-sized retail and food service establishments. Alluvion, which grows and ships plants from Kawailoa, is also in the Haleʻiwa ZipCode area. On the other hand, few businesses are located along the coastline from Kaʻaʻawa through Hauʻula, and their workforce amounts only to 208 persons.

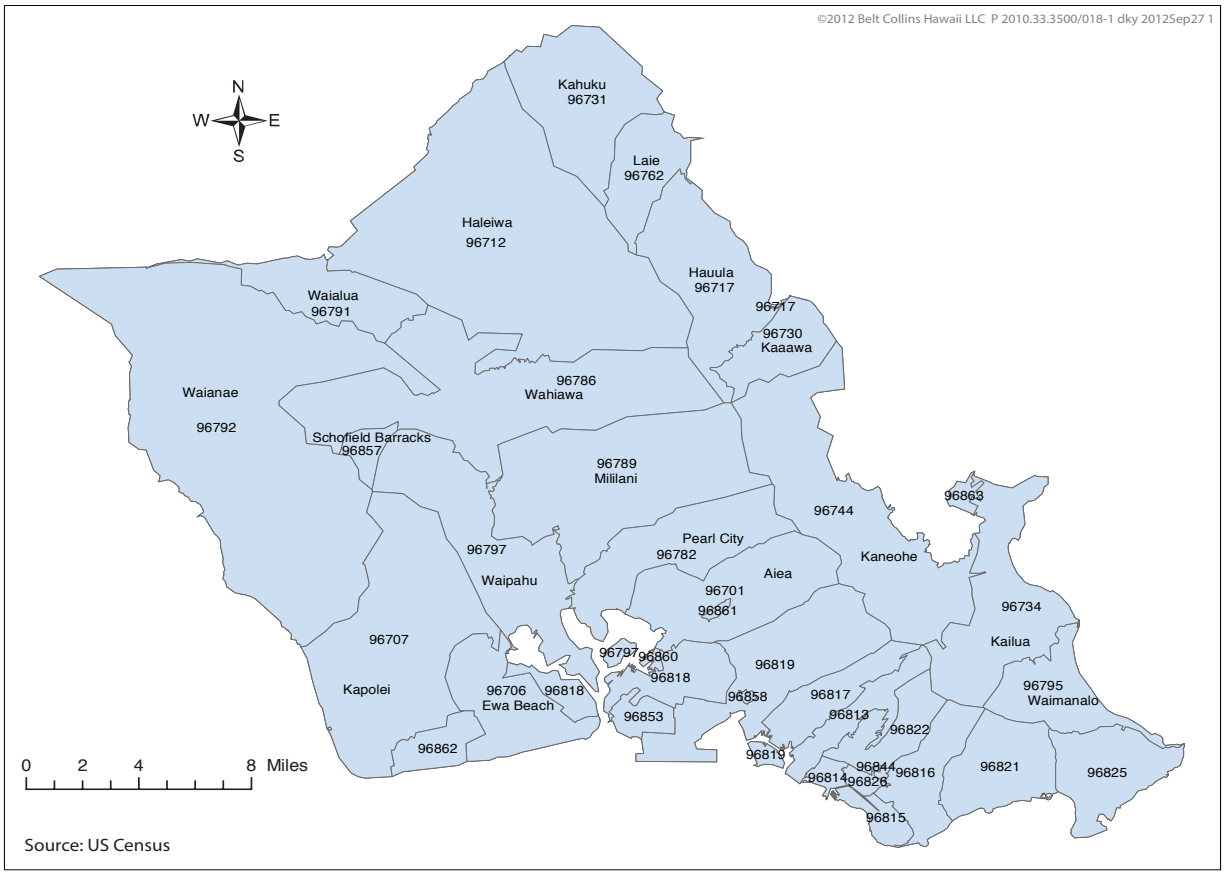
Table 2-17 provides more information on the employment categories for residents of the KNS region. The share of the workforce in the construction industry continues to be substantial, especially in the North Shore Census Tracts. On the Koʻolau Loa side of the region, workers in the accommodation/food service/arts and recreation sector are especially numerous. A large share of the jobs in Lāʻie are in education, with a private university as well as public schools. Throughout the region, few workers are in the financial and real estate sector. Data on class of workers indicates that self-employment is high in the region, especially in CT 101 (Waimea-Kahuku). 40% of employees travel to and from the Resort from the Koʻolau Loa side, and about 60% travel along the highway on the North Shore.

While agriculture was once the local mainstay, its role is smaller in the 21st Century. In Waialua District, much of the land that once was used by Waialua Sugar is now planted in seed corn. Coffee production, floriculture and vegetable farming have also developed. Cows and horses are still raised in the region, although the local dairy closed in the 1990s. On the Ko'olau Loa side of the region, the remaining farms are mostly small-scale operations. Aquaculture has been developed in the Kahuku region, focusing on shrimp, with mixed success. Lunch trucks offering shrimp plates have done well, and now are a common stop on circle-island tours.

Table 2-16: Employment Patterns by Zip Code of Establishment, 2009

		2009 Business Patterns Data					
Area	**ZipCode**	**Business Establishments**	**Workforce**	**Average No. Workers per Establishment**	**Average Annual Wage**	**Number of Establishments 50 to 99 Workers**	**Number of Establishments 100 or more Workers**
Kaaawa	96730	10	60	6.0	$27,833	-	-
Hauula	96717	30	148	4.9	$25,601	-	-
Laie	96762	41	2,904	70.8	$18,826	4	2
Kahuku	96731	46	1,251	27.2	$33,160	1	3
Haleiwa	96712	202	1,491	7.4	$25,452	6	-
Waialua	96791	68	349	5.1	$31,350	-	-

Figure ~~2-61~~ 2-66: Zip Code Tabulation Areas



The major industry in the local economy is tourism. The North Shore is a destination for visitors' day-trips because it is renowned as the home of big-wave surfing, spectacular beaches, Haleʻiwa Town, and deep-water marine activities. The PCC in Lāʻie and Waimea Falls Park also attract visitors on circle-island trips. The Resort not only serves its overnight guests, but attracts tourists staying elsewhere and local residents to its beaches, amenities, golf courses, retail, and restaurants.

Retail and other commercial establishments are concentrated in Haleʻiwa. In Koʻolau Loa, only Lāʻie supports a retail center larger than a strip mall. The region had industrial centers at the sugar mills in Waialua and Kahuku. The Kahuku Sugar Mill now houses a mix of commercial establishments and civic offices, while the Waialua Mill site is home to a mix of small businesses, including surfboard makers, a soap factory, and food vendors. Coffee, chocolate and soda are manufactured in Waialua.

In the KNS region, much of the upland area is used by the U.S. Army and the Marines for training. The training areas may be reached through roads from Central Oʻahu not used by the

Table 2-17: Industry and Class of Worker, 2006-2010

	City and County of Honolulu	KNS Region	Census Tract 102.01 Hauula-Kaaawa	Census Tract 102.02 Laie	Census Tract 101 Waimea-Kahuku	Census Tract 100 Kawailoa	Census Tract 99.02 Haleiwa	Census Tract 99.04 Kaena Point
Employed Civilian Workers	439,691	14,960	2,394	3,254	3,584	881	1,872	2,975
Industry								
Agriculture	0.8%	2.1%	1.5%	0.4%	1.2%	0.0%	6.0%	3.7%
Construction	7.2%	12.4%	13.7%	7.3%	15.3%	8.7%	9.1%	16.6%
Manufacturing	3.5%	2.3%	3.3%	1.0%	2.5%	3.4%	2.3%	2.6%
Wholesale trade	2.9%	1.7%	2.3%	0.7%	1.3%	0.2%	1.8%	3.4%
Retail trade	11.1%	10.0%	7.8%	7.9%	12.6%	6.0%	14.2%	9.7%
Transportation, Warehousing, Utilities	6.0%	3.3%	2.9%	3.3%	2.2%	3.7%	4.3%	4.3%
Information	2.1%	1.7%	1.6%	1.2%	2.0%	0.9%	0.5%	3.1%
Finance, Insurance, Real estate	7.2%	4.0%	4.8%	3.7%	3.8%	0.0%	4.4%	4.7%
Professional, administrative services	10.2%	7.3%	7.4%	6.3%	2.8%	18.8%	10.6%	8.2%
Education and Health	21.7%	25.5%	28.8%	39.0%	23.2%	19.4%	17.6%	17.7%
Accommodation, Food Service, Arts, Recreation	13.6%	19.8%	14.5%	26.1%	23.3%	21.3%	17.3%	14.1%
Public Administration	9.5%	5.7%	8.8%	1.7%	4.5%	12.6%	8.6%	5.3%
Other services	4.3%	4.0%	2.7%	1.5%	5.3%	4.8%	3.2%	6.6%
Class of worler								
Private wage & salary	71.5%	70.9%	67.1%	80.7%	64.9%	67.1%	72.8%	70.3%
Government	21.9%	18.6%	23.1%	13.6%	18.1%	25.3%	17.7%	19.5%
Self-Employed	6.4%	10.5%	9.9%	5.5%	17.0%	7.6%	9.5%	9.9%
Unpaid family workers	0.2%	0.1%	0.0%	0.2%	0.1%	0.0%	0.0%	0.2%

NOTE: The ACS is based on a series of samples, not an enumeration of the whole population, and is less reliable for cells with small counts. The table refers to *residents* of the region, who may work in the region or elsewhere.
SOURCE: American Community Survey data, 2006-2010, downloaded from www.census.gov.

general public, by convoys on public highways, or by air, with helicopters traveling over the water most of the way from Marine Corps Base Hawaii Kaneohe Bay, then crossing the shoreline area near Kahuku Point or Kawailoa to reach training areas. Also, a military housing area is located at Helemano, just within the North Shore SCP area.

For the region's establishments, the average reported wage in 2009 was $24,263. The ACS employed civilian labor force of about 14,960 is more than twice as large as the job count in Table 2-16: most regional workers must travel outside the KNS region to find work. Reported commute times are longer than the island average (except in the Lāʻie and the Kawailoa CTs).

The two major developments that could affect the local economy and employment are the expansion of the Resort and Envision Lāʻie, a planning process sponsored by Hawaii Reserves, Inc., the landowner. Both would support job growth and provide housing. The Proposed Action would provide new jobs for residents throughout the KNS region.

Job growth through Envision Lāʻie would be more narrowly targeted, since Lāʻie's job centers are closely tied to the Mormon Church and educational activities. If new housing is provided by Envision Lāʻie for workers in the Lāʻie job centers, it could address crowding in that community with only limited impact on problems of cost and crowding elsewhere in the region. However, it is important to note that the project presently being discussed in the community has not yet applied for or been granted any development permits or approvals. Some 1,260 units have been proposed to be built over 25 years.[8] If implemented, the proposed development would nearly double the Lāʻie housing stock. It could add far more housing to the regional stock than the Proposed Action.

The new inn at Lāʻie would have up to 224 rooms and limited amenities (e.g., a coffee shop rather than a full restaurant). It is not intended to be a resort that would be comparable to Turtle Bay. It would primarily serve PCC and BYUH visitors and visitors to Koʻolau Loa families.

The Honolulu City Council approved the Special Management Area permit for the new hotel in 2011. New land use approvals would be needed for Envision Lāʻie's proposed university expansion and new residential area towards Malaekahana, so the scope and timing of these is currently unknown.

In the Haleʻiwa area, the major landowner, Kamehameha Schools, completed a Master Plan for its North Shore lands in 2008. It includes renovation and expansion of commercial areas in Haleʻiwa, along with limited new residential development. On Kamehameha Schools land, the Kawailoa

[8] This figure was included in revisions to the Draft Koʻolau Loa SCP supported by several Lāʻie and Kahuku members of the SCP advisory group in 2009 (posted at http://envisionlaie.com/wp-content/downloads/kscp_proposed_amendment.pdf). The developer has not recently provided a revised total for housing to be built at Malaekahana.

Wind project is now beginning construction. It would generate approximately 70 MW of power, and be Hawai'i's largest wind power facility. The towers are to be located well inland, and would be far less visible than the facility now operating at Kahuku, which was also built by First Wind.

Other new major projects that have been proposed (and opposed) include:

- Relocation of the Hau'ula fire station to commercial land acquired from local owners;
- A second wind farm project in Kahuku, which has been opposed by local stakeholders because its proponents failed to consult the community but claimed to have done so;
- A 75,000-square foot commercial development near the Sunset Beach supermarket was proposed, but plans are on hold, and the developer, Honu Group Inc., no longer mentions this project on its website; and
- A small hotel to be located near the shore at Hale'iwa: This would occupy part of the land that the City and County had bought for park expansion; the proposal has inspired intense discussion in the community.

The North Shore Sustainable Communities Plan, passed by the Honolulu City Council in 2011, incorporates plans for revitalization of Hale'iwa and Waialua as country towns, with new housing allowed nearby. In Hale'iwa, the landowner and stakeholders support continuing retail development and creation of a community gathering place. For Waialua, industrial redevelopment at the mill site is supported.

F.3. c. Social Setting

While all of O'ahu is a single political entity (the City and County of Honolulu), smaller areas have representatives on the City Council and in the State Legislature. Local decision-making and advisory bodies that express and shape local views include two Neighborhood Boards. Neighborhood Board No. 28 (Ko'olau Loa) covers the Ko'olau Loa SCP area (i.e., Ka'a'awa to Kawela), and Neighborhood Board No. 27 (North Shore) serves communities from Sunset Beach to Ka'ena Point. Board members on O'ahu often are recognized local stakeholders, and many go on to serve in political offices. The Boards' role is defined as advisory, but they are regularly asked to comment on development proposals. They provide an arena for local issues and debates.

Community Advisory Committees were formed in support of City Department of Planning and Permitting's ongoing update program the SCPs, including the North Shore and Ko'olau Loa Sustainable Communities Plans.

The North Shore Chamber of Commerce has grown from its origins as Hale'iwa Main Street to represent local commercial interests throughout the KNS region. It arranges events such as the annual Arts Festival.

Other local groups include community associations, which vary greatly in their level of activity. The Waialua Community Association (WCA) was incorporated in 1937. It built the WCA gymnasium in Haleʻiwa and continues to operate this facility, serving the entire North Shore. A separate group, Friends of Waialua, sponsored a master plan for the Waialua Town Center (developed with City and County funding). The Lāʻie Community Association has participated extensively in the Envision Lāʻie process, supporting expansion of BYUH and the building of a larger hotel to replace the Laie Inn. Other community associations deal with issues of concern in the towns along the coast. Local institutions may have active groups of associates and supporters. Waimea Valley has provided a venue for Hawaiian cultural practitioners in the region. Kahuku High & Intermediate School has active community support, most visibly for its winning football team.

Concerns about development in the region have been voiced by groups of local stakeholders. Keep the North Shore Country was a plaintiff, along with the Sierra Club, in the suit challenging the Kuilima EIS as outdated. It is part of the Koʻolau Loa/North Shore Alliance and works with the Defend Oʻahu Coalition to oppose development at Turtle Bay and in Lāʻie.

The Kuilima/North Shore Strategic Planning Committee was formed in the 1980s to identify ways in which redevelopment of the Resort could benefit regional residents. It was involved in planning for community benefits after the Kuilima EIS was approved. It continues to meet and provide community input to redevelopment planning for the Resort.

Residents of the KNS region are proud of their communities. The North Shore is renowned for its surf and surfing lifestyle. Koʻolau Loa is less well known. Both areas are viewed as "country" by Oʻahu residents, and many agree that they should be protected from urbanization.

However, these "country" areas are far from isolated. Many workers commute daily outside the region. The North Shore exports surfboards and agricultural products worldwide. Retail and recreational businesses in Haleʻiwa cater to tourists traveling around the island. During the winter surf season, local traffic is even more congested than usual because of the influx of spectators to surfing competitions. Koʻolau Loa includes both major visitor facilities (the PCC and the Resort) and institutions central to Hawaiʻi's Mormon community. BYUH has attracted students and residents from the island communities of Polynesia as well as Hawaiʻi.

Few useful generalizations about quality of life can be made for the entire region. Persons, families, and communities vary over time as they encounter challenges or enjoy prosperity and wellbeing. A few indicators may help to suggest ways that the region's reputation, economy and community life inform residents' lives:

- Unemployment is higher in the KNS region than the island average, and average wages (as distinct from household income as a whole) are lower;

- Surveys of students, parents and teachers indicate that family ties and family involvement in schools are strong in the Kahuku High School catchment area (i.e., mainly Koʻolau Loa). Young people report that they have close neighborhood ties. When data from schools throughout Hawaiʻi were compiled, the Kahuku community was ranked ninth of 42 communities in "protective factors" tending to support young people's success in life.[~~3~~ 9]

  Responses from the Waialua High School area are closer to the island and state average. The summary report suggests some of the strengths of the area: [9]

  > ***In a Statewide survey of students, more than half of the adolescents responding in the Waialua Area reported problems in family relationships. However, most of the adolescents reported strong neighborhood ties and that their schoolwork was interesting and meaningful. The graduation rate in this community is high, and most high school seniors plan to attend college.[10]***

- Respondents to the Behavioral Risk Factor Surveillance Survey from the KNS region were more likely than ones from any other community in Hawaiʻi to report their general health status as good to excellent. They also ranked highest as experiencing social and emotional support. On the other hand, the community also ranked high in reports of high blood pressure.[~~4~~ 11]

The recognized communities of the KNS region vary in ways rooted in their histories. Kahuku and Waialua were each once[~~1~~] the centers of sugar plantations. They retain remnants of mill infrastructure. They have public secondary schools. Their residents include retirees from the plantations, and the children and grandchildren of plantation workers. Lāʻie was acquired as a center for the Church of Jesus Christ of Latter-day Saints in 1865. It remains the center of Mormon worship and education in Hawaiʻi. Haleʻiwa and Sunset Beach have become famous as the home of North Shore surfing. They are mainly tourist and surf industry destinations, especially during the winter season, and are the base for major surfing contests.

The two SCP areas share "country" lifestyles, but these are realized in different ways in different communities.

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[9] Center on the Family, University of Hawaiʻi, Kahuku Area Community Profile. Honolulu, HI: 2003

[10] City and County of Honolulu, Department of Planning and Permitting, Koʻolau Loa Sustainable Communities Plan Five-Year Review: Public Review Draft. Honolulu, HI: 2010, p. 2-1.

[11] Hawaiʻi State Department of Health, interactive database with data for 2005 to 2010, posted at http://hawaii.gov/health/statistics/brfss/HBRFSS-IA9/atlas.html. The region's respondents had less extreme results for asthma and other health problems.

The racial data in Table 2-18 ~~below~~ shows the KNS region, as a whole, being distinctive on the island of Oʻahu for its lower share of Asian residents and its large proportion of White residents. Koʻolau Loa has a higher proportion of Native Hawaiian and Pacific Island residents than the island as a whole.

Koʻolau Loa and North Shore stakeholders, working with the City and County's planners, have developed similar long-term visions for their areas:

> ***… Koʻolau Loa seeks to preserve the region's rural character and its natural, cultural and scenic resources. The community envisions a safe and healthy environment based on strong family values, where residents have access to quality jobs, affordable housing, and ample recreational opportunities within the region. Koʻolau Loa will remain country, characterized by small towns and villages with distinctive identities that exist in harmony with the natural settings, defined by the mountain ridges and scenic open spaces which help to give the region its unique form of organization.***[12]
>
> ***The North Shore in the year 2035 retains the unique qualities that have long defined its attractiveness to residents and visitors alike. Scenic open spaces are protected and maintained, coastal resources are enhanced, and the region's Native Hawaiian heritage, cultural diversity, and plantation past have been carried forward in the revitalization of its communities.***[13]

The former vision emphasizes the continuing wellbeing of local communities rooted in existing towns; the latter emphasizes open space, and treats towns as sites to be "revitalized." This difference is not new, and it is not simply a difference between the two SCP Areas within the region.[14] Areas where many residents value their coastal strip and ocean as "country" include Kaʻaʻawa and Punaluʻu in Koʻolau Loa as well as most of the North Shore. Similarly, "community" orientation and the hope of continuity for families and neighborhoods, from the plantation past to an uncertain present and future, is found as much in Waialua as in Kahuku or Lāʻie.

Local stakeholders in Haleʻiwa and Waialua see their communities as distinct towns with economic hubs to be supported, i.e., Haleʻiwa's mix of tourist retail and other businesses, and

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[12] City and County of Honolulu, Department of Planning and Permitting, Koʻolau Loa Sustainable Communities Plan Five-Year Review: Public Review Draft. Honolulu, HI: 2010, p. 2-1.

[13] City and County of Honolulu, Department of Planning and Permitting, North Shore Sustainable Communities Plan: Public Review Draft. Honolulu, HI: 2010, p.2-2

[14] The Socio-Economic Impact Assessment for the Kuilima EIS made much the same point in 1984: "At a very general level, there is an apparent value difference between residents who are primarily concerned with preserving a 'country' feeling and those who are more concerned with preserving a current 'community' for existing family and friends. While most people would like both, they tend to lean to one or the other if forced to choose." (Community Resources, Inc. and A. Lono Lyman, Inc., Appendix J to the Kuilima EIS, page 4).

Table 2-18: Selected Population Characteristics, 2006-2010

	City and County of Honolulu	KNS Region	Census Tract 102.01 Hauula-Kaaawa	Census Tract 102.02 Laie	Census Tract 101 Waimea-Kahuku	Census Tract 100 Kawailoa	Census Tract 99.02 Haleiwa	Census Tract 99.04 Kaena Point
Population	936,984	32,700	5,286	6,940	7,408	3,179	3,729	6,158
Median Age	37.5	NA	32.0	23.8	33.3	24.5	37.5	39.0
Racial/Hispanic Identification (1)								
White	36.8%	56.2%	58.2%	46.1%	64.3%	77.5%	46.2%	51.4%
Black or African American	3.4%	2.6%	4.5%	0.5%	0.9%	8.4%	1.9%	3.0%
American Indian and Alaska Native	2.1%	4.4%	6.7%	2.1%	5.0%	7.9%	4.2%	2.9%
Asian	61.8%	37.7%	34.4%	25.1%	37.9%	20.8%	53.3%	53.8%
Native Hawaiian and Other Pacific Islander	23.1%	37.0%	55.0%	61.2%	30.3%	7.1%	27.9%	23.3%
Some Other Race	2.4%	1.5%	1.3%	0.7%	1.2%	4.0%	1.7%	1.7%
Hispanic	7.9%	9.3%	8.4%	4.5%	9.8%	13.6%	9.9%	12.1%
Persons below Poverty Level								
Share of Population	8.8%	10.4%	14.1%	10.0%	9.2%	19.5%	7.8%	6.2%
Population 16 and over	752,343	24,982	4,020	4,885	5,889	2,158	2,936	5,094
In Labor Force	501,779	17,106	2,580	3,382	3,935	1,516	2,217	3,476
In Civilian Labor Force	462,843	16,079	2,566	3,372	3,822	977	2,208	3,134
Civilian Labor Force Participation	61.5%	64.4%	63.8%	69.0%	64.9%	45.3%	75.2%	61.5%
Mean Travel Time to Work, Civilian Labor Force (minutes)	27.0	NA	37.4	17.9	35.1	23.7	27.4	32.2
Unemployment Rate, Civilian Labor Force	5.0%	6.5%	6.7%	3.5%	6.2%	9.8%	15.2%	5.1%
Households	304,827	9,135	1,546	1,225	2,297	1,034	1,091	1,942
Median Household Income	$70,093	NA	$66,500	$75,417	$64,623	$40,441	$74,719	$73,883
Population in households	902,832	31,111	5,236	5,978	7,277	3,096	3,729	5,795
Population in group quarters	34,152	1,589	50	962	131	83	-	363

NOTE:
(1) Based on "Race alone or in combination with other races" tally. Percentages add up to more than 100% since persons may claim more than one race.
SOURCE: U.S. Census, American Community Survey combined samples for 2006 through 2010, downloaded from American FactFinder at *www.census.gov*.

Waialua's Sugar Mill redevelopment area. Much the same could be said of Kahuku and Hauʻula in Koʻolau Loa, but their commercial areas appear less successful. Lāʻie stands out because its major employers are closely interrelated. The Polynesian Cultural Center (PCC) depends on Brigham Young University – Hawaii (BYUH) for much of its workforce, while it provides financial support to the university. Its economic organization follows from its role as a church center.

The growth of surfing and the surf industry has brought a younger population and an orientation to the ocean, more than to land resources, to the North Shore. The high levels of unemployment in the Haleʻiwa and Kawailoa Census Tracts (identified in Table 2-18 ~~above~~) is understandable if

many residents live on the North Shore to enjoy the ocean, and do not need to support families or are willing to accept marginal economic conditions so long as they can live there. Many on the North Shore see their environment as a resource for the island and the entire world, not just for their own community. Accordingly, they may be more concerned with environmental protection than with economic sustainability. However, residents of communities throughout the region support both of these values and assess new initiatives in light of them both.

F.3. d. Population Characteristics

The KNS region has experienced population growth in every decade since 1980. However, that growth has been largely on the Koʻolau Loa side and in the Kawailoa area between Waimea

Table 2-19: Population Trends, 1980-2010

	1980	1990	2000	2010
City and County of Honolulu	762,565	836,231	876,156	953,207
KNS Region	27,352	29,992	32,926	34,452
Koʻolualoa District	14,195	18,443	18,899	21,406
CT 102.01 [Hauula-Kaaawa]	3,952	4,608	5,312	5,882
CT 102.02 [Laie]	5,752	6,926	6,100	7,643
CT 101 [Waimea-Kahuku}	4,491	6,909	7,487	7,881
Waialua District	13,157	11,549	14,027	13,046
CT 100 [Kawailoa]	1,879	1,801	4,338	3,320
CT 99.02 [Haleiwa]	5,350	3,956	3,958	3,740
CT 99.04 [Kaena Point]	5,928	5,792	5,731	5,986
	Average Annual Increase, over the decade ending in:			
		1990	2000	2010
City and County of Honolulu		0.9%	0.5%	0.8%
KNS Region		0.9%	0.9%	0.5%
Koʻolualoa District		2.7%	0.2%	1.3%
CT 102.01 [Hauula-Kaaawa]		1.5%	1.4%	1.0%
CT 102.02 [Laie]		1.9%	-1.3%	2.3%
CT 101 [Waimea-Kahuku}		4.4%	0.8%	0.5%
Waialua District		-1.3%	2.0%	-0.7%
CT 100 [Kawailoa]		-0.4%	9.2%	-2.6%
CT 99.02 [Haleiwa]		-3.0%	0.0%	-0.6%
CT 99.04 [Kaena Point]		-0.2%	-0.1%	0.4%

SOURCE: U.S. Census, as reported in State Data Center reports and Data Books.

and Haleʻiwa (Census Tract [CT] 100, labeled in Figure ~~2-64~~ 2-65. The resident population of Haleʻiwa has declined, while the population of the Waialua area has been stable. For the entire KNS region, the result has been population growth at much the same rate as for the island as a whole over thirty years. (See Table 2-19 ~~3-1~~.)

As Table 2-20 ~~3-2~~ indicates, some characteristics of the population of the regional census tracts vary greatly. Lāʻie and Kawailoa stand out as having young populations. In Lāʻie, youths form a large part of the population. In Kawailoa, the young demographic is mostly over 18 years old. Throughout the region, the share of seniors in the population is lower than for Oʻahu as a whole.

The racial data in Table 2-20 ~~3-2~~ reflects (a) broad Federal categories and (b) multiple claims to racial identity. Region-wide, White claims are more frequent, and Asian identification less frequent, than island-wide. The share of residents claiming Native Hawaiian or Pacific Islander status is much higher in Koʻolau Loa than island-wide. The Native Hawaiian or Pacific Islander share of the population is highest in the Hauʻula-Kaʻaʻawa and Lāʻie CTs. Claims to more than one racial identity are higher in the former tract (CT 102.01). The share of the population identifying as Hispanic is higher in the three North Shore Census Tracts than the island average.

Schools assign a single ethnicity to each student for statistical purposes. The secondary school data in Table 2-21 ~~3-3~~ show significant numbers of Native Hawaiians and Samoans at Kahuku High & Intermediate School (i.e., in Koʻolau Loa). At Waialua High & Intermediate School, Filipinos form the largest recognized population. Only about a fifth of the population in either school is categorized as White.

The difference between the racial data in Table 2-20 and in Table 2-21 is due in part to methodology and in part to the fact that many of the Whites in the region are young adults, not school-aged youth.

Table 2-21 also shows that very few students have limited English proficiency, while nearly half of the students in either school can qualify for free or reduced-priced lunch because of low family income. These indicators point to a low-income family population with a small number of immigrants from non-English-speaking lands.

The group-quarters population in Lāʻie consists of students at Brigham Young University – Hawaii (BYUH) in dormitories. The persons in group-quarters in the Kaena Point tract (CT 99.04) are largely military (at Helemano). Both nursing homes and other, not categorized, facilities house the group-quarters population of CT 101.

Table 2-20: Selected Population Characteristics, 2011

	City and County of Honolulu	KNS Region	Census Tract 102.01 Hauula-Kaaawa	Census Tract 102.02 Laie	Census Tract 101 Waimea-Kahuku	Census Tract 100 Kawailoa	Census Tract 99.02 Haleiwa	Census Tract 99.04 Kaena Point
Population	936,984	32,700	5,286	6,940	7,408	3,179	3,729	6,158
Median Age	37.5	NA	32.0	23.8	33.3	24.5	37.5	39.0
Racial/Hispanic Identification (1)								
White	36.8%	56.2%	58.2%	46.1%	64.3%	77.5%	46.2%	51.4%
Black or African American	3.4%	2.6%	4.5%	0.5%	0.9%	8.4%	1.9%	3.0%
American Indian and Alaska Native	2.1%	4.4%	6.7%	2.1%	5.0%	7.9%	4.2%	2.9%
Asian	61.8%	37.7%	34.4%	25.1%	37.9%	20.8%	53.3%	53.8%
Native Hawaiian and Other Pacific Islander	23.1%	37.0%	55.0%	61.2%	30.3%	7.1%	27.9%	23.3%
Some Other Race	2.4%	1.5%	1.3%	0.7%	1.2%	4.0%	1.7%	1.7%
Hispanic	7.9%	9.3%	8.4%	4.5%	9.8%	13.6%	9.9%	12.1%
Persons below Poverty Level								
Share of Population	8.8%	10.4%	14.1%	10.0%	9.2%	19.5%	7.8%	6.2%
Population 16 and over	752,343	24,982	4,020	4,885	5,889	2,158	2,936	5,094
In Labor Force	501,779	17,106	2,580	3,382	3,935	1,516	2,217	3,476
In Civilian Labor Force	462,843	16,079	2,566	3,372	3,822	977	2,208	3,134
Civilian Labor Force Participation	61.5%	64.4%	63.8%	69.0%	64.9%	45.3%	75.2%	61.5%
Mean Travel Time to Work, Civilian Labor Force (minutes)	27.0	NA	37.4	17.9	35.1	23.7	27.4	32.2
Unemployment Rate, Civilian Labor Force	5.0%	6.5%	6.7%	3.5%	6.2%	9.8%	15.2%	5.1%
Households	304,827	9,135	1,546	1,225	2,297	1,034	1,091	1,942
Median Household Income	$70,093	NA	$66,500	$75,417	$64,623	$40,441	$74,719	$73,883
Population in households	902,832	31,111	5,236	5,978	7,277	3,096	3,729	5,795
Population in group quarters	34,152	1,589	50	962	131	83	-	363

NOTE:
(1) Based on "Race alone or in combination with other races" tally. Percentages add up to more than 100% since persons may claim more than one race.

SOURCE: U.S. Census, American Community Survey combined samples for 2006 through 2010, downloaded from American FactFinder at www.census.gov.

Table 2-21: School Population Characteristics, 2011

	Kahuku	Waialua
Major recognized ethnicities (Percentage of student body)		
Filipino	6.1%	35.8%
Native Hawaiian	40.0%	27.3%
Samoan	13.5%	1.6%
White	20.7%	19.5%
Students with Limited English Proficiency	3.6%	6.2%
Students qualifying for Free or Reduced Price Lunch	49.2%	45.0%

SOURCE: School Status and Improvement Reports, 2011, for Kahuku High and Intermediate School and for Waialua High and Intermediate School, posted at *http://doe.k12.hi.us/*.

F.3. e. Housing Characteristics

The region has seen growth in both households and housing units since 1980 (as shown in Table 2-22). Much of the housing is dedicated to vacation or part time resident housing due to the surfing and other recreational attractions of the area. (The large majority of the "vacant" units counted by the various Censuses in the region are second homes or vacation rentals.) Rentals form a larger share of the housing stock than in the rest of O'ahu, especially in the Kawailoa Census Tract (as shown in Table 2-23). This is due in part to the area's appeal to surfers, many of whom rent for longer periods than other vacationers.

Limited availability of affordable housing for local working families has been a concern for decades in the region (and island-wide). Key reasons include limited availability of zoned residential land, and the high cost of land and construction.

General housing trends for the area include an increase in the total number of units in both districts of the KNS region since 1980, with a decline in the Waialua district after 2000. The number of *occupied* housing units grew throughout the period in the Ko'olau Loa District, but only through 2000 in Waialua District. The number of housing units has increased at a faster rate than the resident population in the region, but increased housing prices have made most new homes too expensive for working families. This phenomenon is understandable in light of the North Shore's appeal as a surfing destination with broad expanses of beaches that are attractive year round.

Vacation rentals affect the availability of housing for residents. The City and County of Honolulu recognizes some 70 units with Non-Conforming Use Certificates in Ko'olau Loa and 10 in the North Shore. These are vacation rentals or bed-and-breakfast establishments that have received

Table 2-22: Housing and Occupancy, 1980 to 2010

	1980	1990	2000	2010
Total Housing Units				
City and County of Honolulu	250,864	281,683	315,988	336,899
KNS Region	7,877	9,709	11,121	11,562
Ko'olualoa District	4,679	5,939	6,199	6,808
CT 102.01 [Hauula-Kaaawa]		1,826	1,932	2,098
CT 102.02 [Laie]		1,517	1,452	1,560
CT 101 [Waimea-Kahuku}		2,596	2,815	3,150
Waialua District	3,198	3,770	4,922	4,754
CT 100 [Kawailoa]		559	1,517	1,309
CT 99.02 [Haleiwa]		1,187	1,247	1,231
CT 99.04 [Kaena Point]		2,024	2,158	2,214
Occupied Housing Units (Households)				
City and County of Honolulu	230,214	265,304	286,450	311,047
KNS Region	6,586	8,403	9,575	9,675
Ko'olualoa District	3,742	4,935	5,172	5,483
CT 102.01 [Hauula-Kaaawa]	1,166	1,458	1,571	1,684
CT 102.02 [Laie]	1,080	1,350	1,274	1,342
CT 101 [Waimea-Kahuku}	1,496	2,127	2,327	2,457
Waialua District	2,844	3,468	4,403	4,192
CT 100 [Kawailoa]	478	491	1,375	1,163
CT 99.02 [Haleiwa]	753	1,113	1,145	1,112
CT 99.04 [Kaena Point]	1,613	1,864	1,883	1,917
Vacant Units as Share of Total Units				
City and County of Honolulu	8.2%	5.8%	9.3%	7.7%
KNS Region	16.4%	13.5%	13.9%	16.3%
Ko'olualoa District	20.0%	16.9%	16.6%	19.5%
CT 102.01 [Hauula-Kaaawa]		20.2%	18.7%	19.7%
CT 102.02 [Laie]		11.0%	12.3%	14.0%
CT 101 [Waimea-Kahuku}		18.1%	17.3%	22.0%
Waialua District	11.1%	8.0%	10.5%	11.8%
CT 100 [Kawailoa]		12.2%	9.4%	11.2%
CT 99.02 [Haleiwa]		6.2%	8.2%	9.7%
CT 99.04 [Kaena Point]		7.9%	12.7%	13.4%

SOURCES: Kuilima EIS, Appendix J and American FactFinder (*www.census.gov*).

legal transient accommodation permits. Many more units are rented illegally. One resident has estimated that the Haleʻiwa or North Shore area includes 450 illegal rentals.[15]

In the period from 1985 through 2010, a total of 1,077 new single-family homes were built in the KNS region.[16] On average, some 18 houses were built each year in the area from Kaʻaʻawa through Kahuku, 12 in the area from Turtle Bay through Waimea Bay, and 11 in the remaining North Shore area.

Average single family housing prices in that time increased faster in the KNS region than island-wide, as shown in Figure 2-62. The increase in average single-family home prices since 2000 is consistent with rapid growth of a non-resident market in the region. At the peak of the recent high sales period, KNS single-family sales averaged 189% of island-wide sales. (In 2006, the regional average was $1,472,726, and the island average was $778,393. Since then, the regional average has returned to levels close to the island average.)

In most of the region, about half of the occupied households are owner-occupied, except in CT 100. (See Table 2-23) Household sizes for owner-occupied households are larger than the island average (again, except in CT 100), with households in Lāʻie appreciably larger than elsewhere. Renters in Lāʻie also have large households. In other tracts in the region, average renter household sizes are close to the island average.

The Kawela Bay Census Designated Place (CDP) includes the Resort and some neighboring residential sites. In 2010, it was home to 330 persons in 153 households: the average household size was 2.16 persons per household. Owners lived in 87 (56.9 %) of these units; renters occupied the remaining 66 units. The CDP included a total of 518 housing units, so the occupied units accounted for only 29.5 percent of the housing stock.[17]

By 2012, the Honolulu Real Property Tax files recognized 366 parcels with taxable housing units within Kuilima Estates.[18] Of these, some 52 (14.2 %) were listed as owner-occupied. This share

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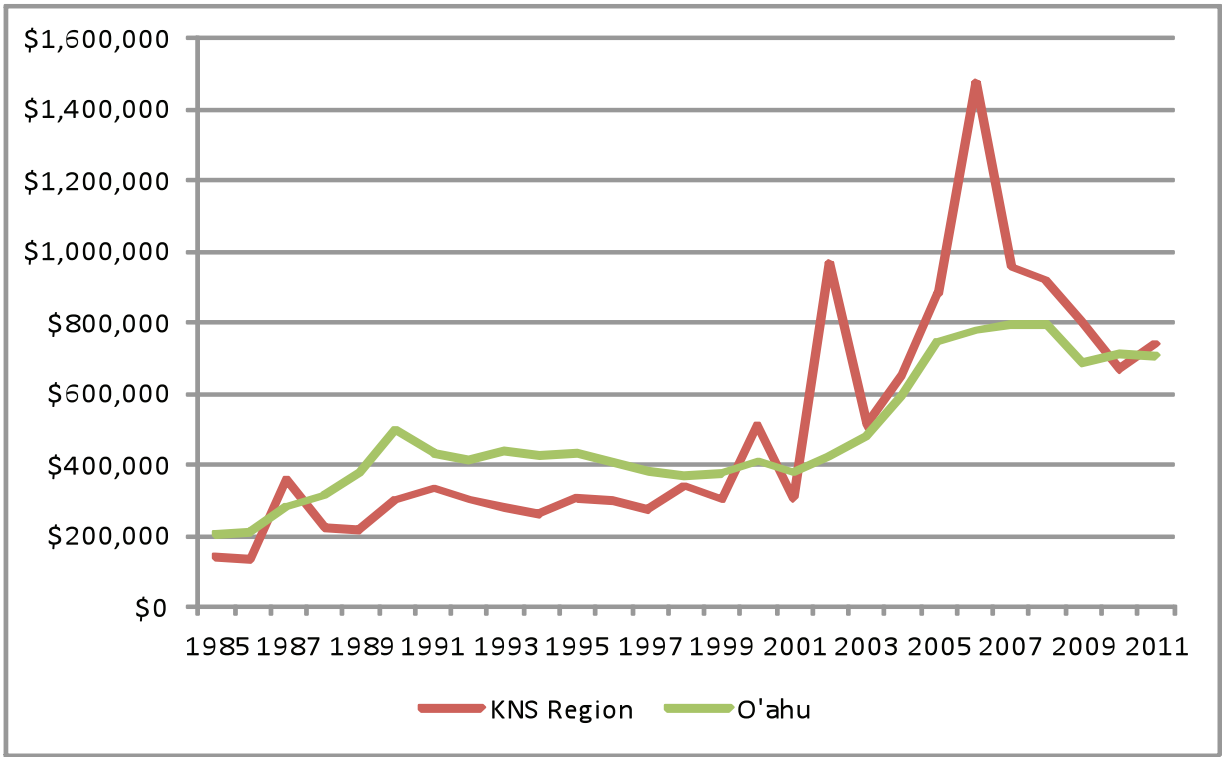
[15] Outside of resort districts, housing can be rented for six months or more at a time. Shorter rentals – "transient vacation rentals" – are sources of income for some homeowners, but may be irritants for others in their neighborhoods. Only long-standing transient vacation rentals can be recognized as legal so long as the use continues from before current zoning rules were enacted. The count of recognized Non-Conforming Uses is from http://honoluludpp.org/HotIssues/NUCreport.pdf. The resident cited in the text is B. Ready, "Illegal Vacation Rentals behind Opposition to Haleiwa Inn?" Hawaiʻi Free Press. June 26, 2012. Posted at http:www.hawaiifreepress.com/ArticlesMain/Tabid/56/ArticleType/CategoryView/categoryID/47/Oahu-News.aspx.

[16] Hawaii Information Service download, analyzed by Belt Collins Hawaii. Only single family units were analyzed because information about the year condominium units were built was not consistently available.

[17] US Census, Summary File 1. Data posted at http://hawaii.gov/dbedt/info/census/Census_2010/SF1/DEC_10_SF1_GCT_CDP.xls.

[18] There are 368 total units in the Kuilima Estates, but two of them are management units.

Figure ~~2-62~~ 2-67: Average Annual Sales Prices, Single Family Homes, KNS Area and O'ahu



NOTE: Average (mean) prices are used rather than medians in order to compare data from different sources. For small areas, average prices can be affected significantly by outliers, i.e., a few extreme cases. This obviously occurred in 2002 and 2006. Still, the overall trend is that the KNS average, once below the island average price, now tends to exceed the island average.
SOURCES: Honolulu Board of Realtors; download from Hawaii Information Service.

Table 2-23: Households and Household Size, 2010

	City and County of Honolulu	KNS Region	Census Tract 102.01 Hauula-Kaaawa	Census Tract 102.02 Laie	Census Tract 101 Waimea-Kahuku	Census Tract 100 Kawailoa	Census Tract 99.02 Haleiwa	Census Tract 99.04 Kaena Point
Population in Households	917,907	31,656	5,531	5,776	7,848	3,170	3,683	5,648
Households	311,047	9,675	1,684	1,342	2,457	1,163	1,112	1,917
Owner-occupied	56.1%	47.0%	50.8%	44.7%	52.3%	18.9%	53.5%	51.5%
Rented	43.9%	53.0%	49.2%	55.3%	47.7%	81.1%	46.5%	48.5%
Average household size								
All households	2.95	3.27	3.28	4.30	3.19	2.73	3.31	2.95
Owner-occupied	3.11		3.59	4.60	3.58	2.79	3.64	3.15
Rented	2.75		2.97	4.06	2.78	2.71	2.94	2.73

is slightly lower than the share counted by the Census in 2010 for the CDP as a whole (87 of 518 units, or 16.8%).[19]

The TMK database shows that less than half of dwellings in the region are registered as owner-occupied for tax purposes, and the share of all housing units registered as owner-occupied is especially low in the region between Turtle Bay and Waimea Bay. In other words, rentals, second homes and vacation units are more prevalent in this area than elsewhere in the region.[20] Illegal rentals are also said to be common. All of these uses for housing, which tend to limit the supply affordable for residents, are consistent with the North Shore's appeal as a surfing and beach destination.

F.3. f. Health Services

Kahuku Medical Center is the only hospital in the region. It is approximately four (4) miles from the Resort and provides 24-hour emergency care. The medical center is part of the Hawaii Health Systems Corporation, a state organization providing primary care in underserved areas.

Koʻolauloa Community Health and Wellness Center, a federally qualified health center, has a clinic in Hauʻula and offices at the Kahuku Medical Center. Wahiawa General Hospital, in Central Oʻahu, also serves North Shore patients, while Castle Medical Center in Kailua serves some Koʻolau Loa patients. Honolulu hospitals provide specialty services and care.

In the Kahuku area, Kahuku Medical Center has 31 beds, and Crawford's Convalescent Home has 55. Kahuku Medical Center's occupancy varied by bed type: surgical care (11 beds, 5% occupancy in 2009), acute/specialized nursing care (11 beds, 55% occupancy), and intensive care (10 beds, 98% occupancy).[21]

On the Behavioral Risk Factor Surveillance survey, KNS respondents usually report high levels of health care coverage, although an indicator of usage ("Visited doctor for a routine checkup during the past year") shows mixed results from 2005 through 2010.[22]

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[19] Information for TMK 1-5-7:27 and 1-5-7:29, downloaded from Hawaii Information Service in June 2012.

[20] The count of single-family dwellings in the TMK database is much smaller than the housing units counted in the 2010 Census. As a result, only the general statement of findings noted in the text seems warranted.

[21] Occupancy estimates for 2009 from Hawaii State Department of Health, posted at http://hawaii.gov/shpda/resources-publications/health-care-utilization-reports/updates-and-results/2009-data/table-6. The figures for acute and long-term care are below the county averages for that year.

[22] Hawaii State Department of Health website, access April 26, 2012 http://hawaii.gov/health/statistics/brfss/HBRFSS-IA9/atlas.html.

F.3. g. Education Facilities

Two public high/intermediate schools, Waialua High and Intermediate and Kahuku High and Intermediate, serve the region, along with seven (7) elementary schools. Each school is part of separate regional systems delineated by the State Department of Education. Table 2-24 summarizes the two regional systems and their current enrollment.

Table 2-24: Enrollment in KNS Public Schools, September 2011

	Enrollment
Leilehua-Mililani-Waialua Complex Area	
Waialua High and Intermediate School	619
Haleiwa Elementary School	198
Waialua Elementary School	564
Castle-Kahuku Complex Area	
Kahuku High and Intermediate School	1,458
Hauula Elementary School	297
Kaaawa Elementary School	134
Kahuku Elementary School	504
Laie Elementary School	683
Sunset Beach Elementary School	446
Total Enrollment, KNS public schools	*4,903*

SOURCE: Hawaii Department of Education website

St. Michael's School in Waialua and Sunset Beach Christian both provide private elementary education. Plans for a high school near Hale'iwa, Aloha Ke Akua, have been advanced, but the initiative appears to have stalled for lack of financial support.

A new school based in Hau'ula, Hawaii Active Learning Academy, combines on-line classes with projects led by teachers. Its application for charter school status was denied in 2011. It functions now as a private school.

Kahuku High School graduated 250 students in 2009, while Waialua High School graduated 98.[23] Over 80 percent of graduating students from Kahuku have planned to continue schooling, but most planned to combine school and work.[24]

[23] Hawaii State Department of Education report posted at http://doe.k12.hi.us/reports/highschoolcompleter0809.pdf

[24] Based on School Exit Plans Survey, last conducted in spring 2008, for Kahuku High School, http://arch.k12.hi.us/PDFs/resources/archive/seps/2008/SEPS307.pdf.

Preschools

Early child-care facilities in Hawai'i are licensed or, if small, license-exempt. Ten licensed programs are located in the KNS region: four Head Start programs, two programs associated with local churches, two non-denominational private programs, a Hawaiian language preschool and a preschool run by a charity serving low-income families. All run day programs only.

In recent years, preschools in the region have not operated at capacity according to Mr. Steve Albert of Rainbow Schools. With the economic downturn, state funds to support preschools were cut and family budgets tightened.

F.3. h. Recreation Facilities and Attractions

The North Shore's coastline supports surfing, boating activities, swimming and, in calm weather, snorkeling and scuba diving. It is a destination for surfers from the island, elsewhere in the state, and worldwide. The region is host to international surfing events including the Triple Crown of Surfing competition and the Quiksilver in Memory of Eddie Aikau surfing competition held at Waimea Bay only when waves are consistently over 20 feet. The North Shore surf also attracts tourists, whether as beachgoers or observers, throughout the year, but especially during the winter season.

In 2010, some 1.5 million beachgoers were counted by Water Safety Officers at guarded beaches in the KNS region, 9.6% of the total O'ahu beach count.[25] Approximately 17% of the surfing accidents and rescues reported island-wide were at KNS beaches. These counts do not cover the Resort beaches.

Kawela Bay is currently used by KNS area residents for beach going, fishing and water sports as documented in the SEIS report on Marine Resource Impacts (Appendix E).

In recent years, turtle and seal populations have increased in Hawai'i. Turtles are sighted regularly by visitors along the KNS coastline. The marine resources impact analysis discussed above in this Chapter documents an increase in turtle and seal populations at Kawela Bay since 1985. Laniākea Beach (also known as Turtle Beach), approximately nine miles west of Resort, has become an extremely popular destination for tour buses and free-and-independent travelers (F.I.T.) to view turtles basking on the shore and swimming in the near shore area.

The KNS region has a wide range of recreation sites. Beach parks are dotted along the entire coast, notably near famous surf breaks. District parks at Kahuku and Waialua include sports fields. (Kahuku District Park, about three miles from the Resort, has baseball and softball fields,

[25] KNS guarded beaches are Hale'iwa Ali'i, 'Ehukai, KeWaena, Sunset and Waimea. Other popular beaches are found throughout the region. DBEDT, 2010 State of Hawaii Data Book, Table 7.51.

Table 2-25: Persons Interviewed for this Report

First	Last	Affiliation Notes
Kat	Adcox	Kuilima Estates resident Waimea Valley employee
Steve	Albert	Rainbow School
Eric	Beaver	President, Hawaii Reserves, Inc. Past Chairman, Kahuku Hospital
Tinker	Bloomfield	Pupukea resident; Waimea Valley employee
Clifton C.	Cassity	Managing Agent, Villa Management at Turtle Bay Resort
Mona	Chang-Vierra	Waimea Valley
Mitch	Costino	Kuilima Estates West Association - President
Tom	Cross	Turtle Bay Resort, Resort Manager
Joann	Dicion	Turtle Bay Resort employee
Kent	Fonoimoana	Koʻolauloa Neighborhood Board; Defend Oahu Coalition
Danna	Holck	Turtle Bay Resort, General Manager
Randal	Hoopai	Waimea Valley Facilities Manager; Waimea resident
Elaine	Hornal	Turtle Bay Resort employee
Patsy	Izumo	Waimea Valley
Choon	James	Marconi Road resident
Jeff	Johnston	Turtle Bay Resort employee
Barbara	Kahana	Koʻolaulea Neighborhood Board
Kent	Kamiya	Kamiya Papaya Farm
Dee Ann	Kekahuna	Waimea Valley Human Resource Manager; Kahuku resident
Daniel	Kerwin	Unite Here! Local 5 Hawaii, Organizer
Bob	Leinau	North Shore Neighborhood Board
DeeDee	Letts	Koʻolauloa Neighborhood Board; Koʻolauloa North Shore Alliance; Specialty Courts Coordinator; Mutual Housing Board - President
Melvin	Matsuda	Kahuku Brand Farms
Susan	Matsushima	Alluvion Inc, CEO (North Shore)
Creighton	Mattoon	Koʻolauloa Neighborhood Board: Kahuku Medical Center Board of Directors, Vice President; Koʻolauloa North Shore Alliance; Punaluʻu Community Association; Koʻolauloa Hawaiian Civic Club; Keep the Country Country
Cathleen	Mattoon	Koʻolauloa Hawaiian Civic Club; Punaluʻu Community Association
Lt Tasman	McKee	Honolulu Police Department
Elena	Meehan	Turtle Bay Resort employee
Antya	Miller	North Shore Neighborhood Board; North Shore Chamber of Commerce; Haleiwa Main Street; Wailua Community Association
Bob	Nakata	Former State Representative; Former State Senator; Kahaluu United Methodist Church, Sr. Pastor; Kahalu'u resident
Josanda	Napeahi	Turtle Bay Resort employee
Jay	Oku	North Shore Disaster Preparedness Committee
Kathleen	Pahinui	North Shore Neighborhood Board; Wailua Community Association
Junior	Primacio	North Shore Strategy Planning Committee; Former Koolualoa NB, No 28; General Manager of former Kahuku Housing Corporation
Ben	Shafer	Kahana Valley resident
Captain D.	Tsuchida	Honolulu Police Department
Bernadette	Tyrell	Principal, Sunset Elementary School
Stephanie	Vaioleti	Administrative Director, Kahuku Medical Center; Board Member, Koolauloa Educational Alliance Corp
Jeff	Wallace	Honolulu Fire Department; Caretaker for Continental Properties on Marconi Road
Ronald	Weidenbach	Hawaii Fish Company
Sadia	Wilkins	Turtle Bay Resort employee
Harvey	Wong	Turtle Bay Resort employee
Anonymous	(three persons)	Kuilima Estates residents

NOTE: Affiliations are given to suggest how particular stakeholders helped the interviewers understand issues and concerns in the region. When an organization or agency is mentioned, no claim is made here that it supports the Proposed Action, or that it has made any official response to the Resort redevelopment. BCH interviewers sought to elicit interviewees' knowledge and perspectives, not their support or opposition to the Proposed Action.

and a volleyball court.) Malaekahana State Recreation Area supports camping by the beach. The Friends of Malaekahana provide patrolled camping sites, yurts, and other overnight shelters for rent.

Within Koʻolau Loa, the Ahupuaʻa o Kahana State Park is an entire valley dedicated as a cultural park, with marked trails for walkers. Waimea Valley, on the North Shore, has extensive horticultural plantings and cultural exhibits. I t is operated as a visitor attraction. Dillingham Airfield has glider rides.

In addition to the two championship public resort golf courses at Turtle Bay, Kahuku has a nine-hole public course.

The Polynesian Cultural Center (PCC) is a visitor destination, with "villages" representing several island societies, *luʻau* dinners, and an evening show. The PCC reported 692,081 visitors in 2010.[26] Just south of the KNS region, Kualoa Ranch offers a range of outdoor activities for visitors, including horse rides and all-terrain vehicle tours.

F.3. i. Community Issues and Concerns

For the SEIS's social impact analysis, the author, Belt Collins Hawaii LLC (BCH), relied upon public records of discussions and planning documents produced with community input, and on a series of interviews with key stakeholders. Most of the interviews were conducted in October through December 2011. Table 2-25 lists the interviewees who shared their views and those of others in their communities. Following is a summary of the report's findings. (The report is included in Appendix H as part of the socio-economic impact analysis.)

Many of the stakeholders interviewed have previously expressed strong views about the Proposed Action or earlier plans for expansion. Several are members of organizations that have challenged expansion plans in court and in community discussions. The interviewer sought to learn from a wide range of knowledgeable members of the KNS population, not just those with a particular stand on the Proposed Action.

[26] DBEDT, 2010 State of Hawaiʻi Data Book, Table 7.43.

Issues and Concerns Independent of Project - For the social impact analysis, the author reviewed the minutes of the two Neighborhood Boards in the region for 2010 through early 2012 to learn of current concerns. Recurring themes that arose in the discussions included:

- Congested roadways: On the North Shore, this issue largely involves tourist traffic and visitors parking near beach sites, especially Laniākea. In Koʻolau Loa, residents were concerned about roadways where resident parking obstructed traffic, and about possible future expansion of the highway that could affect abutting properties.

- Concern about proposed development and redevelopment: Many residents in both areas expressed opposition to new development projects, including Envision Lāʻie, the expansion of the Resort, and the proposed Haleʻiwa hotel. The Kamehameha Schools' project to renovate commercial areas in Haleʻiwa was viewed critically as affecting existing businesses, while the proposed move of the Hauʻula fire station was seen as taking limited commercially-zoned land out of private hands.

- Appreciation for developers who listen to local stakeholders: While community members expressed concern about wind farm development at Kahuku and Kawailoa, they also expressed appreciation for the involvement of First Wind, the developer of both the currently operating Kahuku wind farm and the Kawailoa wind farm, now under construction. Similarly, community stakeholders have welcomed the open attitude of TBR in introducing and sharing information about the Proposed Action and the SEIS process.

- Members of both boards support agriculture and preservation of land for agriculture.

- Outside agencies may make decisions that ignore local views and concerns. Discussion of the Koʻolau Loa Sustainable Communities Plan has recently focused on the fact that the Public Review Draft, issued by the City Department of Planning and Permitting (DPP), supports the Envision Lāʻie plans, while the earlier draft vetted by an advisory committee did not. The change was repeatedly attributed to meetings "behind closed doors." Similarly, the Department of Education has threatened to close Kaʻaʻawa Elementary School despite community opposition.

- Residents are concerned about the effects of limited government budgets on local facilities and resources. Schools, parks, and civil defense budgets may all be affected.

- Disaster planning has emerged as a local initiative throughout the region, with an emphasis on stockpiling supplies needed in the event of emergencies.

- Tensions clearly exist among community leaders. These were evident when a petition to dissolve Neighborhood Board No. 28 in Koʻolau Loa was discussed, and in accounts of various parties involved in housing redevelopment in Kahuku who failed to meet to develop shared goals and proposals. However, Neighborhood Board meetings appear to have proceeded without disruption, unlike more contentious boards elsewhere on Oʻahu. (The North Shore Board convened a meeting on the Haleʻiwa Hotel proposal that became rowdy and was quickly adjourned. In this case, members of the audience were disruptive.)

In the course of interviews, respondents emphasized their deep commitment to "country" lifestyles. They list difficulties for local residents ranging from the inconvenient – Sears delivery service only on Sundays – to traffic congestion that can make the highway impassible during surf season. Still, no interviewee went on to suggest that they or their friends would leave the region because of such problems.

Interviewees mentioned the cost of housing and the limited availability of housing for residents as significant problems for the region. Illegal vacation rentals were sometimes mentioned as part of the problem, both as disruptive in residential neighborhoods and as affecting housing supply and prices.

The ideas of sustainability and food security, much discussed in Hawaiʻi recently, have taken local form in the KNS region. First, much of the opposition to development has been expressed in terms of preserving the North Shore as a shared resource, a unique area enjoyed by the whole island and tourists from around the world. Second, many stakeholders are interested in maintaining the region's agricultural resources. Third, major landowners – notably Kamehameha Schools and Hawaii Reserves, Inc. – have identified the need for their regional resources to be increasingly self-sustaining.

Redevelopment at the Resort has been discussed in the KNS region for decades. The Proposed Action is seen by residents in relation to earlier proposals and discussions. The original master plan for the Kuilima Resort was welcomed by some as assuring economic stability, continuing jobs in the region, and opposed by others as bringing too much development, too many tourists, and too much traffic to the North Shore. Since the 1980s, public debates over development vs. open space have arisen again, notably with regard to plans for Lihi Lani, a recreational community, just north of Pupukea, for a proposed eco-camping resort at Puaʻena, and, more recently, for a proposed Haleʻiwa hotel.

Smaller residential subdivisions have been developed along the North Shore coastline. Along the Koʻolau Loa side of the region, major new development has been proposed only by Hawaii Reserves, Inc., as part of the Envision Lāʻie process, and little has been put in place.

At the Resort, the 2005 announcement by the Resort's previous owner that the Resort would carry out the development proposed in the Kuilima EIS revived old arguments, and several

stakeholders developed the legal challenge that resulted in the Hawai'i Supreme Court ruling that set the Kuilima EIS aside. The draft of the *Ko'olau Loa Sustainable Communities Plan* spells out the concerns expressed in response to the proposal for expansion to the extent allowed in the late 1980s:[27]

> … many residents of Ko'olau Loa do not support the resort expansion due to concerns about traffic impacts on the two-lanes of Kamehameha Highway, the capacities of existing infrastructure systems and public services to accommodate the future projected demand (e.g., water, wastewater, electrical systems, police and fire protection, and emergency services) and the potential impacts to archaeological, cultural and natural resources. Labor force issues related to population growth, housing demand and transportation, as well as a desire to preserve the undeveloped shoreline and scenic view planes and maintain the region's rural character are also concerns. Although there is general support for the existing hotel operations, community discussions about the future development of the resort continues [*sic*], pending completion of an updated EIS. Community concerns about the proposed resort expansion include:
>
> - Preserving the uninterrupted shoreline and scenic view plane, as well as the cultural and historic significance of the area for future generations;
> - Providing for appropriate recreational and other uses that are compatible with existing land uses;
> - Maintaining the viability of the existing Resort, restaurants, condominiums and golf courses as an employment base for the region;
> - Minimizing the impacts of future development;
> - Developing design guidelines for any proposed additional structures to assure their compatibility with the rural character of the region;
> - Providing for appropriate agricultural and other compatible uses in the *mauka* area; and
> - Acknowledging existing land use designations and development approvals that have already been granted.

[27] City and County of Honolulu, Department of Planning and Permitting, Ko'olauloa Sustainable Communities Plan Five-Year Review: Public Review Draft. Honolulu, HI: 2010. The language quoted here was crafted largely in response to proposals by the previous resort owner, Kuilima Development Company, which sought development as permitted by a Unilateral Agreement (further discussed in Chapter Three of the SEIS). The Sustainable Communities Plan now in force and the draft update are generally more supportive of resort expansion than the stakeholders whose views are described in the above quotation.

This entire discussion is included here both because it reflects input from local stakeholders on the Community Advisory Committee for the planning process and because it covers the range of concerns about the Resort that arose in recent interviews. (The interviewer advises there was no did discussions of design guidelines, but people were concerned that the Resort be in keeping with the region's rural character.) Interviewees emphasized traffic congestion as the leading problem for the region. Some went on to discuss the Resort expansion in relation to the need for jobs and housing in the region, and to inadequate infrastructure and public facilities. Others saw it as bringing too many tourists to the area, and as not needed.

The quotation above downplays differences in views of regional residents that could be heard in the course of interviews:

- The draft texts from the Department of Planning and Permitting emphasize opposition to the Resort expansion; in interviews for the socio-economic impact analysis, both support and opposition were expressed. Many residents continue to see job creation as needed to support local communities, and welcome Resort expansion for that reason.

- While view planes at Turtle Bay are important to some residents, others' attention focuses above all on their own home communities. Most interviewees said little about the appearance of the Resort.

Comments on the SEIS Preparation Notice and at public events have covered the points raised above. Issues of concern to many include traffic congestion and protection of marine life (green sea turtles and Hawaiian monk seals). Demands for careful archaeological studies and cultural sensitivity have been made forcefully; the archaeological inventory and cultural impact assessment conducted for the Resort are part of TBR's response.

Some interviewees raised questions about the impact of Resort development, especially resort residential development, on property values nearby.

Interviewees were also asked what steps they thought would be appropriate to mitigate effects of the Proposed Action. Some responses dealt with mitigation of specific anticipated impacts; others simply identified ways in which the Resort could be of greater benefit to stakeholders:

- **Community housing**: KNS residents largely see "affordable housing" built to government pricing guidelines as unaffordable. Many do not trust the government or any developer to build homes that meet the needs of the regional community.

- **Unionization:** Several Resort workers viewed the Proposed Action narrowly in relation to ongoing contract talks with the major union representing workers at the Resort. They accused the hotel operators of increasing workloads in order to set a low baseline for future expansion. They viewed expansion as likely to involve facilities that were not unionized, where wages, benefits and working conditions could be worse than at the current hotel.

- **Disaster planning:** Some residents suggested that the Resort could help surrounding communities by providing a evacuation site upland or by supporting work to maintain resources that would help the community in case of disasters. A related concern was that additional visitors at the Resort would make evacuation even more difficult for the region than it is already.

- **Control over parks**: Conversion of land at Kawela Bay and Kahuku Point to City and County parks would involve increased access for visitors as well as nearby residents. Some question whether the City and County would be able to maintain these parks well. One Kawela Bay resident has spoken publically of his desire for limited access to Kawela, and for policing of any park by the Resort. Others may share his hope that new park areas would be kept clean and park usage would be monitored without aiming to limit local access.

- **Pedestrian and bicycle routes**: Some interviewees pointed to the Malaekahana bike path as a valuable addition to the community, and sought to see it extended from Kahuku past the Resort toward Sunset Beach. They mentioned this as bringing together people from Kahuku and Lāʻie who enjoy it as a new pedestrian link between their communities.

These comments should be understood as pointing towards desired goals as much as an analysis of the merits of the Proposed Action or alternatives.

In addition to the issues identified by the interviewees, specific infrastructure projects unrelated to the Resort have influenced or will influence the socio-economic character of the region.

As a two-lane roadway, Kamehameha Highway's size limits traffic flow throughout the KNS region. The Haleʻiwa Bypass (Joseph P. Leong Highway) provided a local response to congestion. At Waimea Bay, road improvements and cliff stabilization were needed after a major rock fall in 2000, but another fall in 2007 resulted in a brief closure.[28] The City and County's Parks and Recreation Department has plans for support parks, notably at Laniakea, which could reduce roadside parking and unmanaged pedestrian crossings.

A new pedestrian and bike path opened in 2011 in Malaekahana, linking Lāʻie and Kahuku, as part of the Envision Lāʻie initiative.

The City and County of Honolulu has been seeking a new municipal sanitary landfill site to replace Waimanalo Gulch. A citizen committee has recently identified criteria for preliminary ranking of potential sites before land owner, city, state and federal guidelines are evaluated.

[28] Park, G. "Waimea Bay Rocked Again." Honolulu Star-Bulletin. April 8, 2007. Posted at *http://archives.starbulletin.com/2007/04/08/news/story01.html*

Based on their input, a site immediately upland from the Resort has emerged as the preferred location for a new landfill.[29] The site is under the control of the federal government, and is part of the Army's Kahuku Training Area. The City and County of Honolulu does not have the authority to take Army land without federal consent. Apparently, no consultation with federal authorities had occurred at the time of the study because the analysis was limited to an evaluation of physical land characteristics and did not take into account land ownership.

F.3. j. Comparison of Current Socio-Economic Trends with Those Discussed in the 1985 Kuilima EIS

F.3.j. [1] THE SEIS LANDS AND THE RESORT

Before the Kuilima EIS was completed in 1985, parts of the Resort property now identified as the SEIS Lands were under short-term agricultural or residential leases. The leases were not renewed, and beach cottages along the eastern half of Kawela Bay on the SEIS Lands were demolished. A major difference between the current situation and that in 1985 is that the Proposed Action does not involve displacement of private homes or activities.

In the early 1980s, the Kuilima Hotel (now the Turtle Bay Hotel) had low occupancy levels, and the development permits existing at that time did not, in the view of the owners, allow for adequate growth to achieve a prosperous level of operations. After the 1985 EIS was accepted and new development approvals were granted, the owners took steps towards implementing a Resort expansion plan but soon found they could not proceed with their plans for macro-economic reasons.

In the intervening years, the hotel was refurbished in the year 2000 and has experienced higher occupancy levels. The Ocean Villas have expanded the Resort's offerings. The Resort is now a viable resort operation. It has development permits for expansion and the owners plan to implement a phased development plan.

F.1.j. [2] REGIONAL ECONOMY

In the 1980s, the KNS region was characterized by lower incomes and employment than the rest of the City and County of Honolulu, and by a narrow economic base. The region stood out as the center for aquaculture in Hawai'i. Tourism was recognized as offering "the greatest promise for providing new employment and business opportunities" on O'ahu.[30] While the region included major visitor attractions (at PCC and Waimea Valley), the Kuilima EIS identified area residents as more dependent on agriculture and fishing than tourism. Since then, the surf and visitor industries of the region have expanded, and the North Shore's reputation has grown. Only 2.1% of the civilian workforce is in agriculture (as shown in Table 2-17).

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[29] Pacific Business News, April 25, 2012. *http://www.bizjournals.com/pacific/news/2012/04/25/kahuku-sites-now-top-oahu-landfill.html*

[30] Community Resources, Inc. and A. Lono Lyman, Inc. op. cit., page 6.

Tourism is now the region's leading industry. Household incomes for most of the region approach or exceed the island median. However, regional unemployment remains above the island average. Commute times for most of the region are still longer than for other parts of Oʻahu and are now longer than reported in 1980.

F.3.j. [3] POPULATIONS AND COMMUNITIES IN THE REGION

Demographic changes include population growth and aging of the overall population (from medians in the region of about 25 years in 1980 to about 32 years of age in 2010). Changes in ethnic composition are not easily specified, since classification schemes for race and ethnicity have changed, but a marked increase in the share of the population identified as (at least in part) White has occurred. However, occupancy rates have changed little.

F.3.j. [4] HOUSING MARKET

Housing costs on Oʻahu have increased greatly over the last thirty years, and the ratio of housing costs to incomes has increased as well. In parts of the KNS region, the practice of renting homes and/or apartments to vacationers or surfers has tended to increase rents and limit the inventory available to KNS area residents. Elsewhere on Oʻahu, single-family housing and condominiums have been built in large new subdivisions, but housing development in the KNS region has been far slower than in Central Oʻahu and ʻEwa. This is largely due to population distribution standards enacted by the City in the mid-1980s. Available housing within the KNS region is even more limited and costly than before.

F.3.j. [5] EMERGING TRENDS

The 1985 EIS dealt at length with the demographics, economy and aspirations of the region. At that time, the closing of Kahuku Sugar had transformed the economy of Koʻolau Loa, and it was clear that Waialua Sugar would close in the near future. Tourism was recognized then as a critical source of new jobs for the region.

The social impact analysis presented in the 1985 EIS emphasized that the City and County *General Plan* guidelines called for slow population and housing growth – but that existing approvals already provided capacity for a population of approximately 30,400 by 2000. (In retrospect, the actual 2000 population was 108% of the estimated capacity.)

The traffic analysis conducted for the 1985 EIS incorporated assumptions of continuing growth of traffic in the region: traffic was seen as increasing faster than population or housing.

These facts can be read in two ways in relation to the current situation in the region. On the one hand, the problems of a limited economic base, inadequate housing supply, and traffic congestion remain. Expansion of the Resort is a source of jobs for many and some homes affordable for KNS families. To the extent that the expanded Resort will provide recreation and other activities for its visitors, in the long-term it might not add much to, and might even reduce, the circle-island visitor

traffic in the region. However, some observers emphasize traffic congestion and housing demand, and claim that the need for an alternative job base is no longer pressing. They value the existing Resort as a regional amenity but question the need for expansion.

But the data reviewed above indicate that local job sources fail to meet the employment needs of many KNS residents, limiting employment for some and forcing others to commute long distances or to leave the region to find work. Both local employment demand and traffic congestion indicate that the main themes of the regional socio-economic analysis provided in the 1985 EIS are still valid.

F. 4. Transportation

The following discussion addresses existing transportation conditions in the region and at Resort. A discussion of the Proposed Action's impacts on transportation infrastructure is presented in Chapter Five of the SEIS.

F.4. a. Vehicular Traffic

F.4.a. [1] KAMEHAMEHA HIGHWAY

Access to the Resort is provided by Kamehameha Highway, a primary arterial highway owned and maintained by the State of Hawai'i. It is a two-way, two-lane, undivided highway with posted speeds of 35 mph west of the Resort and 45 mph east of the Resort. The portion of Kamehameha Highway extending from Hale'iwa to Kane'ohe is identified as Route 83 (see Figure ~~2-63~~ 2-68. The highway generally follows the coastline, except for the Kahuku area and the Hale'iwa area where it turns inland. The highway consists of a 50-foot wide right-of way with pavement widths of 20 to 24 feet and unpaved shoulders. In most areas, there are no sidewalks and pedestrians must walk on the shoulders.

The Resort is currently served by TheBus Route 55 (Kaneohe Circle Island) and Route 88A (North Shore Express). Route 52 in Wahiawa connects to Route 55 and provides more direct service to the Resort from downtown Honolulu, but requires a transfer. Ala Moana Shopping Center in Honolulu is the terminus of these services. Travel to the Resort using local routes takes from 2 hours to 2 hours 35 minutes depending on the time of day. Express service reduces this time to between 1 hour 30 minutes and 1 hour 50 minutes, but only includes two trips each during the morning and evening commute periods.

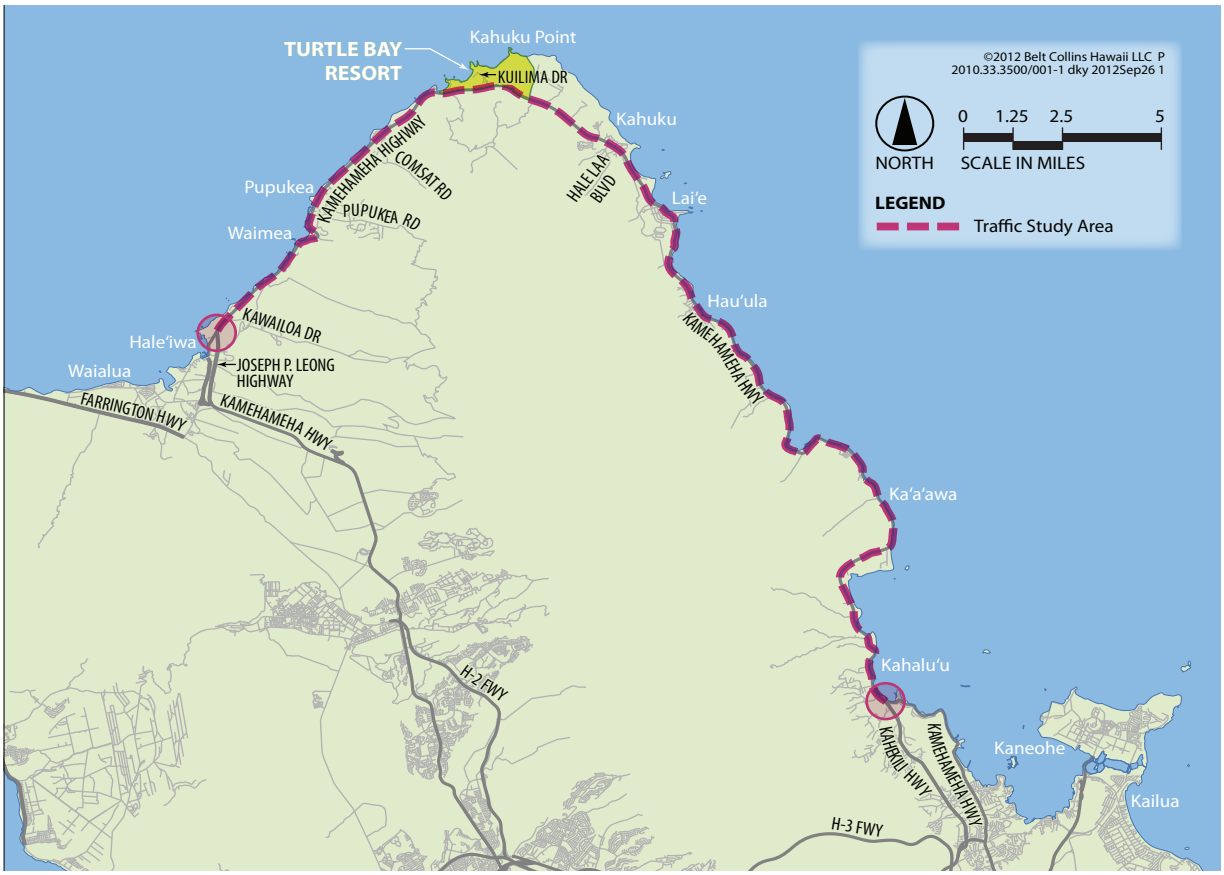
From Honolulu International Airport, travel to the Resort takes approximately 2 hours and 15 minutes. Travelers can take Routes 19, 31 or 62 and transfer to Route 52 near the Middle Street/ Nimitz Highway intersection. Recent routing and scheduling changes were implemented in June 2012 to increase system efficiencies and reduce operating costs for TheBus. No major service changes are expected in the near future for the transit routes serving the Resort.

Travel from the Airport to the Resort by car takes approximately 1 hour via H-1, H-2, and Kamehameha Highway, or via H-3, Kahekili Highway, and Kamehameha Highway. Other

transportation options to access the Resort are provided by David's Limo, Charley's Taxi, Turtle Bay Airport Shuttle Express, and other private companies. These services charge $85 to $160 one-way for two to four passengers.

Once at the Resort, guests can currently rent a car from Enterprise Rent a Car, and the cost is a minimum of $50 per day and varies depending on the vehicle type, demand, and insurance. Short-term rentals of a few hours are not available because a full day rental is currently required.

Figure ~~2-63~~ 2-68: Regional Traffic Study



The following table shows the average cost for a family of four to travel from Honolulu to Turtle Bay using a private rental car, taxi, TheBus, or a shuttle. All of the services listed above are currently provided as options for guests.

As discussed in the 1985 EIS, in most of the communities between Haleiwa and Punalu'u, the great majority of residents live within a few blocks of the highway. The highway is each community's link to the rest of O'ahu. Although population growth in the combined North Shore/Ko'olau Loa area has been relatively stable over the past 30 years, a combination of factors has led to an increase in traffic congestion on the highway. Increasing traffic congestion is a major source of concern for area residents and community leaders.

Table 2-26: Transportation Options for Resort Guests

Travel Type	Travel costs (one way)	Round Trip Guest Cost (family of 4)	Travel Time	Ride Type
Car Rental (5 days)	$50 per day + Fuel	$250	60 min	Private Vehicle
Star Taxi	$85 (up to 4 passengers)	$170	60 min	Direct Private Vehicle
Oahu Airport Shuttle	$110 (up to 4 passengers)	$220	60 min	Direct Private Shuttle
TheBus	$2.50/person	$20	120 min	Shared ride, multiple stops and transfers
Oahu Airport Shuttle	$89 for first customer + $9 per additional (up to 6 per van)	$209	60 min	Varies, direct to Resort

In the 1985 EIS, Haleʻiwa Town and Waimea Bay were identified as the primary constraints on regional traffic congestion. The narrow Anahulu Bridge located near Haleʻiwa Beach Park requires opposing streams of vehicles to slow down. Within the town, pedestrians crossing the highway at various points between the roadway intersections in the town also impact the speed of vehicles. And because of the two-lane character of the highway, left-turning vehicle impact traffic flow in both directions.

A similar condition was observed at the entrance to Waimea Bay. Motorists parking along the roadside or turning left into Waimea Beach Park or Waimea Valley Road create traffic delays in both directions. The curvilinear alignment of the highway along the bay also causes vehicles to slow down.

Similar conditions were also noted in the 1985 EIS along the highway between Waimea Bay and the Resort wherever there is a beach park or a driveway. Motorists executing a left-turn movement create traffic delays in both directions. Motorists parking along the shoulder on the *mauka* side of the highway and then exiting their vehicle to cross the highway to view the surf or go to the beach cause traffic delays. This experience is exacerbated during organized surfing competitions, large beach gatherings, and high surf events. Traffic flow along the highway is also slowed by municipal buses that frequently stop along the highway to drop off or pick up passengers.

Since the 1985 EIS was prepared, two additional constraints on traffic flow have occurred. First, Lanikea Beach (aka Turtle Beach), approximately 9 miles west of the Resort, has emerged as a significant visitor and local resident destination. Tour buses, shuttles, vans, as well as F.I.T travelers and local residents frequent the beach seven days a week to view green sea turtles basking on the shoreline or swimming in the near shore area. This is the direct result of the

marked increase in the turtle populations since the mid-1980s, as noted earlier in this chapter. Because there is no improved parking area at the beach and no provisions for traffic or pedestrian control (traffic signals, pedestrian crossings, etc.), motorists are forced to park along the *mauka* side of the highway and then cross the highway to make their way down the slope to the beach. Left-turning motorists and pedestrians slow traffic in both directions.

Second, since the 1980s, the success of many aquacultural enterprises between the Resort and Kahuku has resulted in a marked increase in the number of roadside shrimp vendors. These vendors are typically located on the *makai* side of the highway with generally adequate parking areas nearby. Thus, although they do not appear to generate the same volumes of pedestrians needing to cross the highway as Laniakea visitors, motorists traveling in an eastern direction need to execute a left-turn across the highway, thereby slowing traffic in both directions.

The average daily number of visitors on Oʻahu has increased by over 23,000; from 65,280 in 1985 to 88,979 in 2011. During the same period, the resident population has increased by about 150,000. As a result, there are more people driving on the islands roads and likely visiting the North Shore. The cumulative result of these population increases, together with traffic impediments that existed in 1985 and new impediments have emerged since then, has generated considerable frustration among area residents about the general state of traffic congestion on Kamehameha Highway.

The State DOT has no plans to widen Kamehameha Highway or construct a second regional highway to serve the area. But it continues to maintain a policy of reserving right-of-way. Improvements to the highway have been, and will likely continue to be, limited to safety related improvements.

F.4.a. [2] KUILIMA DRIVE

Kuilima Drive provides access to the existing Turtle Bay Hotel, Kuilima Estates, and golf courses for Resort guests, visitors, residents, golfers, and hotel service vehicles. It is a privately owned and maintained four-lane, two-way divided roadway that intersects Kamehameha Highway at a stop sign controlled T-intersection. It is constructed to City and County of Honolulu standards and includes pavement, curbs, gutters, and sidewalks within an 80-foot right of way that widens at the Kamehameha Highway intersection. Kamehameha Highway does not have presently have provisions for exclusive turning lanes at Kuilima Drive.

F.4.a. [3] MARCONI ROAD

Marconi Road abuts the eastern boundary of the Resort. It is a privately owned two-lane, two-way roadway that intersects Kamehameha Highway at a stop sign controlled T-intersection.

F.4.a. [4] SERVICE ROADS

Two service driveways, situated between Kuilima Drive and Marconi Road, provide access from the Highway to portions of the Resort. One provides access to the Palmer Golf Course maintenance facility for golf course employees only. The other provides access for large vehicles that service the golf course.

Service and access roads constructed within the Resort are considered driveways by the City.

F.4. b. Parking

The hotel has approximately 509 employees, of which 260 to 350 are on-site at one time. The number varies depending on events and occupancy. Shift changes for employees typically occur between 7:00 and 8:00 AM and again between 10:00 and 11:00 PM. Employee parking is located in designated areas and in the golf overflow parking area. Parking areas are typically one-quarter to one-half full. The areas of most concern for commuting employees are general traffic, surf traffic, parking location, and parking surface (some parking is on grass).

Guest parking is generally accommodated even at 80% plus occupancy at the Resort. Guest parking occupancy typically ranges from 60% to 100% on the weekends. Conventions and conferences make up approximately 20% of the activity at the Resort. During special events, overflow parking is accommodated on vacant lands to the west (and south of the highway if needed).

F.4. c. Pedestrians

F.4.c. [1] REGIONAL

As mentioned above, most of Kamehameha Highway has unimproved shoulders with no sidewalks, forcing pedestrians to walk on the shoulder or along the edge of the highway pavement. With the exception of a new 1.2 mile paved pedestrian path and bikeway along the *mauka* side of the highway between Lāʻie and Kahuku that was completed several years ago, this hazardous condition has persisted since the mid-1980s.

F.4.c. [2] LOCAL

Near the Resort, Kamehameha Highway does not currently have sidewalks, however pedestrian access within the Resort is currently provided via attached sidewalks along streets and a network of paths and trails.

Moped, Segway, and electric bicycle rentals are available to Resort guests. The rental operation is run by a Hele Huli Adventure Rentals. Two wheel or three wheel mopeds are available for hourly or daily rental with prices starting at $30 and $59 for up to 24 hours. Segway tours are also available. A 30-minute demo tour costs $45 and a 90-minute adventure tour costs $99. Electric bicycles with up to 30 miles of battery power are available for $20 the first hour and $10 per additional hour.

F.4. d. Bicyclists

Bicycle access to and from the Resort to other nearby destinations is currently available by sharing the lane with vehicles on Kamehameha Highway. The State DOT bike map shows this facility as suggested route for experienced bicyclists. An existing multi-use path is located along the highway beginning approximately 2.5 miles west of the Resort entrance, and a second multi-use path is located along the highway beginning in Kahuku approximately 3.9 miles to the southeast. However, the posted speed limits on the roadway vary between 35 and 45 miles per hour and the lack of additional pavement width at selected locations make bicycling a challenge, especially for less-experienced riders.

The draft Oahu Bike Plan map shows Kamehameha Highway as a proposed official bike route but additional improvements including bike lanes or separated bike paths have not been proposed near the Resort.

Within the Resort, bicycle rentals are available to hotel guests who, together with some residents of the Kuilima Estates, use them to travel the miles of pedestrian paths along the shoreline.

F.4. e. Transit

The resort is currently served by TheBus service via Route 55 that links Haleiwa to downtown Honolulu, and Route 88A that provides peak period service along the same paths. Route 55 service is provided at headways ranging from 30 to 60 minutes between approximately 4:00 am and midnight on weekdays. On weekends and holidays, Route 55 service is provided between the same hours at 40- to 60-minute headways. Route 88A provides peak period service on weekdays with two eastbound trips in the morning stopping between 4:30 am and 5:30 am at the Resort, and two westbound trips in the evening stopping between 6:10 pm and 7:00 pm. A bus stop is currently located within the parking lot serving the hotel and includes two shelters and bench for patrons.

With the new development of the Proposed Action, a continuous internal roadway (Kaihalulu Drive) will be constructed between Marconi Road and a point on Kamehameha Highway approximately 3,800 feet west of existing Kuilima Drive. Turtle Bay Resort will work with TheBus to determine the optimal locations for a new stop(s) within the SEIS Lands since there is no substantive transit patron demand on Kamehameha Highway for nearby uses. On-site stops will include amenities such as shelters and benches to encourage patronage and provide a pleasant waiting environment. While the project will increase bus patronage with the anticipated increase in on-site population and implementation of the TDM program, the Proposed Action is not expected to cause any significant impacts to fixed route bus operations or paratransit service. All major on-site roadways will be designed to accommodate full-size transit vehicles, as well as Handi-Van vehicles.

~~F.4. e.~~ F.4. f. Previous Traffic Studies

A traffic study for the Resort was prepared in 1985 and presented as part of the 1985 EIS. Subsequent to the acceptance of the 1985 EIS, land use approvals and entitlements were granted allowing the development of 3,500 new units at the Resort. As the result of these approvals, the State DOT required the Resort owner to conduct additional traffic studies to address proposed traffic improvements. Following is a summary of the studies that have been conducted since 1985.

An update of the 1985 EIS traffic study entitled, *Traffic Impact Analysis Report for the Proposed Kuilima Resort Expansion*, dated July 25, 1991, was prepared by The Traffic Management Consultant (TMC). It focused on the access to the Resort.

A subsequent update entitled, *Traffic Impact Analysis Report Update for the Proposed Turtle Bay Resort Master Plan*, dated September 9, 2005, was prepared by TMC. The purpose of the TIAR Update was to support the design of the proposed Resort access intersections along Kamehameha Highway.

On February 14, 2006, TMC completed Addendum No. 1 to the 2005 TIAR Update. The addendum analyzed the channelization design of the new intersection at Kamehameha Highway (now called Kaihalulu Drive).

At the request of the City and County of Honolulu's Department of Planning and Permitting, TMC prepared a second addendum (Addendum No. 2) to the 2005 TIAR Update. It was dated April 21, 2006 and addressed the issue of whether Kaihalulu Drive should be widened from two to four lanes within the Resort.

On August 25, 2006, TMC completed a third addendum (Addendum No. 3) to the 2005 TIAR. It addressed a second phase of improvements on Kamehameha Highway at the Kuilima Drive intersection and at the proposed Kaihalulu Drive intersection.

On June 27, 2007, TMC completed a fourth addendum (Addendum No. 4) to the 2005 TIAR to determine the first phase of development where access would be provided by the improved Kuilima Drive intersection.

On April 16, 2009, TMC completed a revision of the 2005 TIAR Update, entitled *Revised Traffic Impact Analysis Report Update for the Proposed Turtle Bay Resort Master Plan.* The Revised TIAR was formally accepted by the State Department of Transportation in a letter dated July 9, 2009.

All eight traffic studies conducted between 1985 and 2009 addressed the proposed expansion of the Resort approved after the 1985 EIS was accepted.

~~F.4. f.~~ F.4. g. Existing Traffic Conditions

To address traffic conditions that will result from the implementation of the Proposed Action discussed in this SEIS, TMC has prepared a new traffic study that evaluates current traffic conditions and forecasts traffic impacts in the year 2025. The report, entitled *Traffic Impact Analysis Report for the Proposed Turtle Bay Resort Master Plan,* dated September 18, 2012 (hereinafter, "the 2012 TIAR"), is presented in the SEIS as Appendix I. The results of the current study that pertain to existing conditions are summarized below. The traffic impact study's findings and recommendations are presented in Chapter Five of the SEIS.

~~F.4.f. [1]~~ F.4.g. [1] METHODOLOGY

The adequacy of a roadway to accommodate vehicular traffic flow is measured in two ways: a determination of the Level of Service (LOS), and an evaluation of the capacity of a roadway (expressed as a volume-to-capacity, or "v/c, ratio"). The former generally evaluates how roadway intersections perform. The latter evaluates how stretches of roadway perform.

Several factors determine LOS, including speed, travel time, freedom to maneuver, traffic interruptions, driver comfort, and convenience. The LOS is expressed in letters A through F, where A, B, and C are considered to be satisfactory levels of service at an intersection. The letter D expresses what is generally considered to be a "desirable minimum" operating level of service. LOS "E" is an undesirable condition and LOS "F" is an unacceptable condition. It should be noted that a single intersection can, however, have more than one LOS rating. For example, an intersection may generally perform at LOS "A", but a cars attempting to turn left at the intersection might experience a LOS level of "C" or "D".

Volume-to-capacity ratio is a measure indicating the relative traffic demand to the roadway's capacity. In technical terms, it is defined as "the maximum number of vehicles that can pass a given point during a specific period under prevailing roadway, traffic flow, and traffic control conditions." A "v/c ratio" of 0.50 indicates that the traffic demand is using half (50%) of the roadway's capacity. A "v/c ratio" of 1.00 indicates that the traffic demand exceeds the capacity of the roadway.

The process of determining whether an intersection should be signalized is called "warranting". Traffic agencies typically will not require that a traffic signal be installed at an intersection unless it is "warranted", meaning that an engineering study must be conducted to determine if several specific measurement factors are met. These factors include the volume of traffic an intersection handles over an eight-hour period and whether traffic is so heavy that drivers experience excessive delays or conflicts entering or crossing an intersection.

The 2012 TIAR addresses traffic conditions on Kamehameha Highway from Haleʻiwa to Kaneʻohe. As recommended by the State DOT, the study extended over 35 miles from the intersection Joseph P. Leong Highway and Kamehameha Highway east to the intersection of Kamehameha Highway and Kahekili Highway. These two end points were chosen because beyond them motorists have a choice of routes, but between them motorists are confined to

Kamehameha Highway. Peak period traffic count surveys were conducted at these intersections on October 29, 2011 (a Saturday) and on November 1, 2011 (a Monday).

Traffic counts were conducted on Kamehameha Drive intersections at Kuilima Drive and at Marconi Road by TMC on November 3, 2011 (a Thursday) and on November 5, 2011 (a Saturday). Turning movements at Kuilima Drive were recorded from 6am to 6pm on the Thursday, and from 9am to 6pm on the Saturday. Turning movements at Marconi Road were taken during what was determined to be the peak period of traffic flow on Kamehameha Highway.

A week-long traffic count survey was conducted at the intersection of Kuilima Drive and Kamehameha Highway and at the Turtle Bay Hotel entrance from Sunday, October 30, 2011 to Sunday, November 6, 2011. The purpose of the survey was to develop trip generation characteristics for the existing Resort hotel (Turtle Bay Hotel) and resort residential units (Kuilima Estates). The traffic count survey was coordinated with a travel interview survey conducted by SMS Research and Marketing Services, Inc. from November 1, 2011 through November 6, 2011. The purpose of the interview survey was to determine the origins and destinations of all traffic entering and existing the Resort, and resulted in the interviewing of about 4,800 motorists during the eight-day period. The interview survey is presented as Appendix J to this SEIS.

~~F.4.f. [2]~~ F.4.g. [2] EXISTING AM PEAK HOUR WEEKDAY TRAFFIC CONDITIONS

Traffic engineers measure traffic conditions by determining the peak hour of traffic in the morning and the afternoon, and using that peak hour to generally characterize traffic on the given roadway. In urban Honolulu, the peak morning period extends generally from 6:00 AM to 9:00 AM: the "rush hour". However, in the vicinity of the Resort, an analysis of traffic conditions on Kamehameha Highway determined that a traditional morning "rush hour" is virtually non-existent. Rather, the AM peak hour of weekday traffic on Kamehameha Highway occurred between 11:00 AM and 12:00 Noon. During that period, the highway carried about 500 vehicles per hour (vph), total for both directions. That volume continued to increase in the afternoon hours.

In the vicinity of the Resort, Kamehameha Highway operated at LOS "C", with a v/c ratio of 0.18 during the morning peak hour. The left turn movement at Kuilima Drive operated at LOS "C" and the right turn movement operated at LOS "B" during that same period. Turning movements at Marconi Road operated at LOS B.

At the intersection of Joseph P. Leong Highway and Kamehameha Highway in Haleʻiwa, the AM peak hour for weekday traffic occurred between 10:45 AM and 11:45 AM, or about 15 minutes earlier than at the Resort. Kamehameha Highway carried about 900 vph, total in both directions, or about 80% more vehicles than the stretch of highway fronting the Resort during the peak morning hour. Kamehameha Highway operated at LOS "D" with a v/c ratio of ~~0.35~~ 0.33 north of the intersection (meaning towards the Resort). The intersection operated at LOS "B".

At the intersection of Kamehameha Highway and Kahekili Highway in Kahalu'u, the peak morning hour occurred between 6:45 AM and 7:45 AM, with Kamehameha Highway carrying about 1,200 vph, total for both directions, or 140% more than vehicles than at the Resort. North of the intersection, Kamehameha Highway operated at LOS "D" with a v/c ratio of ~~0.41~~ 0.53. The east leg of the highway operated at LOS "F". The other turning movements were determined to be "satisfactory" levels of service.

~~F.4.f. [3]~~ F.4.g. [3] EXISTING PM PEAK HOUR WEEKDAY TRAFFIC CONDITIONS

At the Resort, the PM peak hour of weekday traffic on Kamehameha Highway occurred between 2:00 PM and 3:00 PM. During that period, the highway carried about 700 vehicles per hour (vph), total for both directions. Kamehameha Highway operated at LOS "C ", with a v/c ratio of ~~0.26~~ 0.25 during the afternoon peak hour. The left turn movement at Kuilima Drive operated at LOS "C" and the right turn movement operated at LOS "B" during that same period. Turning movements at Marconi Road operated at LOS B.

At the intersection of Joseph P. Leong Highway and Kamehameha Highway in Hale'iwa, the afternoon peak hour for weekday traffic occurred between 2:45 PM and 3:45 PM. Kamehameha Highway carried over 1,400 vph, total in both directions, or twice the number of vehicles than the stretch of highway fronting the Resort carried during the peak afternoon hour. Kamehameha Highway operated at LOS "D", with a v/c ratio of 0.48. The intersection operated at LOS "B".

At the intersection of Kamehameha Highway and Kahekili Highway in Kahalu'u, the peak afternoon hour occurred between 3:30 PM and 4:30 PM, with Kamehameha Highway carrying about 1,500 vph, total for both directions, or over twice the vehicles that the highway carries at the Resort during its peak PM hour. Kamehameha Highway operated at LOS "D" with a v/c ratio of ~~0.48~~ 0.51. The traffic movements all operated at a satisfactory level.

~~F.4.f. [4]~~ F.4.g. [4] EXISTING PEAK HOUR WEEKEND TRAFFIC CONDITIONS

Weekend traffic is typically represented by a single peak hour on Saturday and Sunday. The existing weekend traffic data indicated that Saturday traffic was higher than Sunday traffic. The difference is attributed to the fact that the PCC does not operate on Sundays. During consultation with the State Department of Transportation, it was agreed that the Saturday peak hour could be used to represent the weekend traffic conditions in the study area.

In the vicinity of the Resort, the peak hour of weekend traffic occurred between 2:00 PM and 3:00 PM. Kamehameha Highway carried almost 900 vph, total for both directions. Kamehameha Highway operated at LOS "C", with a v/c capacity of ~~0.29~~ 0.27. The left turn movement at Kuilima Drive operated at LOS "D" and the right-turn movement operated at LOS "B" Marconi Road operated at LOS "B".

At the intersection of Joseph P. Leong Highway and Kamehameha Highway in Haleʻiwa, the weekend peak hour occurred between 11:45 AM and 12:45 PM. Kamehameha Highway carried almost 1,600 vph, total in both directions. Kamehameha Highway operated at LOS "D" with a v/c ratio of ~~0.53~~ 0.51 north of Haleʻiwa. The intersection operated at LOS "B", with the left-turn movement operating at LOS "D" and the other turning movements operating at satisfactory levels of service.

At the intersection of Kamehameha Highway and Kahekili Highway in Kahaluʻu, the peak weekend hour occurred between 2:15 PM and 3:15 PM, with Kamehameha Highway carrying about 1,200 vph, total for both directions. Kamehameha Highway operated at LOS "D" with a v/c ratio of ~~0.50~~ 0.49, or 0.02 higher than the peak PM weekday hour. The traffic movements all operated at a satisfactory level.

~~F.4.f.~~ ~~[5]~~ F.4.g. [5] SUMMARY OF EXISTING TRAFFIC CONDITIONS

Existing traffic conditions on Kamehameha Highway in the vicinity of the Resort can be compared to those that existed in 1985 when the expansion of the Resort was first proposed.

The traffic study in the 1985 EIS identified Kamehameha Highway at the Resort as operating at LOS "A" during the PM peak hour of 1:15 to 2:15 PM with the left turn movement at Kuilima Drive operating at LOS "C". The 1985 EIS did not present v/c ratios. However, the study did present traffic counts. The following table compares the PM Peak Hour Weekday traffic counts on Kamehameha Highway and Kuilima Drive taken in 1985 to those taken in 2011 for the SEIS. The 1985 EIS did not identify traffic movements at Marconi Road, in Haleʻiwa, or at Kahaluʻu.

The annual growth rate of traffic on Kamehameha Highway between Kahaluʻu and Haleʻiwa is generally in line with the Oʻahu Regional Transportation Plan (ORTP) forecasts.

Table 2-27: Comparison of Existing PM Peak Hour Traffic Volumes; 1985 & 2011

Traffic Direction/Movement	1985 Traffic Study	2012 Traffic Study	Average Annual Rate of Growth	Difference
East Bound on Kamehameha Hwy. approaching Kuilima Drive	236	344	1.8%	108 (46%)
Left Turn into Kuilima Drive	65	104	2.3%	39 (60%)
Left Turn out of Kuilima Drive onto Kamehameha Hwy.	41	70	2.9%	31 (76%)
Left Turn into Marconi Road	N.A.	2		N.A
Left Turn out of Marconi Road onto Kamehameha Hwy.	N.A.	7		N.A
East Bound on Kamehameha Hwy. after Marconi Road	277	311	0.5%	34 (12%)
West Bound on Kamehameha Hwy. approaching Marconi Road	246	352	1.7%	106 (43%)
Right Turn into Marconi Road	N.A.	7		N.A.
Right Turn out of Marconi Road	N.A.	3		N.A.
Right Turn into Kuilima Drive	65	76	0.7%	11 (17%)
Right Turn out of Kuilima Drive	74	91	0.9%	17 (23%)
West Bound on Kamehameha Hwy. after Kuilima Drive	242	362	1.9%	120 (50%)

Note: N.A. means Not Available.

F. 5. Air Quality

An Air Quality Impact Study was conducted for the Proposed Action by B. D. Neal & Associates and is presented in Appendix J. A summary of the report's description of the existing air quality at the SEIS Lands and in the region is presented below. The impacts of the Proposed Action on air quality are discussed in Chapter Five, the SEIS chapter addressing impacts.

F.5. a. National and State Standards

Ambient concentrations of air pollution are regulated by both national and state ambient air quality standards (AAQS). National AAQS are specified in Section 40, Part 50 of the Code of Federal Regulations (CFR), while State of Hawaii AAQS are defined in Chapter 11-59 of the

Hawaii Administrative Rules. Table 2-28 summarizes both the national and the state AAQS that are specified in the cited documents. As indicated in the table, national and state AAQS have been established for particulate matter, sulfur dioxide, nitrogen dioxide, carbon monoxide, ozone and lead. The state has also set a standard for hydrogen sulfide. National AAQS are stated in terms of both primary and secondary standards for most of the regulated air pollutants.

Table 2-28: Summary of State of Hawai'i and National Ambient Air Quality Standards

Pollutant	Units	Averaging Time	Maximum Allowable Concentration		
			National Primary	National Secondary	State of Hawaii
Particulate Matter (<10 microns)	μg/m³	Annual 24 Hours	- 150[a]	- 150[a]	50 150[b]
Particulate Matter (<2.5 microns)	μg/m³	Annual 24 Hours	15[c] 35[d]	15[c] 35[d]	- -
Sulfur Dioxide	ppm	Annual 24 Hours 3 Hours 1 Hour	- - - 0.075[e]	- - 0.5[b] -	0.03 0.14[b] 0.5[b] -
Nitrogen Dioxide	ppm	Annual 1 Hour	0.053 0.100[f]	0.053 -	0.04 -
Carbon Monoxide	ppm	8 Hours 1 Hour	9[b] 35[b]	- -	4.4[b] 9[b]
Ozone	ppm	8 Hours	0.075[g]	0.075[g]	0.08[g]
Lead	μg/m³	3 Months Quarter	0.15[h] 1.5[i]	0.15[h] 1.5[i]	- 1.5[i]
Hydrogen Sulfide	ppm	1 Hour	-	-	0.035[b]

a Not to be exceeded more than once per year on average over three years.
b Not to be exceeded more than once per year.
c Three-year average of the weighted annual arithmetic mean.
d 98th percentile value of the 24-hour concentrations averaged over three years.
e Three-year average of annual fourth-highest daily 1-hour maximum.
f 98th percentile value of the daily 1-hour maximum averaged over three years.
g Three-year average of annual fourth-highest daily 8-hour maximum.
h Rolling 3-month average.
i Quarterly average.

National primary standards are designed to protect the public health with an "adequate margin of safety". National secondary standards, on the other hand, define levels of air quality necessary to protect the public welfare from "any known or anticipated adverse effects of a pollutant". Secondary public welfare impacts may include such effects as decreased visibility, diminished comfort levels, or other potential injury to the natural or man-made environment, e.g., soiling of materials, damage to vegetation or other economic damage. In contrast to the national AAQS, Hawaii State AAQS are given in terms of a single standard that is designed "to protect public health and welfare and to prevent the significant deterioration of air quality".

Each of the regulated air pollutants has the potential to create or exacerbate some form of adverse health effect or to produce environmental degradation when present in sufficiently high concentration for prolonged periods of time. The AAQS specify a maximum allowable concentration for a given air pollutant for one or more averaging times to prevent harmful effects. Averaging times vary from one hour to one year depending on the pollutant and type of exposure necessary to cause adverse effects. In the case of the short-term (i.e., 1- to 24-hour) AAQS, both national and state standards allow a specified number of times a standard can be exceeded each year.

The Hawai'i AAQS are in some cases considerably more stringent than the comparable national AAQS. In particular, the Hawaii 1-hour AAQS for carbon monoxide is four times more stringent than the comparable national limit.

The national AAQS are reviewed periodically, and multiple revisions have occurred over the past 30 years. In general, the national AAQS have become more stringent with the passage of time and as more information and evidence become available concerning the detrimental effects of air pollution. Changes to the Hawaii AAQS over the past several years have tended to follow revisions to the national AAQS, making several of the Hawaii AAQS the same as the national AAQS.

F.5. b. Regional and Local Climatology

Regional and local climatology significantly affects the air quality of a given location. Wind, temperature, atmospheric turbulence, mixing height and rainfall all influence air quality. Although the climate of Hawai'i is relatively moderate throughout most of the state, significant differences in these parameters may occur from one location to another. Most differences in regional and local climates within the state are caused by the mountainous topography.

Hawaii lies well within the belt of northeasterly trade winds generated by the semi-permanent Pacific high-pressure cell to the north and east. On the island of O'ahu, the Ko'olau and Waianae Mountain Ranges are oriented almost perpendicular to the trade winds, which accounts for much of the variation in the local climatology of the island.

The site of the Proposed Action is located on the windward side of the Ko'olau Mountains at the northern tip of O'ahu near Kahuku Point. There are no published wind data for this area of

O‘ahu. However, based on the project location and the good exposure to the trade wind flow, ventilation can be expected to be good much of the time. Wind energy resource maps for the Kahuku area suggest that wind speeds are frequently in the upper range. (AWS Truewind, LLC: 2004). Winds can be expected to come mostly from the east or northeast direction due to the prevailing trade wind flow and to the local terrain effects.

Air pollution emissions from motor vehicles, the formation of photochemical smog, and smoke plume rise all depend in part on air temperature. Colder temperatures tend to result in higher emissions of contaminants from automobiles but lower concentrations of photochemical smog and ground-level concentrations of air pollution from elevated plumes. In Hawai`i, the annual and daily variation of temperature depend to a large degree on elevation above sea level, distance inland, and exposure to the trade winds. Average temperatures at locations near sea level generally are warmer than those at higher elevations. Areas exposed to the trade winds tend to have the least temperature variation, while inland and leeward areas often have the most. The Proposed Action’s coastal, windward location results in relatively persistent and moderate temperatures.

Small scale, random motions in the atmosphere (turbulence) cause air pollutants to be dispersed as a function of distance or time from the point of emission. Turbulence is caused by both mechanical and thermal forces in the atmosphere. It is oftentimes measured and described in terms of Pasquill-Gifford stability class. Stability class 1 is the most turbulent and class 6 the least. Thus, air pollution dissipates the best during stability class 1 conditions and the worst when stability class 6 prevails. In the Kahuku area, stability class 5 or 6 is generally the highest stability class that occurs, developing during clear, calm nighttime or early morning hours when temperature inversions form due to radiational cooling. Stability classes 1 through 4 occur during the daytime, depending mainly on the amount of cloud cover and incoming solar radiation and the onset and extent of the sea breeze.

Mixing height is defined as the height above the surface through which relatively vigorous vertical mixing occurs. Low mixing heights can result in high ground-level air pollution concentrations because contaminants emitted from or near the surface can become trapped within the mixing layer. In Hawai‘i, the mixing heights tend to be high because of mechanical mixing caused by the trade winds and because of the temperature moderating effect of the surrounding ocean. Low mixing heights may sometimes occur, however, at inland locations and even at times along coastal areas early in the morning following a clear, cool, windless night. Coastal areas also may experience low mixing levels during sea breeze conditions when cooler ocean air rushes in over warmer land. Mixing heights in Hawai‘i typically are above 3,000 feet (1,000 meters).

Rainfall can have a beneficial effect on the air quality of an area because it helps to suppress fugitive dust emissions, and it also may “washout” gaseous contaminants that are water-soluble. Rainfall in Hawai‘i is highly variable depending on elevation and on location with respect to the trade wind. The Kahuku area receives moderate amounts of precipitation due to its windward and near sea level location.

F.5. c. Existing Air Quality Conditions

Present air quality in the project area is mostly affected by air pollutants from motor vehicles, agricultural operations and to a lesser extent by natural sources. Table 2-29 presents an air pollutant emission summary for the island of Oʻahu for calendar year 1993. This is the most recent information available. The State Department of Health operates a network of air quality monitoring stations at various locations on Oʻahu. Each station, however, typically does not monitor the full complement of air quality parameters, and no stations are located on the windward side of the island or anywhere near to the project site. Thus, air quality data from stations at leeward locations are presented, but this data is probably only marginally representative of the project area. The table shows annual summaries of air quality measurements that were made at leeward Oʻahu locations for several of the regulated air pollutants for the period 2006 through 2010. These are the most recent data that are currently available.

The emission rates shown in the table pertain to manmade emissions only, i.e., emissions from natural sources are not included. As suggested in the table, much of the particulate emissions on Oʻahu originate from area sources, such as the mineral products industry and agriculture. Sulfur oxides are emitted almost exclusively by point sources, such as power plants and refineries. Nitrogen oxides emissions emanate predominantly from industrial point sources, although area sources (mostly motor vehicle traffic) also contribute a significant share. The majority of carbon monoxide emissions occur from area sources (motor vehicle traffic), while hydrocarbons are emitted mainly from point sources. Based on previous emission inventories that have been reported for Oʻahu, emissions of particulate and nitrogen oxides may have increased during the past several years, while emissions of sulfur oxides, carbon monoxide and hydrocarbons probably have declined.

Kamehameha Highway, which passes near the project area to the south, is a major arterial roadway that presently carries moderate to heavy levels of vehicle traffic during peak traffic hours. Emissions from motor vehicles using this roadway, primarily nitrogen oxides and carbon monoxide, will tend to be carried away from the project site by the prevailing winds.

Natural sources of air pollution emissions that also could affect the project area but cannot be quantified very accurately include the ocean (sea spray), plants (aero-allergens), wind-blown dust, and perhaps distant volcanoes on the island of Hawaiʻi.

During the 2006-2010 period, sulfur dioxide was monitored by the State Department of Health at an air quality station located at Kapolei. Concentrations monitored were consistently low compared to the standards. Annual second-highest 3-hour concentrations (which are most relevant to the air quality standards) ranged from 0.004 to 0.011 parts per million (ppm), while the annual second-highest 24-hour concentrations ranged from 0.003 to 0.004 ppm. Annual average concentrations were only about 0.001 to 0.002 ppm. There were no exceedances of the state/national 3-hour or 24-hour AAQS for sulfur dioxide during the 5-year period. Data pertaining to the new 1-hour standard have not yet been reported.

Table 2-29: Annual Summaries of Air Quality Measurements for Monitoring Stations Nearest Turtle Bay Resort Expansion

Parameter / Location	2006	2007	2008	2009	2010
Sulfur Dioxide / Kapolei					
3-Hour Averaging Period:					
Highest Concentration (ppm)	0.005	0.010	0.009	0.010	0.012
2nd Highest Concentration (ppm)	0.004	0.008	0.009	0.007	0.011
No. of State AAQS Exceedances	0	0	0	0	0
24-Hour Averaging Period:					
Highest Concentration (ppm)	0.003	0.003	0.005	0.003	0.004
2nd Highest Concentration (ppm)	0.003	0.003	0.003	0.003	0.004
No. of State AAQS Exceedances	0	0	0	0	0
Annual Average Concentration (ppm)	0.002	0.002	0.001	0.001	0.001
Particulate (PM-10) / Kapolei					
24-Hour Averaging Period:					
Highest Concentration ($\mu g/m^3$)	59	75(a)	61	37	59
2nd Highest Concentration ($\mu g/m^3$)	58	57	44	36	58
No. of State AAQS Exceedances	0	0	0	0	0
Annual Average Concentration ($\mu g/m^3$)	16	17	18	16	16
Particulate (PM-2.5) / Kapolei					
24-Hour Averaging Period:					
Highest Concentration ($\mu g/m^3$)	34(a)	20	35	25	61(a)
98th percentile Concentration ($\mu g/m^3$)	7	8	21	13	12
No. of State AAQS Exceedances	0	0	0	0	1(a)
Annual Average Concentration ($\mu g/m^3$)	4	4	5	6	4
Carbon Monoxide / Kapolei					
1-Hour Averaging Period:					
Highest Concentration (ppm)	1.4	3.8	2.2	3.7	1.6
2nd Highest Concentration (ppm)	1.4	0.9	1.7	2.6	1.5
No. of State AAQS Exceedances	0	0	0	0	0
8-Hour Averaging Period:					
Highest Concentration (ppm)	1.0	0.8	0.7	1.2	1.0
2nd Highest Concentration (ppm)	1.0	0.7	0.7	1.2	0.8
No. of State AAQS Exceedances	0	0	0	0	0
Nitrogen Dioxide / Kapolei					
Annual Average Concentration (ppm)	0.005	0.005	0.004	0.004	0.003
Ozone / Sand Island					
8-Hour Averaging Period:					
Highest Concentration (ppm)	0.042	0.035	0.048	0.049	0.052
4th Highest Concentration (ppm)	0.042	0.033	0.043	0.048	0.047
No. of State AAQS Exceedances	0	0	0	0	0

(a) Data flagged due to fireworks. Source: State of Hawaii Department of Health, "Annual Summaries" Hawaii Air Quality Data, 2006 - 2010"

Particulate matter less than 10 microns in diameter (PM-10) is also measured at the Kapolei monitoring station. Annual second-highest 24-hour PM-10 concentrations ranged from 36 to 58 g/m^3 between 2006 and 2010. Average annual concentrations ranged from 16 to 18 g/m^3. All values reported were within the state and national AAQS.

Particulate matter less than 2.5 microns in diameter (PM-2.5) measured at the Kapolei monitoring station had annual 98th percentile 24-hour concentrations ranging from 7 to 21 g/m^3 between 2006 and 2010. Average annual concentrations ranged from 4 to 6 g/m^3. All values reported were within the state and national AAQS.

Carbon monoxide measurements were also made at the Kapolei monitoring station. The annual second-highest 1-hour concentrations ranged from 0.9 to 2.6 ppm. The annual second-highest 8-hour concentrations ranged from 0.7 to 1.2 ppm. These values are well within the standards, and no exceedances of the state or national 1-hour or 8-hour AAQS were reported.

Nitrogen dioxide is also monitored by the Department of Health at the Kapolei monitoring station. Annual average concentrations of this pollutant ranged from 0.003 to 0.005 ppm, safely inside the state and national AAQS.

The nearest available ozone measurements were obtained at Sand Island. The fourth-highest 8-hour concentrations (which are most relevant to the standard) for the period 2006 through 2010 ranged between 0.033 and 0.048 ppm, well inside the state and federal standards. The 8-hour standard for ozone did not exist prior to 2002. Prior to 2002, the now obsolete state 1-hour standard was typically exceeded several times each year.

Although not shown in the table, the nearest and most recent measurements of ambient lead concentrations that have been reported were made at the downtown Honolulu monitoring station between 1996 and 1997. Average quarterly concentrations were near or below the detection limit, and no exceedances of the state AAQS were recorded. Monitoring for this parameter was discontinued during 1997.

It is probable that air pollution concentrations measured at leeward locations are higher than those present on the windward coast where the project is located. Based on the data and discussion presented above, it appears likely that the State of Hawaii AAQS for sulfur dioxide, nitrogen dioxide, particulate matter, ozone and lead are currently being met in the project area. While carbon monoxide measurements at the Kapolei monitoring station suggest that concentrations are within the state and national standards, local "hot spots" may exist near traffic-congested intersections. The potential for this within the specific project area is addressed in the discussion of impacts in Chapter Five of the SEIS.

F. 6. Acoustic Environment

A Noise Impact Analysis was conducted for the Proposed Action by Y. Ebisu and Associates and is presented in Appendix K. A description of the existing acoustic environment is presented below and the results of the analysis detailing the anticipated impacts of the Proposed Action are presented in Chapter Five, the SEIS chapter addressing impacts.

F.6. a. Methodology

The noise descriptor currently used by federal agencies to assess environmental noise is the Day-Night Average Sound Level (DNL or Ldn). The DNL values represent the average noise during a typical day of the year. DNL exposure levels of 55 or less are typical of quiet rural or suburban areas. DNL exposure levels of 55 to 65 are typical of urbanized areas with medium to high levels of activity and street traffic. DNL exposure levels above 65 are representative of densely developed urban areas and areas fronting high volume roadways. A general consensus among federal agencies has developed whereby residential housing development is considered acceptable in areas where exterior noise does not exceed 65 DNL. This value of 65 DNL is used as a federal regulatory threshold for determining the necessity for special noise abatement measures when applications for federal funding assistance are made. For the purposes of determining noise acceptability for funding assistance from federal agencies, an exterior noise level of 65 DNL or lower is considered acceptable. These federal agencies include the Federal Aviation Administration (FAA), Department of Defense (DOD); Federal Housing Administration, Housing and Urban Development (FHA/HUD), and Veterans Administration (VA). This standard is applied nationally, including Hawai‘i.

In the State of Hawai‘i, the State Department of Health (DOH) regulates noise from on-site activities. State DOH noise regulations are expressed in maximum allowable property line noise limits rather than DNL. The noise limits apply on all islands of the State, including O‘ahu. Although they are not directly comparable to noise criteria expressed in DNL, State DOH noise limits for preservation/residential, apartment/commercial, and agricultural/industrial lands equate to approximately 55, 60, and 76 DNL, respectively.

Because the proposed project site is located on lands designated for single family and multifamily residential, commercial, and agricultural uses, various DOH noise limits would be applicable along the lot boundary lines or receptor locations for any stationary machinery, or equipment related to commercial or construction activities. These property line limits are 60 dBA and 50 dBA during the daytime and nighttime periods, respectively, for commercial lots or receptors. For multifamily or apartment use, the State DOH limits are also 60 dBA and 50 dBA during the daytime and nighttime periods, respectively. For single family residential and public facility uses, the State DOH limits are 55 dBA and 45 dBA during the daytime and nighttime periods, respectively. For agricultural uses, the State DOH limit is 70 dBA during both the daytime and nighttime periods. These noise limits cannot be exceeded for more than 2 minutes in any 20-minute time period under the State DOH noise regulations. The State DOH noise regulations do not apply to aircraft or motor vehicles.

Existing traffic and background ambient noise levels were measured at fifteen locations in the project environs to provide a basis for developing the traffic noise contours along Kamehameha Highway; and for determining the existing background ambient noise levels in the project area. The locations of the measurement sites are shown in Figure 1 of Appendix K. Noise measurements were performed during February 2012. Traffic noise calculations for the existing conditions as well as noise predictions for the future conditions with and without the project were performed using the Federal Highway Administration (FHWA) Noise Prediction Model.

Traffic noise calculations for both the existing and future conditions in the project environs were developed for ground level receptors without the benefit of shielding effects. Traffic assignments with and without the project were obtained from the project's traffic analysis presented above. The forecasted increases in traffic noise levels over existing levels were calculated for both scenarios (with and without the Proposed Action), and noise impact risks evaluated. The relative contributions of non-project and project related traffic to the total noise levels were also calculated, and an evaluation was made of possible traffic noise impacts resulting from the project.

The results of the analysis are presented in a map that depicts contour lines depicting noise impacts from the major roadways in the area. If a noise receptor (a house, apartment, business, park or hotel) is determined to be in a noise contour of 65 Ldn or greater, the impact is determined to be significant and measures to mitigate that impact are recommended.

F.6. b. Existing Conditions

The existing traffic noise levels in the project environs are affected by traffic along Kamehameha Highway. Within the Resort property, existing background noise levels along the *mauka* boundaries are affected by traffic along Kamehameha Highway. Traffic along Kuilima Drive affects background ambient noise levels in the middle section of the Resort at the Kuilima Estates. Along the *makai* boundaries of the Resort, surf and Resort activities control the background ambient noise levels. Given the moderate speeds of prevailing winds and the presence of large groves of ironwood trees along coastal areas, ambient noise levels are also affected by wind noise.

The existing setback distances from the roadways' centerlines to their associated 65, 70, and 75 DNL contours were also calculated as shown in Table 2-30. The contour line setback distances do not take into account noise shielding effects or the additive contributions of traffic noise from intersecting street sections. Based on the results of Table 2-30, it was concluded that the existing 65 DNL traffic noise contour is located approximately 59 to 75 FT from the centerline of Kamehameha Highway west of Kuilima Drive, and approximately 57 to 100 FT from the centerline of Kamehameha Highway east of Kuilima Drive.

One existing residence located *makai* of Kamehameha Highway and approximately 0.70 miles east of Kuilima Drive is located within the existing 65 DNL traffic noise contour, with approximately 68 DNL noise exposure level.

Approximately thirteen existing residences located *makai* of Kamehameha Highway and between Pahipahialua Street and Pahipahialua Beach Park are located within the existing 65 DNL traffic noise contour, with traffic noise levels ranging from 66 to 70 DNL.

Existing traffic noise levels along Kuilima Drive at Kuilima Estates are less than 65 DNL along the Rights-of-Way, and the traffic noise contributions from Kuilima Drive range from approximately 54 to 59 DNL at the six multifamily dwelling units closest to Kuilima Drive.

Traffic noise contributions from Kamehameha Highway are relatively low, and less than 48 DNL at Kuilima Estates.

Paradise Helicopters provides helicopter tours from a helipad situated at the eastern end of the main parking lot for the existing hotel pursuant to Federal Aviation Administration (FAA) approval H158. Helicopter tour and charter flights are conducted from 8am to 6pm daily, depending upon demand, pursuant to FAA Part 135, 137 and 91. Flights depart to the northeast and approach from the southeast (over the existing golf course driving range). Helicopter activities consist of approximately 10 operations per day. (An operation is equal to one landing or departure.)

Facilities include the 14,400 square foot helipad, a portable building for office/retail space (15 feet by 30 feet), a portable restroom structure (15 feet by 5 feet), two small shipping containers for equipment storage, and a covered area for helicopter and fuel storage (25 feet by 50 feet). Fuel storage consists of one 600-gallon storage tank for Jet A fuel. The fuel is delivered by a 2000-gallon certified Jet A fuel truck operated by North Shore Aviation.

Table 2-30: Existing and CY 2025 Distances to 65, 70, and 75 DNL Contours

STREET SECTION	65 DNL SETBACK (FT)		70 DNL SETBACK (FT)		75 DNL SETBACK (FT)	
	EXISTING	CY 2025	EXISTING	CY 2025	EXISTING	CY 2025
Kamehameha Hwy. West of Kaihalulu Dr. (Posted 35 mph)	59	87	36	50	22	28
Kamehameha Hwy. West of Kaihalulu Dr. (Posted 45 mph)	75	122	46	66	28	37
Kamehameha Hwy. from Kaihalulu to Kuilima (With Median)	75	81	46	46	28	26
Kamehameha Hwy. from Kaihalulu to Kuilima (W/O Median)	75	82	46	45	28	25
Kamehameha Hwy. East of Kuilima Dr. (Posted 35 mph)	58	84	34	48	20	27
Kamehameha Hwy. East of Kuilima Dr. (Posted 45 mph)	73	116	44	63	27	35
Kamehameha Hwy. West of Marconi Dr. (Posted 35 mph)	57	84	34	48	20	27
Kamehameha Hwy. West of Marconi Dr. (Posted 45 mph)	73	116	44	63	26	35
Kamehameha Hwy. East of Marconi Dr. (Posted 35 mph)	58	84	34	48	20	27
Kamehameha Hwy. East of Marconi Dr. (Posted 45 mph)	100	173	60	90	36	49
Kaihalulu Dr. At Kamehameha Hwy.	N/A	29	N/A	15	N/A	7
Kuilima Dr. At Kamehameha Hwy.	23	33	12	17	7	9
Marconi Rd. At Kamehameha Hwy.	3	15	2	8	1	4

Notes:

(1) All setback distances are from the roadways' centerlines.
(2) See TABLES 3 and 5 for traffic volume, speed, and mix assumptions.
(3) Setback distances are for ground level receptors.
(4) "Loose Soil" conditions assumed along all roadways.
(5) DNL values represent 7-day, weekly averages.
(6) With medians and 35 mph posted within 600' of intersections on Kamehameha Highway.
(7) Without medians and 45 mph posted beyond 600' of intersections on Kamehameha Highway, except 35 mph posted between Kuilima Dr and Kaihalulu Dr.

Existing background noise levels at the interior portions of the project site beyond 500 feet from Kamehameha Highway are low (between 45 and 55 DNL) due to their large setback distances from Kamehameha Highway. At these interior locations on the project site, distant traffic, helicopter noise, and the natural sounds of surf, birds, and winds in foliage are the dominant noise sources. Between traffic, helicopter, surf, bird, or wind noise events, background ambient noise levels drop to a range of 40 to 45 dBA. During calm wind periods, background ambient noise levels decrease to levels less than 45 dBA at the interior locations removed from Kamehameha Highway, Kuilima Drive, and the shoreline. The minimum background ambient noise levels at these interior locations are controlled by distant traffic, surf, and wind noise.

F.7. Public Emergencies and First Responders

This section identifies existing public facilities that provide first responses to natural and man-made emergencies. It then goes on to discuss the full scope of emergencies to which the State of Hawaiʻi is exposed, and the extent to which the Resort is potentially exposed.

F.7. a. Public Safety Services and Facilities

The City and County of Honolulu is responsible for providing public safety and first-responder services for non-federal properties on Oʻahu. Public notice of natural and man-made emergencies is provided by the Oʻahu Civil Defense agency, the Honolulu Police Department, the Department of Emergency Services. Federal agencies that provide early notification of potential emergencies include the National Weather Service (for tropical cyclones and storms) and the Pacific Tsunami Center (for tsunami events). The State of Hawaiʻi's DOH provides early notification for water contamination events (primarily sewage spills).

F.7.a. [1] POLICE AND SECURITY

The KNS region is within two police districts, with stations in Kāneʻohe and Wahiawā, outside the region. A substation in Kahuku, about five (5) miles from the Resort, serves the Koʻolau Loa side of the region. Island-wide, recruitment is adequate to keep police staffing constant, but not to expand to fill vacancies. The Kahuku substation is authorized to have five officers but has only three or four at a time.

Private security is provided at the Resort.

F.7.a. [2] FIRE PROTECTION

Fire stations are located in the KNS region at Kaʻaʻawa, Hauʻula, Kahuku, Sunset Beach, and Waialua. The Kahuku station is about five (5) miles from the Resort. The Fire Department plans to relocate the Hauʻula and Waialua stations to sites outside of the flood plain.

F.7.a. [3] EMERGENCY SERVICES

As discussed above, the Kahuku Medical Center provides 24-hour emergency services to the KNS region. It is located about five miles east of the Resort.

F.7.a. [4] EMERGENCY NOTIFICATION AND EVACUATION

The emergency warning system maintained by the O'ahu Civil Defense agency includes an integrated system of warning sirens island wide that are activated in times of emergency, together with the broadcast of alerts and advisories on television and radio. An emergency siren is situated on Kamehameha Highway approximately one mile east of the existing Resort entrance.

Kamehameha Highway serves as the only evacuation route for the KNS region. The decision to evacuate an area as the ~~Resort~~ result of a man-made threat or natural disaster rests with O'ahu Civil Defense and the Honolulu Police Department.

F.7. b. Possibility of Environmental Accidents

There are at least three potential sources of environmental accidents that could occur in the vicinity of the Resort: an accident on Kamehameha Highway that involves a vehicle transporting toxic material (such as a gasoline tanker) which results in a spill; the accidental spillage of pesticides by a Resort resident, the golf course operator, or a farmer in the area *mauka* of the Resort; or the accidental release of untreated sewage from the Resort's wastewater collection or the wastewater treatment plant *mauka* of the Resort.

If an environmental accident is reported, clean up crews from the Honolulu Fire Department are called into action. In the case of a sewage spill, the State Department of Health is notified and warning signs may be posted on the shoreline if the spill cannot be contained inland and makes its way to near shore waters.

The likelihood of a major roadway spill is quite limited. There have been no known reports of a fuel truck accident resulting in a serious spill in local memory. There are, however, frequent spillages of fuel or oil resulting from serious traffic accidents on Kamehameha Highway. While these incidents are not uncommon, they are limited in scope and usually do not result in a significant release of hazardous substances to the environment. First responders are usually able to alert the fire department in time.

The accidental spillage of pesticides by the golf course operator is considered to be very unlikely. The golf course maintenance crew is specifically trained in the handling of pesticides. The frequency of pesticide spillage by farmers or private homeowners is unknown as neither group is required to report such incidences. However, the volume of pesticides involved, especially with regard to homeowners, is quite low. While the environmental effects should not be discounted, they do not constitute a widespread environmental hazard.

The spillage of untreated sewage is possible, especially when wastewater collection system pipes are old. Sewage spills on O'ahu are a frequent occurrence, especially in the greater Honolulu area where some collection system pipelines date back to the early 1900s.

F.7. c. Flooding

Potential flood hazards are identified by the Federal Emergency Management Agency (FEMA) National Flood Insurance Program and are mapped on the Flood Insurance Rate Maps (FIRM). The maps classify land into four zones depending on the potential for flood inundation.

According to the 2011 FIRM (see Figure ~~2-64~~ 2-69), the SEIS Lands include four flood zones: VE, AE, D and X. With the exception of the property occupied by the Kuilima Estates East and West, and a portion of the Palmer Golf Course of similar size just west of Punahoʻolapa Marsh, the entire Resort property is designated as Zone AE, with base flood elevations determined to be approximately 11 feet. The coast of the Resort property is designated as Zone VE (Coastal Flood Zone with Velocity Hazard) with base flood elevations determined to be between 16 and 17 feet at the coast and 12 to 14 feet several hundred feet inland.

The FIRM map indicates that Hoʻolapa Stream, the intermittent stream that enters the property at its southeastern corner, causes episodic flooding that correlates with high volume rain events.

F.7. d. Tsunami

A tsunami is a series of very long-period waves that are usually triggered by a disturbance at the seafloor that displaces water (usually the result of an earthquake, undersea landslide or undersea volcano). These waves can move across the ocean at speeds approaching 500 miles per hour and inundate coastal areas with water reaching several meters in height and causing extensive destruction. However, tsunami can also occur locally as the result of a coastal landslide or coastal subsidence event.

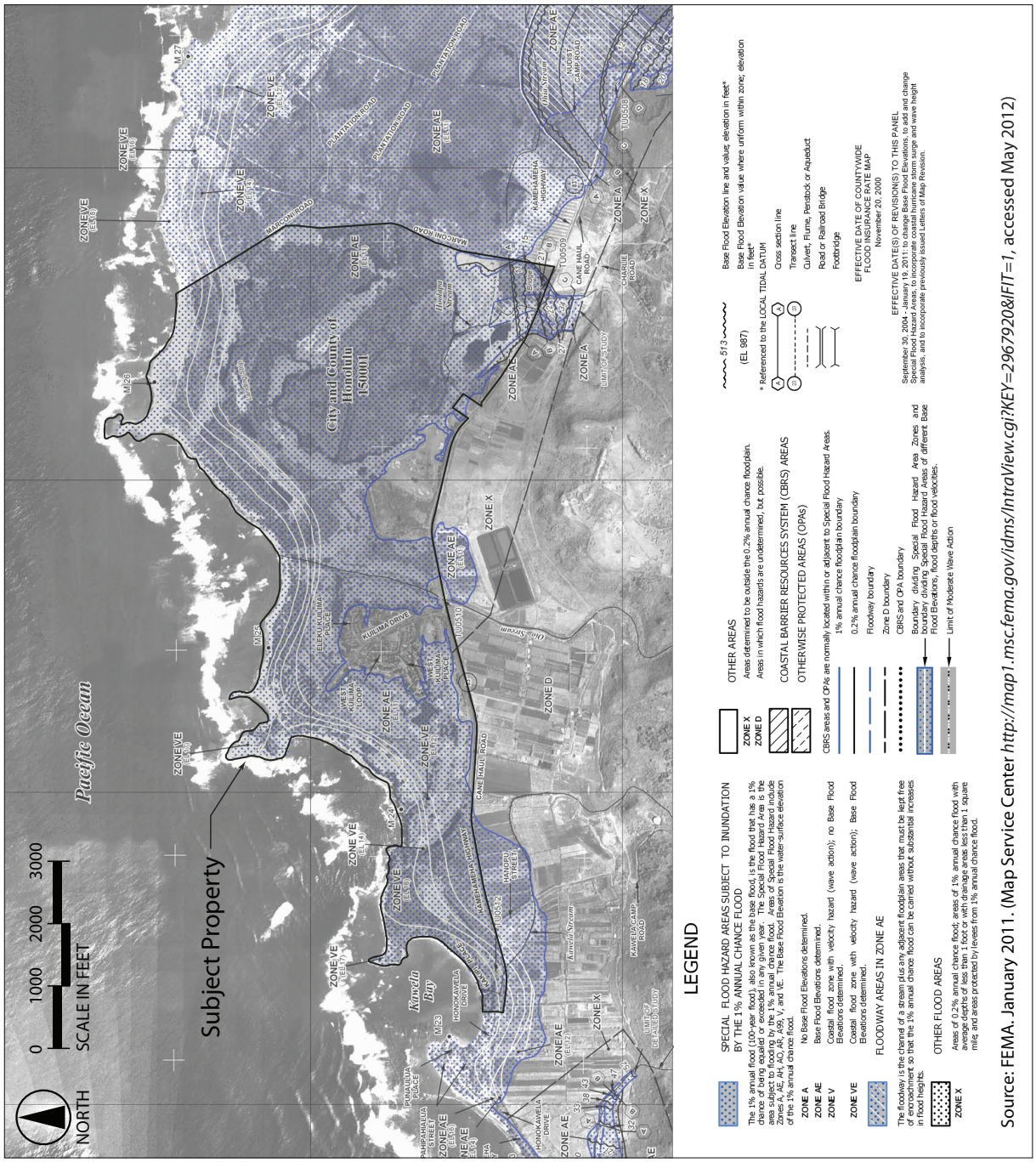
The most severe tsunami known to reach the Hawaiian Islands occurred in 1946 as the result of an earthquake in the Aleutian Islands. It resulted in wave heights as high as 37 feet (at Laupahoehoe on the Island of Hawaiʻi). At the army's airfield at Kahuku (now the eastern portion of the SEIS Lands), wide spread inundation occurred with the sea flooding approximately 1.6 kilometers inland destroying many wooden structures and lifting large barracks buildings off their foundations, collapsing several. Vegetation was damaged by the waves. Sands from Kahuku beach and coastal sand dunes were dispersed throughout the inundation zone. (http://cedb.asce.org/cgi/WWWdisplay.cgi?162779)

On March ~~15~~ 11, 2011, an 8.9 earthquake off the east coast of Japan resulted in a tsunami that caused unprecedented damage. Approximately six hours after the tsunami struck Japan, tsunami waves ranging in height from three to seven feet reached the Hawaiian Islands.

F.7. e. Volcanic Hazards

Hazards associated with volcanic eruptions include lava flows, tephra (airborne particulate matter ejected by a volcano), volcanic gases, and earthquakes (including ground cracks and subsidence). As there are no active or dormant volcanoes on Oʻahu, the threat of lava flow inundation is non-existent. The threat of tephra is usually limited to areas immediately downwind of an active eruption, and for that reason, Oʻahu is not subjected to tephra hazards.

Figure ~~2-64~~ 2-69: FIRM Map



Source: FEMA. January 2011. (Map Service Center *http://map1.msc.fema.gov/idms/IntraView.cgi?KEY=2967920&IFIT=1*, accessed May 2012)

Ground cracks and subsidence of the earth can occur as the result of earthquake activity associated with volcanic eruptions, but these phenomenon are not known to impact Oʻahu.

Since the eruption of Puʻu Oʻo in Puna in 1984, continuous volcanic activity associated with that vent and sporadic activity in recent years at Kilauea crater has resulted in the near constant emission of volcanic gas composed of water vapor, carbon dioxide, and sulfur dioxide in the range of approximately 300 to 700 tonnes per day. During normal trade wind conditions, most of this volcanic gas, known as vog, is blown out to sea in a southwest direction. However, during those times when the winds shift to the southeast (blowing southeast to northwest), the plume of vog can reach Oʻahu, resulting in hazy atmospheric conditions that constitute a health concern for people suffering from acute asthma and lung-related illnesses.

F.7. f. Earthquakes and Seismic Activity

Earthquake activity on Oʻahu is linked to volcanic activity that is focused on the Island of Hawaiʻi and the surrounding seafloor. Earthquakes can occur before or during volcanic eruptions or when magma (molten rock) migrates underground without breaking through to the surface.

The largest known earthquake to occur in the Hawaiian Islands was an event with an estimated magnitude of 7.9 in Kaʻu on the Island of Hawaiʻi in 1868. The next largest event was a 7.2 magnitude event on that island's Kalapana coast in 1975. However, smaller magnitude quakes on the Island of Hawaiʻi are capable of inflicting damage and disruption as far away as Oʻahu. On October 15, 2006, a 6.7 earthquake under the seafloor just offshore of Hualalai on Hawaiʻi Island caused a near total electrical blackout on Oʻahu.

The United States Geological Service has designated four seismic hazard zones in the main Hawaiian Islands, ranging on a scale from 1 to 4 with 4 being the most severe. The island of Kauaʻi is designated as Zone 1; Oʻahu as Zone 2A; Maui County as Zone 2B; and the Island of Hawaiʻi as Zone 4. [USGS:1997]

F.7. g. Landslides, Rock-Falls and Subsidence

Landslides and rock-falls are typically associated with steep mountainous areas where prolonged rainfall events or strong earthquake activity can dislodge soil from the subsurface rock.

Subsidence, or the sudden collapse of soil in relatively flat coastal areas, is associated with strong earthquake activity. The most recent notable event of subsidence was during the 1972 Kalapana earthquake, when a large stretch of the Kalapana coastline collapses several feet, causing an immediate tsunami as the ocean rushed in to replace the void created by the collapsed beach. Subsidence also occurs regularly along the coast downslope from Puʻu Oʻo and Kilauea craters where lava drains into the sea. Where the lava enters the sea, it cools and over time forms a large shelf of new land. However, once the shelf reaches several acres in size, it tends to break off from the coast and sink. This event has occurred repeatedly over the past two decades.

F.7. h. Severe Winds

Air-borne debris dislodged by strong winds can pose a threat to life and property. In Hawai`i, strong winds can be caused by tropical cyclones, including tropical storms and hurricanes, by a steep air pressure gradient across the islands resulting from the proximity of a high pressure area, and by tornadoes or water spouts that make landfall.

The Hawaiian Islands are situated at the northern edge of the area extending north of the equator that is most closely associated with tropical cyclone activity in the North Pacific. During the period from May 15 to November 30 each year, tropical depressions tend to form in the warm waters off the western coast of Mexico and Central America, and then often move in a west to northwest direction. If climatic conditions are favorable for intensification, the depression can become a tropical storm or eventually a hurricane. In rare instances, these East Pacific storms are able to reach the Hawaiian Islands. However, because of cooler sea surface temperatures around Hawai'i, and due to the summer-time presence of the North Pacific high pressure area several hundred miles north of the islands that generates the trade winds, tropical cyclones originating in the East Pacific usually dissipate before reaching the islands. Nevertheless, the residual moisture associated with dissipated cyclones is an important contributor to summertime rainfall in the islands.

When tropical cyclones form west of 140 degrees longitude, they are considered to have formed in Hawaiian waters and are given Hawaiian names. While these storms are also exposed to the same influences that help to dissipate East Pacific storms, Hawaiian tropical cyclones pose a significant threat to the islands because of their tendency to form rapidly and move swiftly, resulting in as little as two to three days of warning time, as opposed to the 10 days or more it takes an East Pacific storm to cross the 2,000+ miles to the Hawaiian Islands.

The National Weather Service has established categories of wind speeds as a means of identifying the strength of a tropical cyclone. Tropical storm storm-force winds range in speed from 39 to 73 miles per hour (mph). If wind speeds exceed tropical storm force, the storm is classified as a hurricane. The Saffir-Simpson Hurricane Wind Scale for Hawai'i is a 1 to 5 categorization based on the intensity of a hurricane at a particular time. The scale was most recently modified on May 15, 2012.

- Category One: Sustained winds 74-95 mph. Hurricane Iwa (passing just northwest of Kaua'i in 1982) and Hurricane Dot (landfall on Kaua'i in 1959) are examples of category one cyclones.

- Category Two: Sustained winds 96-110 mph. There is no record of a category two cyclone directly impacting the Hawaiian Islands.

- Category Three: Sustained winds 111-129 mph. There is no record of a category three cyclone directly impact the Hawaiian Islands.

- Category Four: Sustained winds 130-156 mph. Hurricane Iniki, which made landfall on Kauai in 1992, is an example of a category four cyclone.

- Category Five: Sustained winds greater than 157 mph. There is no record of a category three cyclone directly impact the Hawaiian Islands.

Steep air pressure gradients across the islands can also generate strong winds. As air heats at the equator and rises, causing air pressure at the Earth's surface, it moves north towards the pole. But as it flows north at a high altitude, it cools and begins to sink back to Earth, creating high air pressure at the surface. The phenomenon of tropical air sinking back to Earth occurs around 30 degrees latitude in the North Pacific, several hundred miles north of Hawaiʻi. As this sinking air is then drawn back toward the low air pressure at the equator, it begins to warm, and when it reaches the equator it rises, creating a perpetual cycle of air, called the Hadley Cell, rotating up and down in the atmosphere. The Hadley Cell is predominant during the summer months, giving Hawaiʻi its trade winds. Although the trade winds are not particularly strong, they can reach speeds up to the high thirties (miles per hour). In leeward areas characterized by south or southwest facing mountain slopes, trade winds speeds can sometimes accelerate and damage roof shingles.

However, during the winter when the Hadley Cell is less active, winter storms blowing in from the west can occasionally create a low-pressure system west or northwest of the islands. Known as a Kona Low, this winter-time phenomenon is known for delivering strong winds and copious amounts of rain to the islands. Wind speeds associated with Kona Lows can approach 100 miles per hour. (These storms are not considered to be hurricanes because they do not form as tropical cyclones…and yet, they can have hurricane-force winds.)

At times during the winter season, large low-pressure systems set up west or northwest of the Hawaiian Islands that do not form into Kona Lows. Yet, because nature abhors a vacuum, air from the east is pulled in towards the low; creating a high-pressure gradient across the islands. Strong winds ranging from 50 to 60 miles per hour are associated with this phenomenon, which tends to occur in the period from January to March.

While tornadoes and water spouts have been known to occur in the Hawaiian Islands on rare occasions, they appear to have become more frequent in the past several years, for reasons not fully understood. On Oʻahu, tornadoes have been documented in Waipahu and Kunia. Most recently in 2011, a water spout made landfall in Lanikai, in the Koʻolaupoko district, and moved about a mile inland, causing incidental damage before dissipating.

CHAPTER THREE: Proposed Action

A. Overview of Market Demand 3-1

B. Description of the Proposed Action 3-3

1. Cultural Orientation 3-3

2. ~~Ahupuaʻa O ʻŌpana Kawela~~ Western Resort Area: Kawela Bay and Kawela Point. . . . ~~3-4~~ 3-6

a. ~~*Ahupuaʻa Orientations*~~ *Resort Residential* . . . . . ~~3-4~~ 3-7

b. ~~*Ahupuaʻa Elements*~~ *Park (P-1)* . . . . . ~~3-6~~ 3-8

c. *Kawela Bay Marine Life Conservation District* 3-8

~~[1] RESORT RESIDENTIAL~~. . . . . ~~3-6~~

~~[2] PARK (P-1)~~ . . . . . ~~3-7~~

~~[3] KAWELA BAY MARINE LIFE CONSERVATION DISTRICT~~ . . . . . ~~3-7~~

3. ~~Ahupuaʻa O Hanakaʻoe~~ Central Resort Area: Kuilima Point . . . . . ~~3-7~~ 3-10

a. ~~*Ahupuaʻa Orientations*~~ *Hotel Facilities*. . . . . ~~3-8~~ 3-11

b. ~~*Ahupuaʻa Elements*~~ *The Gathering Place* . . . . . ~~3-8~~ 3-11

c. *Farmers' Market* 3-12

~~[1] HOTEL FACILITIES~~. . . . . ~~3-8~~

~~[2] THE GATHERING PLACE~~. . . . . ~~3-9~~

~~[3] FARMERS' MARKET~~ . . . . . ~~3-9~~

4. ~~Ahupuaʻa O Kahuku~~ Eastern Resort Area: Kahuku Point . . . . . ~~3-10~~ 3-13

a. ~~*Ahupuaʻa Orientations*~~ *Resort Residential* . . . . . ~~3-10~~ 3-14

b. ~~*Ahupuaʻa Elements*~~ *Community Housing* . . . . . ~~3-10~~ 3-14

c. *Punahoʻolapa Marsh Preservation and Enhancement*. 3-14

~~[1] RESORT RESIDENTIAL~~. . . . . ~~3-10~~

~~[2] COMMUNITY HOUSING~~ . . . . . ~~3-11~~

~~[3] PUNAHOʻOLAPA MARSH PRESERVATION AND ENHANCEMENT~~ . . . . . ~~3-11~~

5. Recreation Amenities . . . . . ~~3-11~~ 3-16

a. *Parks and Pedestrian Access* . . . . . ~~3-12~~ 3-16

b. *Golf*. . . . . ~~3-13~~ 3-17

c. *Tennis* . . . . . ~~3-13~~ 3-17

d. *Equestrian Center*. . . . . ~~3-13~~ 3-17

e. *Open Space* . . . . . ~~3-13~~ 3-19

6. Vehicular Circulation . . . . . ~~3-14~~ 3-19

7. Infrastructure and Utilities. . . . . ~~3-14~~ 3-20

a. *Pedestrian & Bicycle Access* . . . . . ~~3-14~~ 3-20

b. *Drainage* . . . . . ~~3-14~~ 3-20

c. *Drinkable Water Storage and Transmission*. . . . . ~~3-16~~ 3-22

[1] EXISTING POTABLE SYSTEM . . . . . ~~3-16~~ 3-22

[2] PROPOSED SYSTEM . . . . . ~~3-17~~ 3-23

d. *Irrigation Water* . . . . . ~~3-19~~ 3-24

[1] EXISTING ~~POTABLE~~ SYSTEM . . . . . ~~3-19~~ 3-24

[2] PROPOSED SYSTEM . . . . . ~~3-19~~ 3-25

e. Wastewater Collection and Treatment . . . . . ~~3-20~~ 3-25
[1] EXISTING ~~POTABLE~~ SYSTEM . . . . . ~~3-20~~ 3-25
[2] PROPOSED SYSTEM . . . . . ~~3-22~~ 3-28
f. Solid Waste Collection and Disposal & Recycling . . . . . ~~3-22~~ 3-29
[1] EXISTING ~~POTABLE~~ SYSTEM . . . . . ~~3-22~~ 3-29
[2] PROPOSED SYSTEM . . . . . ~~3-22~~ 3-29
g. Electrical and Telecommunication Services . . . . . ~~3-22~~ 3-29
[1] EXISTING ~~POTABLE~~ SYSTEM . . . . . ~~3-22~~ 3-29
[2] PROPOSED SYSTEM . . . . . ~~3-24~~ 3-30
8. Views . . . . . ~~3-24~~ 3-30
9. Construction and Funding Source . . . . . ~~3-25~~ 3-30
10. Use of Public Funds or Lands . . . . . ~~3-25~~ 3-30
11. Phasing and Timing . . . . . ~~3-25~~ 3-31
12. Necessary Approvals . . . . . ~~3-28~~ 3-34

LIST OF FIGURES

Figure	Title	Page	
3-1	Proposed Action	3-5	
3-2	Proposed Action – Open Space	3-15	
3-3	Wailee Wells	3-18	
3-4	Water Master Plan, Proposed Water System	3-21	
3-5	Sewer Master Plan, Proposed System	~~3-23~~	3-27

LIST OF TABLES

Table	Title	Page	
3-1	Proposed Action Phasing Plan	~~3-27~~	3-32

CHAPTER THREE:

PROPOSED ACTION

A. Overview of Market Demand

It is the opinion of HVS International Consulting and Evaluation (Golf and Resort Services), an internationally recognized firm specializing in real estate market assessment, that the current and projected market conditions for hotel units and resort residential real estate are sufficient to support the development of the Proposed Action, and that the development of the Proposed Action is financially feasible from the perspective of the master developer, as well as for the sale of improved properties to builders.

The economy in Hawai'i is heavily oriented towards the visitor industry, and tourism indicators have been trending up over the last several years. Visitation to the islands reached a plateau in 2005, 2006 and 2007; declined in 2008 and 2009; but started a recovery in 2010 that accelerated throughout 2011. Recent 2012 visitor information data indicates that the recovery has continued.

Robust increases in international visitation from Japan, Canada, China, and South Korea, and increasing domestic visitation beginning in the second half of 2011 created robust demand conditions in the islands' hotels and continued through 2012. New sources of visitors from China, Australia, Canada, and South Korea are expected to represent the growth area for Hawai'i visitation and the outlook for the next five years remains optimistic.

While the demand for primary residence is driven by market fundamentals, the market for resort real estate has been based upon investment resources and disposable income. The purchase decision is typically motivated by a number of different factors, including current lifestyle, future lifestyle or retirement, investment potential, and rental income.

The resort real estate market in the Hawaiian Islands has historically consisted of a large majority of speculative buyers for numerous reasons. The aging of the baby-boom generation is a major factor in almost all of the seasonal markets. These buyers are approaching their 'golden years' and are looking to live in a more relaxed resort environment with lifestyle improvements. These buyers are also conscious of the changing prices of real estate, and they desire prudent choice with upside potential in terms of equity growth. Despite the current soft markets, the Hawaiian Islands have had consistent growth. This fact, as well as the emergence of the Asian markets, should help to drive future growth in these markets in the long term.

Surveys of national second home buyers reveals two categories of these buyers; investment buyers and vacation buyers. According to the market assessment consultant, the nature of the market has changed substantially over the past several years, and much of the speculative

demand from investors has changed; the speculative demand that boosted home prices and demand through much of the late 1990s and early 2000s is absent from today's market. As such, less speculative demand for investment is expected in the early years of the development horizon. The main market for resort real estate will be the end-users of the properties, although some may speculate based upon investment or future retirement.

The long distance required to travel to the islands dictates that the prime markets for potential seasonal unit purchasers will be between 20-30 percent of the total market for seasonal homes, are from outside the Hawaiian Islands, and are dependent upon air travel to the region. However, a significant percentage of homes is purchased by buyers within close proximity to the development. For vacation buyers, this represents about 18 percent of purchasers, while for investment buyers this represents about 60 percent of buyers. The market assessment consultant concludes that a significant number of investors from Honolulu will be evaluating the opportunity from an investment perspective.

The demand for residential property at the Resort will come from several different markets. These include:

- National and international visitors looking for seasonal homes;
- Buyers looking for a retirement home; and
- Investment for future use or monetary gain.
- The local neighborhoods and permanent residents;
- Honolulu residents looking for a second home;

Honolulu will also provide a captive market for purchases of second homes. The secluded and natural environment of the Resort, similar to a neighbor island experience, creates a unique aspect to the Proposed Action that does not exist elsewhere on Oʻahu and will appeal to a significant number of purchasers.

This demand for seasonal units in the coming decade is estimated at about 685 units a year statewide. This will comprise approximately 11% of the 6,000 new units forecasted to be constructed annually within the state (based on an historical analysis of building trends over the past several decades). Oʻahu is expected to garner about 45 percent of these units, or about 313 annually. The market assessment consultant concludes that the Proposed Action will induce additional demand for seasonal units, as it will provide a purchasing alternative that does not currently exist in the market.

The market assessment consultant identified several comparable resort real estate projects located in the Hawaiian Islands, including Kukio, Waikoloa, and Mauna Lani on the Big Island, Ko Olina on Oʻahu, and Kaʻanapali on Maui. The peak in the sales of comparable projects' real estate markets occurred in advance of the overall tourism and hospitality markets, and was significantly more severe both in terms of the number of sales as well as pricing. Furthermore,

there has been a substantial re-orientation of the demand in the markets for these projects during that timeframe.

Condominium sales were a very small part of overall demand until 2004, and as the market for single-family homes declined, condominium sales have become the most significant component for comparable projects in the current market. For resort residential real estate, the sales of single-family homes and lots represented the vast majority of all sales through 2004, and accounted for close to 800 sales in 2003. In 2010 and 2011, the sales of lots and homes totaled about 150, or about 18 percent of the peak market, and about 35 percent of the average over the past decade.

The real estate markets are at or near the bottom in terms of sales volume, but the recovered market is likely to be significantly different as it emerges. Condominiums and low maintenance products will constitute a much larger portion of these projects, although single family will reemerge as a more significant component than in the current market. The recovery will likely be more pronounced once purchasers are comfortable that their investment in real estate will not deteriorate further, and sales levels will return towards a more sustainable level.

While the overall tourism visits in Hawai'i are projected to surpass pre-recession levels in the next year or two, it is expected that recovery in the housing market will take substantially longer, but that by the time sales are starting at the Resort, the housing market will be trending upwards.

Both the markets and value proposition for buyers have undergone significant changes since the original EIS for the Resort was completed in 1985. As such, the highest and best development opportunity for rest estate and hospitality development at the Resort has changed significantly. The market assessment consultant concludes that the full build out of the Resort that was envisioned in 1985 is not currently a financially viable development opportunity due to changes in market conditions. The density of development and the total number of units in the Full Build Out scenario were predicated upon creating sufficient mass for the development to create economies of scale. But comparable projects completed elsewhere in Hawai'i since 1985 have demonstrated that success can be achieved at a reduced scale while maintaining the special essence of the place that creates the demand.

B. Description of the Proposed Action

Following is a detailed description of the Proposed Action.

B. 1. Cultural Orientation

The Proposed Action is based in large part upon the traditional Hawaiian cultural resource management principles and values that sustained the *ahupua'a*, which the project team has developed into ~~planning guidelines they refer to as,~~ an overarching philosophy referred to as *Tomorrow's Ahupua'a*. In recognition of the objectives of *Tomorrow's Ahupua'a* discussed in Appendix A, and in view of the sensitivities of the community concerning maintaining the

rural character of the SEIS Lands, the Proposed Action represents an over 60% reduction from the density proposed in the original expansion project as formalized under the 1985 Unilateral Agreement.

The Proposed Action concentrates higher density development in the resort's existing central core area – Ahupuaʻa O Hanakaʻoe - with two (2) new hotel sites and a new community Gathering Place in proximity to the existing Turtle Bay Hotel. See Figure 3-1. The previous five (5) sites originally proposed for hotel development in the Ahupuaʻa O ʻŌpana-Kawela (to the west) and Ahupuaʻa O Kahuku (to the east) will be developed instead with ~~r~~Resort-~~r~~Residential Units ~~at much~~ lower density developments; reduced by over 75% of what is allowable under existing zoning. Similarly, the Kahuku *ahupuaʻa* is planned for affordable ~~c~~Community ~~h~~Housing Units and ~~r~~Resort-~~r~~Residential Units with over 60% less density than is allowed under existing entitlements. The result is the concentration of development in the central core of the SEIS Lands and the general preservation of a rural character to the east and west.

Further, the Proposed Action provides for two (2) hotel sites, rather than the five (5) approved in the current land use entitlements and the number of Hotel Units is reduced from 2,500 to 625. By implementing generous shoreline setbacks at 150 to 200 feet, the development concept achieves public access to the entire shoreline, as intended in the Unilateral Agreement, and further enhances the pedestrian experience of an unencumbered coastal area.

~~B.2. a Ahupuaʻa Orientations~~

The environmental, social, economic and cultural orientations of ~~Ahupuaʻa O ʻŌpana-Kawela~~ the Resort will be addressed in a manner that ensures the balanced use of its natural resources and the reciprocal relationships between man and nature within the *ahupuaʻa*. For example, monitoring and maintenance of Kawela stream ~~from *mauka to makai*~~ allows for proper stewardship; restoring its *makai* alignment to its historic route for the purpose of reducing siltation in Kawela Bay; and encouraging marine life preservation in Kawela Bay collectively will foster the restoration of this once significant fishery. Storm-water retention ponds in the kula lands will help control storm water run-off and contribute to the recovery of the fishery. And farm-to-table programs in the kula lands provide a fresh food supply, reduce carbon emissions, and stimulate the economy of local farmers and ranchers. Finally, the stories of the people and traditions of the *ahupuaʻa* will guide land use, and be integrated into park signage and storytelling programs.

~~B.3.a Ahupuaʻa Orientations~~

~~Ahupuaʻa O Hanakaʻoe~~ The central resort area presents the greatest opportunity for employing the *Tomorrow's Ahupuaʻa* ~~concept~~ philosophy because of its existing density, mixed-use, and its built environment. The Proposed Action consolidates high density in this area in order to accommodate low density in the adjoining Resort areas. ~~*ahupuaʻa*~~. The commercial core provides an opportunity for enhanced community amenities, and the existing hotel property creates an economic base to support this area as the gathering place. Appropriate

Figure 3-1: Proposed Action

Proposed Action

AREA	ACRES	UNITS/ACRE	UNITS
Hotel (H-1a, 1b)	25.9	14	375
Hotel (H-2, 2a)	19.0	13	250
Existing Turtle Bay Hotel	34.5	14	500
TOTAL HOTEL	79.4	14	1,125
Resort Residential (RR-1)	39.1	2	75
Resort Residential (RR-2a, 2b)	20.3	7	150
Resort Residential (RR-3a, 3b)	24.8	4	100
Resort Residential (RR-4a, 4b)	33.4	4	120
Resort Residential (RR-5)	25.6	4	100
Resort Residential (RR-6)	11.2	4	45
Resident Housing (RES-1)	12.4	9	112
Resident Housing (RES-2)	8.8	5	48
TOTAL RESIDENTIAL	175.6	4	750
Existing Kuilima Estates	33.1	11	368
Gathering Place (Piko)	9.6		
Existing Clubhouse	1.2		
New Clubhouse	2.3		
TOTAL OTHER	13.1		
Golf Course (G-1)	123.1		
Golf Course (G-2)	191.5		
Punahoolapa Wildlife Preserve	100.0		
Park (P-1)	4.8		
Park (P-2)	38.0		
Park (P-3) - Bird Sanctuary	6.0		
Park (P-4)	9.4		
Park (P-5)	11.3		
Equestrian Center	8.8		
Farmers' Market (east)	3.4		
Farmers' Market (west)	4.1		
Parcel 5-6-003:033	3.8		
AG Well (Lot 524)	2.0		
TOTAL OPEN SPACE	506.2		
Kuilima Drive (Existing)	4.5		
P-1 Access Road	0.4		
RR-1/2 Access Road	0.7		
Equestrian Road	2.6		
Marconi Road Expansion	11.3		
Kaihalulu Drive	24.8		
TOTAL ROADWAYS	44.3		
Parcel 5-7-003:072	0.2		
TOTAL SITE	**851.9**		

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07.31.2012 |

water-oriented recreation businesses and other local business opportunities that serve hospitality and residential clients are anticipated. ~~Stories of Hanaka‘oe~~ Traditional stories of the area will provide the foundation for cultural interpretation along pathways and in park signage as well as in hotel programs. And in a similar fashion to the eastern resort area's Kawela Stream ~~Ahupua‘a O ‘Ōpana-Kawela~~**,** the entire course of ‘Ō‘io stream will be maintained from its source to its outflow into Kuilima Bay.

~~B.4. a. Ahupua‘a Orientations~~

Interpretive signs in parks, paths, and along the bridle trail will tell the unique stories of the ~~*ahupua‘a*~~ western resort area including the Hawaiian accounts of the kapa beater of Punaho‘olapa Marsh and the floating island of Kahuku. The low-density resort residential component fosters a sense of well-being, community, and proper stewardship. Respectful access to the marsh honors the importance of wetlands in the *makai* lands. ~~And stewardship of the portion of ‘Ō‘io stream in the *mauka* lands of the *ahupua‘a* ensure that the *makai* lands of Ahupua‘a O Hanaka‘oe are not adversely impacted by sedimentation and run-off.~~

Following is a detailed discussion of how the components of the Proposed Action are distributed ~~among the three *ahupua‘a* contained~~ within the SEIS Lands.

B. 2. ~~Ahupua‘a O ‘Opana-Kawela~~ Western Resort Area: Kawela Bay and Kawela Point

The 1986 SMA Use Permit for the Resort allows the development of up to 1,000 hotel units in ~~Ahupua‘a O ‘Ōpana-Kawela~~ the vicinity of Kawela Bay and Kawela Point. Based upon listening to the community, and balanced with economic viability, the Proposed Action reduces development in ~~‘Ōpana-Kawela~~ the vicinity of Kawela Bay and Kawela Point to two projects with a total of 225 Resort Residential Units in an area of approximately 60 acres, at a net density of less than 3 units/acre.

To further demonstrate this commitment, along Kawela Bay, all buildings will be set back a minimum of 300 feet from the certified shoreline, consistent with the requirements of the property's approved land use entitlements. Along the shoreline east of Kawela Point, all buildings will be set back a minimum of 150 feet. Proposed building heights will be a maximum of four habitable floors/60 feet on the R-2 development site facing the Resort and three habitable floors/50 feet on the R-1 development site facing Kawela Bay.

The focus in the ~~*makai* lands encompassing Ahupua‘a O ‘Ōpana-Kawela~~ vicinity of Kawela Bay will be the strategic distribution of low and medium density uses to respect the shoreline and Kawela Bay, which TBR proposes to use best efforts to promote the creation of a Marine Life Conservation District to improve water quality and the ecosystem of the bay. Linked open spaces and building shoreline setbacks will accommodate parks, preserves, and recreational and educational footpaths in this area.

Kaihalulu Drive (tentative name - final name to be determined) will intersect with Kamehameha Highway and continue through the *ahupuaʻa* until it connects with Hanakaʻoe. Kaihalulu Drive connects all three project-area *ahupuaʻa*, allowing the boundary areas adjacent to this roadway to function in a similar fashion as they might have in ancient times. As such, the plan includes market areas and other open spaces at each intersection of Kaihalulu Drive and a project area *ahupuaʻa* boundary. In the kula lands, farming and commercial agriculture will be enhanced with programs and facilities to promote exchange between *ahupuaʻa*. ~~In the *mauka* lands *mauka* of Kamehameha Highway in each of the *ahupuaʻa*, relationships with the U.S. military and other government agencies will be strengthened in order to promote, protect, and better steward area watershed.~~

B.2. a. Resort Residential

Because flood elevations in the Kawela Bay area range between eleven and fourteen feet above mean sea level in the locations where ~~the~~ Resort Units are proposed to be developed, the first habitable floor of each unit must be constructed above the designated flood elevation. To accomplish this construction, the Resort Residential Units will likely consist of some combination of structures with single family, duplex, or low-density multi-family units. The 39.5-acre area designated as RR-1 in Figure 3-1 will contain approximately 75 Resort Residential Units built at a density of approximately two Resort Residential Units per acre. (For comparison purposes, a typical single-family home in Koʻolau Loa or the North Shore built on a 7,500 square-foot lot results in a density of over five units per acre.) At the proposed density, development site RR-1 will contain a maximum of 75 structures, if all are single family, or 38 structures (if each contains two Resort Residential Units), and approximately 13 structures (if each contains six Resort Residential Units). The actual number of structures will likely be a blend of two- four-, and, or six-unit buildings, and may include some single-family units as design and compliance allows. But regardless of the configuration of units in the final site plan that would be prepared at the time of development, the proposed density will result in the majority of the development site being retained in open space. The Resort Residential structures will be built no higher than 50 feet, meaning that they will likely be four stories in height with three habitable floors. Parking for the duplex and multi-unit structures will be located on the ground floor with the first habitable floor above.

Development site RR-2, extending between Kamehameha Highway and the western side of the Resort contains a total of approximately 21 acres. Approximately 150 multi-family Resort Residential Units are proposed for this site at a density of approximately seven Resort Residential Units per acre. However, development may also include single-family units. The number of structures will depend upon the configuration of units per structure but will likely be similar to development site RR-1. Building heights will be limited to 60 feet with four habitable floors. Open space areas will include common area grounds, pedestrian paths, paved roadways and passive recreational areas.

Because of the proximity of development sites R-1 and R-2 to the shoreline, all outdoor lighting will be shielded to minimize glare when viewed from the ocean or the sky.

B.2. b. Park (P-1)

Over four acres of land will be set aside for a park at the western end of the resort property, fronting the center point of Kawela Bay. The park will have legal roadway access to Kamehameha Highway.

B.2. c. Kawela Bay Marine Life Conservation District

In accordance with Condition 14 of the Unilateral Agreement, "Declarant shall use its best efforts to promote the creation of a Marine Life Conservation District (MLCD) at Kawela Bay", TBR intends to consult with the community to discuss the creation of MLCD at Kawela Bay. In the event the community wants TBR to pursue the creation of Kawela Bay as an MLCD, TBR would propose that it be coordinated with an educational program for the visitors, residents, and guests of the resort to instruct them about the appropriate use of the bay and shoreline. TBR will consult with the community on the development of a culturally and environmentally appropriate educational program that is consistent with the Kawela *Ahupuaʻa*. Notwithstanding an educational program or MLCD designation, traditional and customary practices related to fishing and gathering will be respected in accordance with the constitutional protections as required by law.

~~B.2. a. Ahupuaʻa Orientations~~

~~The environmental, social, economic and cultural orientations of Ahupuaʻa O ʻŌpana-Kawela will be addressed in a manner that ensures the balanced use of its natural resources and the reciprocal relationships between man and nature within the *ahupuaʻa*. For example, monitoring and maintenance of Kawela stream from *mauka* to *makai* allows for proper stewardship; restoring its makai alignment to its historic route for the purpose of reducing siltation in Kawela Bay; and encouraging marine life preservation in Kawela Bay collectively will foster the restoration of this once significant fishery. Storm-water retention ponds in the kula lands will help control storm water run-off and contribute to the recovery of the fishery. And farm-to-table programs in the kula lands provide a fresh food supply, reduce carbon emissions, and stimulate the economy of local farmers and ranchers. Finally, the stories of the people and traditions of the *ahupuaʻa* will guide land use, and be integrated into park signage and storytelling programs.~~

~~B.2. b. Ahupuaʻa Elements~~

~~The focus in the *makai* lands encompassing Ahupuaʻa O ʻŌpana-Kawela will be the strategic distribution of low and medium density uses to respect the shoreline and Kawela Bay, which TBR proposes to use best efforts to promote the creation of a Marine Life Conservation District to improve water quality and the ecosystem of the bay. Linked open spaces and building shoreline setbacks will accommodate parks, preserves, and recreational and educational footpaths in this area.~~

~~Kaihalulu Drive (tentative name - final name to be determined) will intersect with Kamehameha Highway and continue through the *ahupuaʻa* until it connects with Hanakaʻoe. Kaihalulu Drive connects all three project-area *ahupuaʻa*, allowing the boundary areas adjacent to this roadway to function in a similar fashion as they might have in ancient times. As such, the plan includes market areas and other open spaces at each intersection of Kaihalulu Drive and a project area *ahupuaʻa* boundary. In the kula lands, farming and commercial agriculture will be enhanced with programs and facilities to promote exchange between *ahupuaʻa*. In the *mauka* lands in each of the *ahupuaʻa*, relationships with the U.S. military and other government agencies will be strengthened in order to promote, protect, and better steward area watershed.~~

~~B.2.b. [1] RESORT RESIDENTIAL~~

~~Because flood elevations in the Kawela Bay area range between eleven and fourteen feet above mean sea level in the locations where the units are proposed to be developed, the first habitable floor of each unit must be constructed above the designated flood elevation. To accomplish this construction, the resort residential units will likely consist of some combination of structures with single family, duplex, or low-density multi-family units. The 39.5-acre area designated as R-1 in Figure 3-1 will contain approximately 75 units built at a density of approximately two units per acre. (For comparison purposes, a typical single-family home in Koʻolau Loa or the North Shore built on a 7,500 square-foot lot results in a density of over five units per acre.) At the proposed density, development site R-1 will contain a maximum of 75 structures, if all are single family, or 38 structures (if each contains two units), and approximately 13 structures (if each contains six units). The actual number of structures will likely be a blend of two- four-, and, or six-unit buildings, and may include some single-family units as design and compliance allows. But regardless of the configuration of units in the final site plan that would be prepared at the time of development, the proposed density will result in the majority of the development site being retained in open space. The resort-residential structures will be built no higher than 50 feet, meaning that they will likely be four stories in height with three habitable floors. Parking for the duplex and multi-unit structures will be located on the ground floor with the first habitable floor above.~~

~~Development site R-2, extending between Kamehameha Highway and the western side of the Resort contains a total of approximately 21 acres. Approximately 150 multi-family units are proposed for this site at a density of approximately seven units per acre. However, development may also include single-family units. The number of structures will depend upon the configuration of units per structure but will likely be similar to development site R-1. Building heights will be limited to 60 feet with four habitable floors.~~

~~Open space areas will include common area grounds, pedestrian paths, paved roadways and passive recreational areas.~~

~~Because of the proximity of development sites R-1 and R-2 to the shoreline, all outdoor lighting will be shielded to minimize glare when viewed from the ocean or the sky.~~

~~B.2.b. [2] PARK (P-1)~~

~~Over four acres of land will be set aside for a park at the western end of the resort property, fronting the center point of Kawela Bay. The park will have legal roadway access to Kamehameha Highway.~~

~~B.2.b. [3] KAWELA BAY MARINE LIFE CONSERVATION DISTRICT~~

~~In accordance with Condition 14 of the Unilateral Agreement, "Declarant shall use its best efforts to promote the creation of a Marine Life Conservation District (MLCD) at Kawela Bay", TBR intends to consult with the community to discuss the creation of MLCD at Kawela Bay. In the event the community wants TBR to pursue the creation of Kawela Bay as an MLCD, the team would propose that it be coordinated with an educational program for the visitors, residents, and guests of the resort to instruct them about the appropriate use of the bay and shoreline. TBR will consult with the community on the development of a culturally and environmentally appropriate educational program that is consistent with the Kawela Ahupuaʻa. Notwithstanding an educational program or MLCD designation, traditional and customary practices related to fishing and gathering will be preserved and protected in compliance with the constitutional protections as required by law.~~

B. 3. ~~Ahupuaʻa O Hanakaʻoe~~ Central Resort Area: Kuilima Point

~~Ahupuaʻa O Hanakaʻoe is~~ The lands immediately east and west of Kuilima Point are proposed as the physical and commercial center of the Turtle Bay Lands. Existing resort facilities are concentrated around Kuilima Point. In the Proposed Action, the Gathering Place, and all future hotel development are located within ~~Hanakaʻoe~~ this central area and within walking distance of existing facilities. All buildings on Development Sites H-1 and H-2 will be set back a minimum of 150 feet from the certified shoreline.

~~B.3. a. Ahupuaʻa Orientations~~

~~Ahupuaʻa O Hanaka`oe presents the greatest opportunity for employing the *Tomorrow's Ahupuaʻa* concept because of its existing density, mixed-use, and its built environment. The Proposed Action consolidates high density in this area in order to accommodate low density in the adjoining *ahupuaʻa*. The commercial core provides an opportunity for enhanced community amenities, and the existing hotel property creates an economic base to support this area as the gathering place. Appropriate water-oriented recreation businesses and other local business opportunities that serve hospitality and residential clients are anticipated. Stories of Hanakaʻoe will provide the foundation for cultural interpretation along pathways and in park signage as well as in hotel programs. And in a similar fashion to Ahupuaʻa O ʻŌpana-Kawela, the entire course of ʻŌʻio stream will be maintained from its source to its outflow into Kuilima bay.~~

~~B.3. b. Ahupuaʻa Elements~~

~~Ahupuaʻa O Hanakaʻoe is~~ The central resort area is bounded on the west by ~~Ahupuaʻa O ʻŌpana-~~ Kawela and on the east by ~~Ahupuaʻa O~~ the Kahuku Point Area. The ~~*makai* land of the *ahupuaʻa* is the~~ central resort area is the commercial core of the ~~plan~~ resort and serves as the central gathering place for commerce, events, and cultural programs. ~~It is envisioned as the center of the Resort.~~

The central resort area is proposed to provide the highest density within the SEIS Lands including two new hotel sites and consolidated commercial uses. Parks on the eastern and western boundaries define the limits of the central resort area and also serve as buffers to the adjoining *ahupuaʻa*. The west-side park will include space for farmer's markets supporting the farm-to-table program. The refurbished 9-hole golf course or open space recreational area will serve as an additional buffer between residences, the existing highway, and proposed hotel components. Similar to kula lands ~~in Ahupuaʻa O ʻŌpana-Kawela~~ *mauka* of Kawela Bay, ~~these kula lands~~ the lands *mauka* of the central resort area will feature farming and commercial agriculture with enhanced programs and facilities. ~~As stated previously, the resort's *mauka* lands in Hanakaʻoe *ahupuaʻa* will reflect a strengthened relationship between the community and government agencies with a focus on protecting the watershed.~~

~~B.3.b. [1]~~ B.3. a. ~~HOTEL FACILITIES~~ Hotel Facilities

On the H-2 development site east of the existing Ocean Villas, the Proposed Action includes ~~a~~ 250~~-unit hotel~~ Hotel Units with a maximum height of five habitable floors/90 feet (See Figure 3-1). At this time, it is contemplated that the ownership structure is likely to be condominium, but could be a traditional hotel or timeshare.

West and *mauka* of The Cottages, the H-1 Development Site is bisected by a central Gathering Place. Roughly ten acres of the H-1 hotel site is designated for a commercial gathering place within the heart of the *ahupuaʻa*. Development Site H-1 is contemplated, at this time, as a timeshare project with a maximum of 375 ~~units~~ Hotel Units and a maximum height of 90 feet. While the ultimate ownership structure could also be condominium or traditional hotel, as with many timeshare projects elsewhere in Hawaiʻi, individual ~~lock~~ Hotel Units with a Lock-off feature ~~suites, or 'keys', within a unit~~ may be rented or occupied separately depending upon market demand.

In total, these two sites are planned for 625 ~~units~~ Hotel Units, of which up to 375 may have a Lock-off feature. However, in no case will the number of ~~hotel~~ keys on Development Sites H-1 and H-2, ~~including lock-off suites~~, exceed 1,000.

B.3. b. ~~[2] THE GATHERING PLACE~~ The Gathering Place

The Resort is situated at the western edge of the Koʻolau Loa district and at the eastern end of a seven mile stretch of beach featuring many of the world's most famous surf breaks. The Gathering Place is at the nexus of these two rich and diverse areas and is intended to be a vibrant activity center welcoming the local communities to enjoy the Resort's spectacular setting

together with its visitors. Currently Turtle Bay Resort hosts special events such as Fourth of July celebrations, Makahiki, Kanikapilapalooza, Golf Tournaments, Oceanfest, special concerts and others. These events take place in the existing hotel meeting rooms, grounds and other approved areas for public gatherings. Traffic management and parking is planned and managed by TBR's events coordinator and security. The resort uses the West Event Lawn to host larger events such as the Fourth of July and Kankapilapalooza open to the public that attract approximately 500 to 3,000 participants. The existing hotel also hosts ocean related events such as the Stand Up Paddleboard World Series, Oceanfest and others that attract from 50 to several hundred participants. These events are considered as extensions of the existing, new hotel and supporting facilities and are considered in the supporting technical reports including traffic and infrastructure.

Flanked by the two halves of the H-1 hotel site, the Gathering Place will be the focal point of the resort and draw deeply on the foundation of the host Hawaiian culture. This community core will feature a small collection of simple and authentic structures drawing inspiration from the *kamaʻaina* architectural heritage of the islands. Local shops and restaurants, a day care facility for resort employees, sunny lawns and groves of shade trees will all provide opportunities for locals and guests alike to gather and talk story.

The built component of the Gathering Place will include less than 40,000 square feet of conditioned space, primarily in single story buildings. The outdoor space in the Gathering Place will include raised lanai and porches linking the clustered arrangements of buildings. Nearest to the ocean will be an ocean sports club called the *Hale Kai*. This facility will host a wide range of ocean-based sports and activities, both cultural and contemporary in nature, and celebrate the resort area's significant history related to the water. All buildings will be set back a minimum of 150 feet from the certified shoreline.

The Gathering Place at the Project will provide a more defined outdoor stage and event lawn to host the small to medium sized events from a few hundred to a thousand, but will also be an adjunct to larger group events like Wanderlust, Mercedes, Makahiki or other special events. The Gathering Place is planned to encourage and support Hawaiian arts and cultural similar to the stage at Royal Hawaiian Shopping Center.

~~B.3.b. [3]~~ B.3. c. ~~FARMER'S MARKET~~ Farmers' Market

Mauka of the shoreline park (Turtle Bay Park) at the western end of the central resort area ~~Ahupuaʻa O Hanakaʻoe~~ will be the farmers' market. Between market days, the farmers' market will include a small number of permanent market stands offering a convenient market outlet for local farmers. On market days and during other resort events such as the annual *Makahiki* celebration, the venue will fill in with additional stands offering Koʻolau Loa a farmer's market complimentary to the North Shore's very well regarded Haleʻiwa market. The area for the Farmers' Market depicted on Figure 3-1 is bisected by the West Main Drain. At this point in the planning process, the final site plan for the market has yet to be determined, but will include a

parking area (most likely on the portion of the market identified as Farmers' Market on the west side of the West Main Drain).

B. 4. ~~Ahupuaʻa O Kahuku~~ Eastern Resort Area: Kahuku Point

~~Ahupuaʻa O Kahuku constitutes~~ The lands on either side of Kahuku Point constitute the eastern end of the Resort and ~~is~~ are proposed to be developed with a low-density rural character. While its physical area is the largest of the three areas of the Resort ~~*ahupuaʻa*~~, much of the land is occupied by the Punahoʻolapa Marsh, the Kahuku Point Park (Park P-2), and the existing Palmer golf course.

~~Ahupuaʻa O Kahuku~~ The eastern resort area is intended to primarily offer new Residential Resort Units ~~homes~~ – 30% of which are targeted for community use. The Proposed Action includes up to a maximum of 160 affordable Community Housing Units on Development Sites RES-1 and RES-2. The maximum height will be three floors/50 feet on Site RES-1 and two floors/40 feet on Site RES-2. TBR intends to work with the community, city, state, and others to determine methods to ensure realistic affordability for future occupants of these homes. TBR plans to work on providing innovative solutions to workforce/affordable housing by partnering with the community and leaders in the field including Habitat for Humanity or Enterprise Community. TBR believes that innovative programs with education for leasing and/ or sale of these units at 80% to 120% of the median income can provide significant assistance to many working families in the region who are seeking housing. The balance of homes, 365 in total, will be Resort Residential Units.

~~B.4. a. Ahupuaʻa Orientations~~

~~Interpretive signs in parks, paths, and along the bridle trail will tell the unique stories of the *ahupuaʻa* including the Hawaiian accounts of the kapa beater of Punahoʻolapa Marsh and the floating island of Kahuku. The low-density resort residential component fosters a sense of well-being, community, and proper stewardship. Respectful access to the marsh honors the importance of wetlands in the *makai* lands. And stewardship of the portion of ʻŌʻio stream in the *mauka* lands of the *ahupuaʻa* ensure that the *makai* lands of Ahupuaʻa O Hanakaʻoe are not adversely impacted by sedimentation and run-off.~~

~~B.4. b. Ahupuaʻa Elements~~

~~Ahupuaʻa O Kahuku is the eastern-most *ahupuaʻa* in the Resort~~ The eastern resort area ~~and~~ is connected to ~~Ahupuaʻa O Hanakaʻoe and Ahupuaʻa O ʻŌpana-Kawela~~ the rest of the Resort by Kaihalulu Drive. The *makai* lands in the ~~*ahupuaʻa*~~ eastern area include a significant wetland at Punahoʻolapa Marsh that will be preserved and enhanced to benefit its waterfowl habitats, in coordination with the U.S. Fish and Wildlife Service. The area will also include portions of the existing Palmer Golf Course, its clubhouse, an equestrian center with a bridle trail coursing through the natural environment, and parks which serve as buffers to ~~Ahupuaʻa O Hanakaʻoe~~ the central area resort core. Kahuku Point will be preserved as a passive park in respect for its strong cultural association with these lands. ~~Similar to the other two *ahupuaʻa*, the *kula* lands~~

~~will feature improved relationships with neighboring farmers and the *mauka* lands require strengthening relationships with the U.S. military and other government agencies.~~

~~B.4.b. [1]~~ B.4. a. Resort Residential

The proposed development program for ~~Ahupua'a O Kahuku~~ the eastern resort area is limited to 365 Resort Residential Units and 160 affordable Community Housing Units, a significant reduction from the total of 1,695 units permitted under the 1986 SMA Use Permit for this area. In contrast to the 415-unit hotel project allowed for Development Site RR-3 fronting Kaihalulu Beach in the current entitlements, the Proposed Action includes a maximum of 100 Resort Residential Units in buildings with a maximum height of three habitable floors/50 feet. All buildings will be set back a minimum of 150' from the certified shoreline along Kaihalulu Beach (see Figure 3-1). The designation of 3a and 3b on Site RR-3 denote a possibility for different phasing and market types.

Development on Sites RR-4, RR-5 and RR-6 will be limited to a maximum of 265 Resort Residential Units with a maximum height of two habitable floors/40 feet. As is the case with RR-3, the designation of RR-4a and RR-4b denotes the possibility for phased development and different market types.

It should also be noted that the area identified as Lot 33 on Figure 3-1 has been delineated for the benefit of the reader because this tax map parcel was not included in the land area covered by the 1985 Revised Final EIS but has been included in the SEIS.

~~B.4.b. [2]~~ B.4. b. ~~COMMUNITY HOUSING~~ Community Housing

The proposed Community Housing Units will be situated on development sites RES-1 and RES-2 (see Figure 3-1). Under the proposed phasing plan, discussed in Section 11 below, approximately 44 units would be constructed in the first year, followed by 25 in the second year, and 19 each year for the next three years. Construction of additional units would then taper off until the community housing project is complete in 2022.

~~B.4.b. [3]~~ B.4. c. ~~PUNAHO'OLAPA MARSH PRESERVATION AND ENHANCEMENT~~ Punaho'olapa Marsh Preservation and Enhancement

The Punaho'olapa Marsh is a spring fed wetland of approximately 100 acres that provides valuable habitat for a multitude of birds. In the early 1990's when the Palmer Golf Course was constructed, a moat was constructed around much of the perimeter of the marsh creating additional standing water for water birds. The Proposed Action will include further work to enhance the marsh wetlands for the benefit of endangered water bird species including the Hawaiian stilt, the Hawaiian coot, the Hawaiian common moorhen and the Hawaiian duck. This work will include the completion of the moat around the perimeter of the marsh and the creation of standing open water ponds within the central portion of the marsh, and will be coordinated with the U.S. Fish and Wildlife Service. The applicant will develop a plan that may also include additional improvements such as an elevated walking path with viewing platforms.

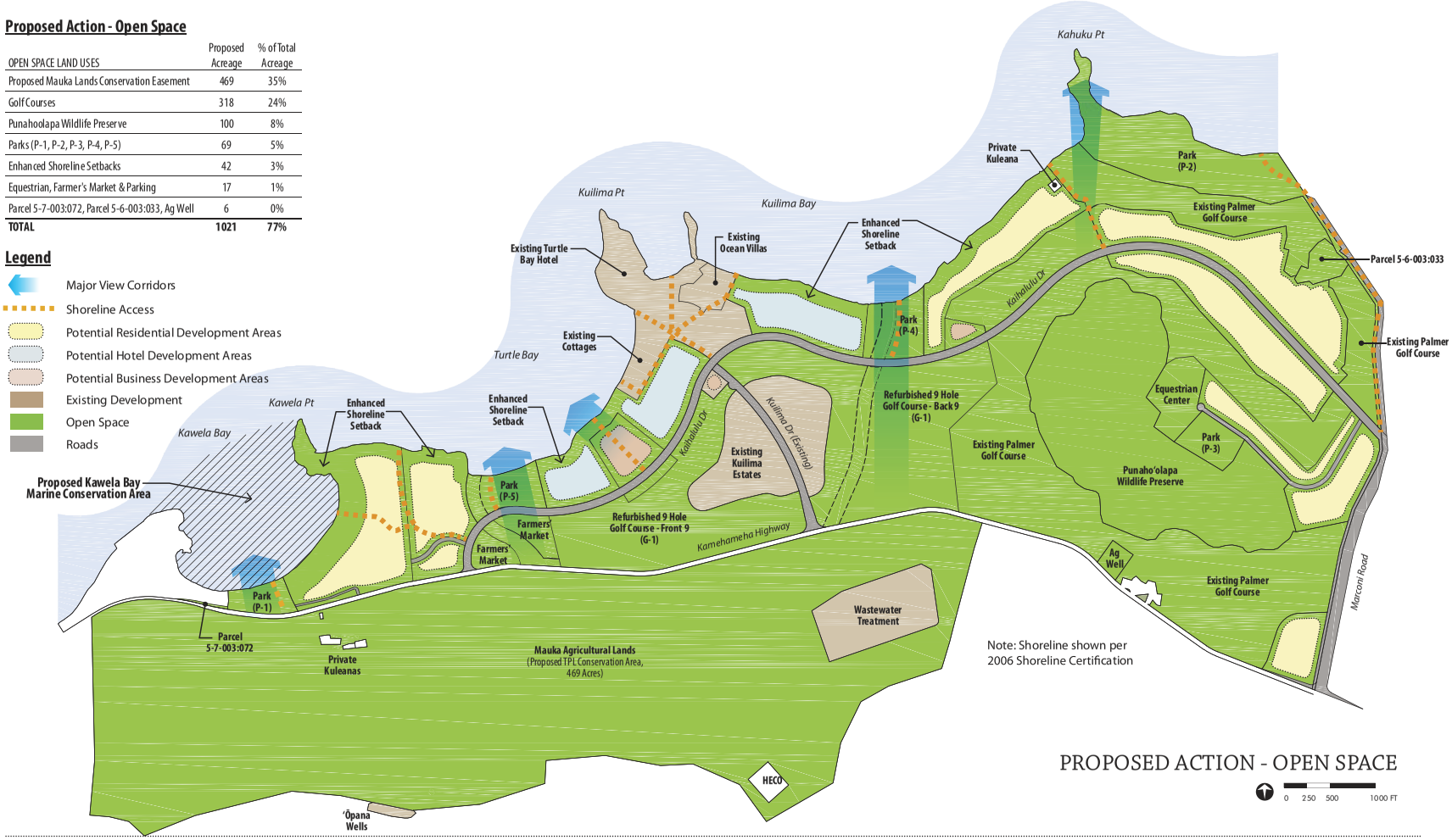
Figure 3-2: Proposed Action - Open Space

Proposed Action - Open Space

OPEN SPACE LAND USES	Proposed Acreage	% of Total Acreage
Proposed Mauka Lands Conservation Easement	469	35%
Golf Courses	318	24%
Punahoolapa Wildlife Preserve	100	8%
Parks (P-1, P-2, P-3, P-4, P-5)	69	5%
Enhanced Shoreline Setbacks	42	3%
Equestrian, Farmer's Market & Parking	17	1%
Parcel 5-7-003:072, Parcel 5-6-003:033, Ag Well	6	0%
TOTAL	**1021**	**77%**

Legend

- Major View Corridors
- Shoreline Access
- Potential Residential Development Areas
- Potential Hotel Development Areas
- Potential Business Development Areas
- Existing Development
- Open Space
- Roads



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B. 5. Recreational Amenities

The visitor destination area envisioned by the Oʻahu General Plan at the Resort has been operating successfully for four decades, thanks in great part to the recreational amenities it offers to its guests and the greater Oʻahu community. The proposed expansion of the resort will modify some of these facilities, but together they will remain an integral part of the resort.

B.5. a. Parks and Pedestrian Access

The 1986 Unilateral Agreement requires that four parks be provided at the resort together with a shoreline easement for public access be provided at stages of the resort expansion development (see Appendix B):

1. Kawela Bay Park (development site P-1): A four and eight tenths (4.8) acre park at Kawela Bay (to be dedicated to the City and County of Honolulu). As discussed earlier, this park will be developed at the center-point of the Kawela Bay shoreline (the western edge of the Resort). Planned facilities will include a minimum of 22 public parking stalls, showers, a comfort station, and picnic tables and lawns;
2. Hanakaʻilio Beach Park (development site P-2): A thirty-seven (37) acre park located from Kahuku Point to the eastern boundary of Hanakaʻilo Beach (to be dedicated to the City and County of Honolulu). In respect for the rich cultural heritage of Kahuku Point, this will be a passive park with facilities limited to a minimum of 30 public parking stalls, showers, and a comfort station. Development will focus on the restoration of indigenous vegetation;
3. Punahoʻolapa Park (development site P-3): A six (6) acre park abutting Punahoʻolapa Marsh (to be privately owned but open to the public). This will be a passive park with a minimum of 18 public parking stalls, a comfort station, interpretive signage, benches, landscaping, and a possible birding lookout; and
4. Kaihalulu Beach Park (development site P-4): A two (2) acre park located in the area surround the outlet for East Main Drain (to be privately owned but open to the public). A minimum of 18 public parking stalls will be provided.

The shoreline park areas shall be linked, with the exception of the shoreline along the existing Turtle Bay Hotel, by a continuous shoreline easement (to be publicly-owned, privately-maintained, and open to the general public), which will be further augmented by pedestrian easements and the easement to Kalokoiki beach (Kuilima Cove).

While not required, the Proposed Action includes an additional 11.3-acre park (Turtle Bay Park) to be located adjacent to the outlet of the West Main Drain. This private park will be nearby and compliment the proposed Gathering Place. The focal point of the park will be a terraced lawn area and stage. This venue will have the flexibility to serve events of differing sizes. When not being used for public performances, the stage will be the home to the local *hula halau*. At other times, the amphitheater will serve as an intimate setting for concerts of both local and nationally recognized artists performing for audiences of resort guests and residents from nearby communities. Native plants and landscaping will enrich this park's cultural focus and

the inclusion of a traditional canoe house, *halau waʻa*, will provide a connection, in look and in practice, to the rich cultural traditions of the past. To ensure appropriate management and control is in place to maximize the opportunity presented by the amphitheater, the park will be privately owned and maintained. A minimum of 18 public parking stalls will be provided at the park.

One of the Resort's primary attractions is its rugged coastline. It is TBR's *kuleana* (responsibility) to preserve and protect this environmentally sensitive and culturally important resource. The Proposed Action will provide enhanced access to the shoreline for visitors, residents, and guests alike through the provision of the Shoreline Trail that will meander along the oceanfront in a 100-foot shoreline access easement. Under the Unilateral Agreement, a total of eight public shoreline access ways are to be provided. However, the Proposed Action includes an additional four public shoreline access ways, for a total of twelve.

B.5. b. Golf

The Proposed Action includes reconfiguring the 18-hole Fazio Golf Course to a nine-hole arrangement in the area indicated on Figure 3-1. The reconfiguration of the Fazio Golf Course might include the creation of additional water hazards, recreational paths and natural open space that would provide habitat for water birds and additional storm water retention. A new Golf Clubhouse is proposed for a site of approximately 3 acres adjacent to the 18th green of the Palmer Golf Course. The existing golf clubhouse will be retained as a commercial building. No material changes are proposed for the Palmer Golf Course.

B.5. c. Tennis

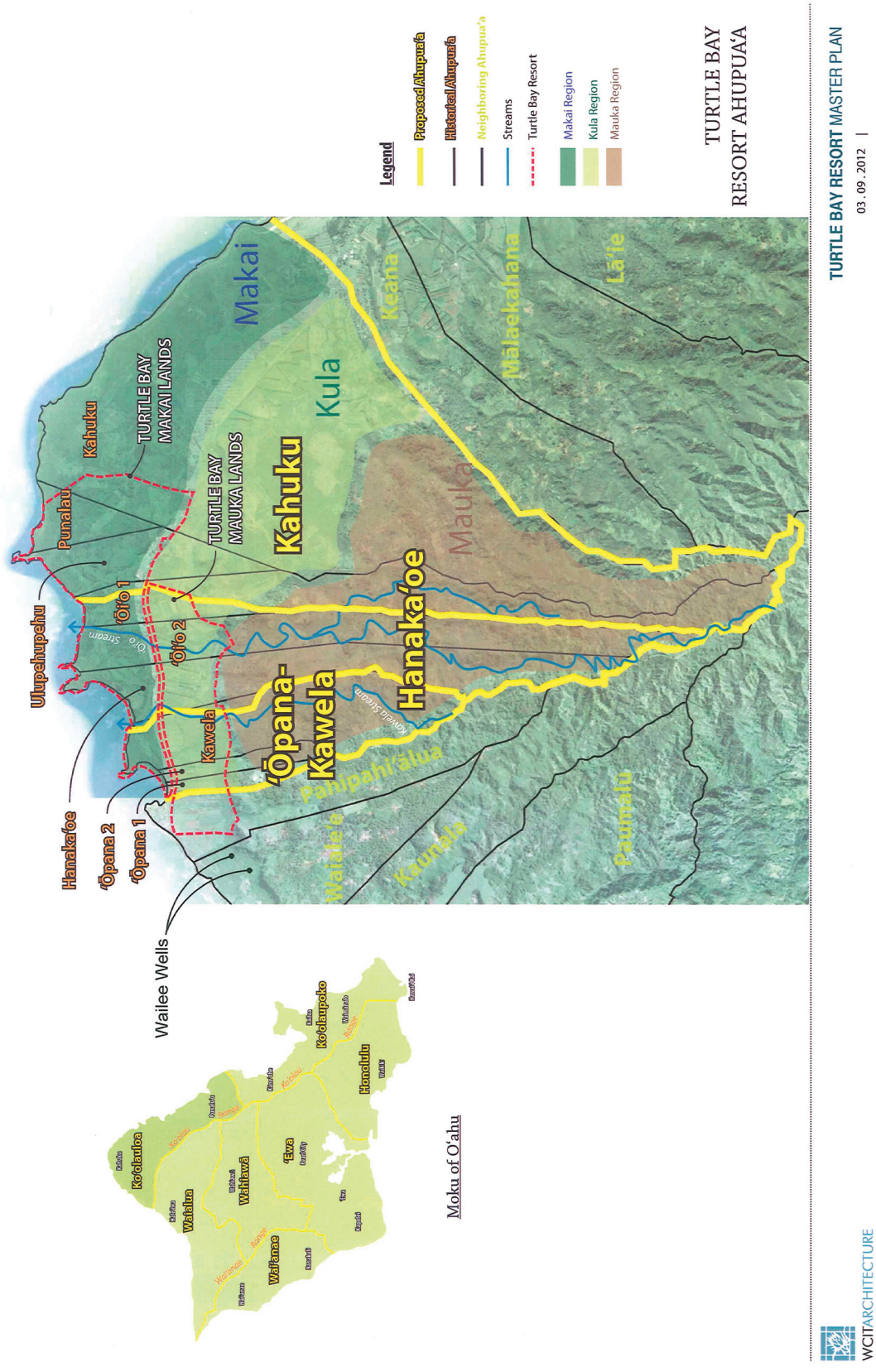
The Resort includes four tennis courts that are available to its visitors, guests, and the public. The courts are located adjacent to the existing Hotel. No significant changes to the tennis courts are contemplated. However, new hotel development may incorporate additional courts where appropriate.

B.5. d. Equestrian Center

The existing stables will be relocated to a site of approximately 9 acres adjacent to the Punahoʻolapa Marsh. The new stables facility will include a barn, fenced corrals, a small office, parking, snack bar, restrooms and appurtenant facilities. Best management practices will be employed to prevent stable and corral runoff from entering the moat and the marsh.

An equestrian trail network will be incorporated into the resort as part of the Proposed Action. The network will include a bridle path along one side of Kaihalulu Drive, a bridle path along Kaihalulu Beach set back a minimum of 50' from the certified shoreline, and a mixed use trail along the old rail grade through the Punahoʻolapa Marsh. The proposed Equestrian Center and trails will be graded and managed to minimize the risk of nutrient loading entering the Punahoʻolapa Marsh.

Figure 3-3: Wailee Wells



B.5. e. Open Space

The elements of the Proposed Action combine to preserve the open space character of the resort. The majority of the Resort property will be preserved in open space uses, including but not limited to golf course, parks, shoreline setback areas, Punahʻolapa Marsh, the Equestrian area, Farmers Market, and parking~~, and the *mauka* agricultural lands~~. See Figure 3-2 Use WCIT Figure 9. The Proposed Action will also incorporate significant view corridors into the expansion project as depicted in Figure 3-2.

B. 6. Vehicular Circulation

As discussed in Chapter Two, a new access road, Kaihalulu Drive, will be constructed as the resort's principal east-west internal roadway. Its intersection with Kamehameha Highway will function as the resort's new entrance. Kuilima Drive will be preserved as the principal access to the existing hotel and to the Kuilima Estates. Marconi Road will also be improved to function as an access road for land uses along the eastern portion of the resort.

The proposed access roadways and intersections within the Turtle Bay Resort expansion project shall be designed in accordance with City and Federal standards for City roadways and State and Federal standards for improvements along Kamehameha Highway. All major roadways to be constructed by TBR, whether private or public shall be open to the public; and will comply with the City's Complete Streets Standards. In addition, the design of roadways and pedestrian ways will be based upon and consistent with the T.I.A.R.(see Appendix I) and consultation with DTS and DOT. The resort's new access road, Kaihalulu Drive (working name only at this time), is planned to provide for one lane of traffic in each direction along with pedestrian and equestrian uses that are separated from the vehicle travel lanes. Landscaping is provided along a center median dividing the two travel lanes, as well as in between the travel lanes and the pedestrian/equestrian paths. Street lights are also located in the center median to provide shielded lighting along the travel lanes.

The Resort's proposed design plan indicates a two lane configuration of a 108-foot easement for Kaihalulu Drive, having a 14-foot wide landscape median, with one 12-foot wide paved lane on either side.

In addition, the proposed design provides a 4-foot paved shoulder on either side of the vehicle lanes which will function as a bikelane, 22-foot wide landscape strip and a 10-foot wide area for the 8-foot wide meandering walkway on the *makai* side of the right-of-way on the *makai* side. And on the *mauka* side, an 18-foot wide landscape strip and 12-foot wide equine trail. Relative to the "resort boulevards" envisioned in the urban design plan, the proposed two-lane design provides both a wider right-of-way and broader landscape areas. In this respect, the proposed 108-foot easement is consistent with the "casual" character expressed in the urban design plan.

Marconi Road will be improved as a two-lane road, with one 10-foot paved lane in each direction. Between Kamehameha Highway and its intersection with Kaihalulu Drive Marconi

Road will consist of a 78-foot right-of-way that will include two travel lanes, a six-foot wide bike lane in each direction on the outside of the travel lane, and space for on-street parking. The right-of-way will also include a 15-foot landscape strip on either side of the curbed and guttered roadway, consisting of a 10-foot wide planting strip and a 5-foot wide sidewalk separated from the curb by the planting strip. Because Marconi Road will provide direct access to Park P-2, which must be dedicated to the City, the roadway must also be designed to dedication standards. TBR may request a modification to the subdivision roadway standards, such as a median and meandering sidewalks, to make the road more consistent with the master planned resort community.

For the portion of Marconi Road, *makai* of the Kaihalulu Drive intersection, TBR will request a modification of the subdivision roadway standards to allow for a 56-foot right-of-way, consistent with the roadway design already approved in the Unilateral Agreement.

B. 7. Infrastructure and Utilities

B.7. a. Pedestrian & Bicycle Access

The Proposed Action includes the provision of an extensive pedestrian path and trail system within the resort that will provide access to the resort coastline for pedestrians and bicyclists.

B.7. b. Drainage

The golf course fairways are shaped to provide channelized routing to the golf course water features, the East and West Main Drains, or the coast. Runoff to the golf course water features are planned to provide supplemental make up water to sustain the created wetlands, with the wetlands being one of the Resort's *BMPs* to address long term water quality concerns relative to ocean discharges. The golf course water features and channelized routing through the landscape serve as *BMPs* prior to ocean discharge as sheet flow or through the East and West Main Drains.

Planned upgrades to the Fazio Golf Course include the re-contouring of the fairways to widen the West Main Drain and improve the flow of runoff through the existing breaks in the sand dunes and sheet flow areas, while still maintaining the storm water detention and water quality features of the course. Construction of the proposed Clubhouse adjacent to the East Main Drain also includes re-contouring of the fairways to improve the flow of runoff through the existing breaks in the sand dunes and sheet flow areas.

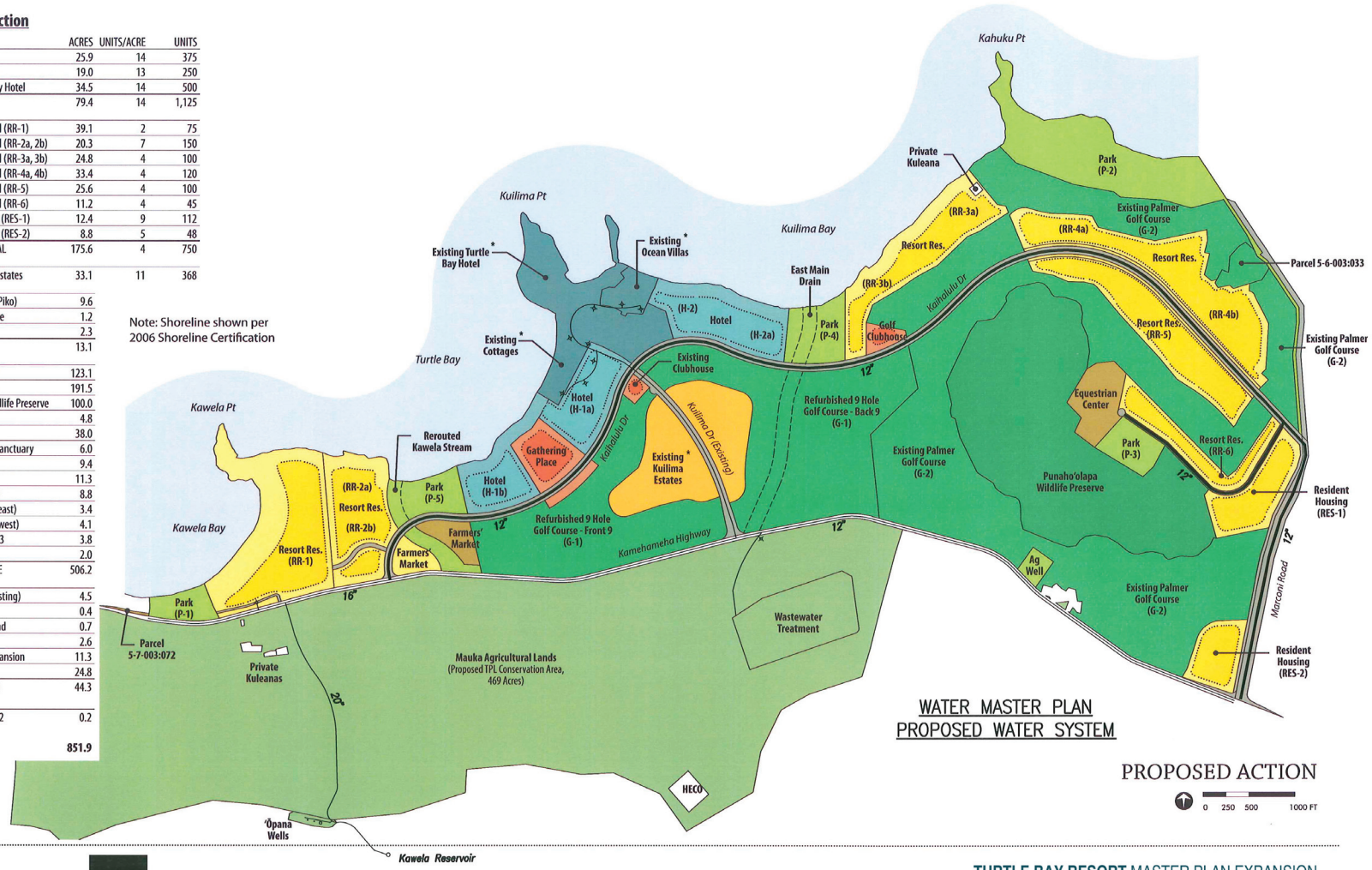
Besides the Fazio Golf Course and new Clubhouse, portions of the Palmer Golf Course are also being evaluated for further re-design to enhance the drainage system and the course. The proposed Community Housing RES-2 development could benefit from the re-contouring of the golf course between Kamehameha Highway and the lagoons in the Palmer Golf Course to reduce the Hoʻolapa Stream Floodway. Grassed lined channels can be incorporated into the re-design because the resort will be responsible for the maintenance of the channel. It is possible for the East and West Main Drains and the Punahoʻolapa Ditch to meander through the golf course, flowing through irregular channels with golf course features, on their way to the ocean.

Figure 3-4: Water Master Plan, Proposed Water System

Proposed Action

AREA	ACRES	UNITS/ACRE	UNITS
Hotel (H-1a, 1b)	25.9	14	375
Hotel (H-2, 2a)	19.0	13	250
Existing Turtle Bay Hotel	34.5	14	500
TOTAL HOTEL	79.4	14	1,125
Resort Residential (RR-1)	39.1	2	75
Resort Residential (RR-2a, 2b)	20.3	7	150
Resort Residential (RR-3a, 3b)	24.8	4	100
Resort Residential (RR-4a, 4b)	33.4	4	120
Resort Residential (RR-5)	25.6	4	100
Resort Residential (RR-6)	11.2	4	45
Resident Housing (RES-1)	12.4	9	112
Resident Housing (RES-2)	8.8	5	48
TOTAL RESIDENTIAL	175.6	4	750
Existing Kuilima Estates	33.1	11	368
Gathering Place (Piko)	9.6		
Existing Clubhouse	1.2		
New Clubhouse	2.3		
TOTAL OTHER	13.1		
Golf Course (G-1)	123.1		
Golf Course (G-2)	191.5		
Punahoolapa Wildlife Preserve	100.0		
Park (P-1)	4.8		
Park (P-2)	38.0		
Park (P-3) - Bird Sanctuary	6.0		
Park (P-4)	9.4		
Park (P-5)	11.3		
Equestrian Center	8.8		
Farmers' Market (east)	3.4		
Farmers' Market (west)	4.1		
Parcel 5-6-003:033	3.8		
AG Well (Lot 524)	2.0		
TOTAL OPEN SPACE	506.2		
Kuilima Drive (Existing)	4.5		
P-1 Access Road	0.4		
RR-1/2 Access Road	0.7		
Equestrian Road	2.6		
Marconi Road Expansion	11.3		
Kaihalulu Drive	24.8		
TOTAL ROADWAYS	44.3		
Parcel 5-7-003:072	0.2		
TOTAL SITE	**851.9**		

Note: Shoreline shown per 2006 Shoreline Certification



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* Not in SEIS Area

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As an enhancement to the regional drainage system, the east portion of the Fazio Golf Course and the entire Palmer Golf Course can accommodate the increase in runoff from the proposed developments through retention. The increase in runoff is calculated as the difference between the pre-development and post development runoff for the 24-hour 100-year storm. The increased runoff volume from the proposed developments on the east side of Kuilima Drive, which include the Golf Course Clubhouse, the new Hotel site H-2 and Resort Residential and Community Housing sites, RR-3 to 6 and RES-1 and RES-2, served by the East Main Drain, is still approximately 88.8 ac-ft. The Fazio Golf Course and Palmer Golf Course provide a total of 179.29 ac-ft east of Kuilima Drive at an elevation of 6 feet msl. Punahoʻolapa Marsh provides 96.8 ac-ft at elevation 6 feet msl, for a total of 276.09 ac-ft., which receive runoff from offsite properties that flows across Kamehameha Highway and the Palmer Golf Course into the marsh.

As an enhancement to the regional drainage system, the west portion of the Fazio Golf Course can accommodate the increase in runoff from the proposed developments on the west side of Kuilima Drive, Resort Residential sites RR-1 and RR-2, Hotel site H-1 and the Farmer's Market and Gathering Place through retention. The increased runoff volume west of Kuilima Drive, which includes Kawela Stream, West Main Drain, and West Kuilima Drain, is still approximately 48.9 ac-ft. The Fazio Golf Course provides 69.09 ac-ft west of Kuilima Drive at an elevation of 8 feet above mean sea level. Re-contouring of the golf course will be required in order to maintain retention when the hydraulic grade is lowered at the time the improvements to the West Main Drain are constructed.

B.7. c. Drinkable Water Storage and Transmission

B.7.c. [1] EXISTING POTABLE SYSTEM

The existing water supply, transmission, and distribution system is owned and operated by the Board of Water Supply (BWS). The existing infrastructure at the Resort has been constructed in accordance with BWS standards.

The existing Resort and the SEIS Lands are located within the Waialua-Kawela 228-foot service zone. Generally, the service zone is defined by the elevation of the reservoir serving the system (the Kawela reservoir). In this instance, the spillway of the reservoir was constructed at an elevation high enough to allow gravity to generate enough pressure to render the system operational. (The spillway is used to maintain the maximum elevation of the water in the reservoir.) The spillway of the 2.0 million gallon (mg) Kawela reservoir has an elevation of 228 feet above mean sea level. The reservoir has sufficient capacity to accommodate the maximum daily flow and the fire flow required for the resort by City and State regulations and guidelines.

The existing Resort water system is currently served by the BWS Wailee Wells (State Nos. 4101-07 and 4101-08). The two wells are located southwest of ~~the Resort's *mauka* agricultural lands~~ Kawela Bay at elevations of ~~5,000~~ 81 feet and ~~4,200~~ 63 feet respectively (see Figure 3-3). The two wells have authorized uses of 340,000 and 410,000 gallons per day respectively.

These wells are part of the Waialua-Kawela system, which can also receive water from the Waialua and Haleiʻwa wells (State Well Nos. 3405-01 to 04 respectively). The Wailee Wells

provide water for the BWS Service Area that extends from Pupukea to the Resort and withdraw water from the Kawailoa Aquifer. The regional system has a combined capacity of approximately six (6) million gallons per day.

Water from the Wailee Wells is conveyed to the Kawela Reservoir by a 16-inch water main located within the Kamehameha Highway right-of-way and a 20-inch water main along the access road to the reservoir.

A 12-inch diameter water line extends *makai* under Kuilima Drive from the 16-inch main under Kamehameha Highway. The 12-inch line provides the existing Turtle Bay Hotel, the golf course, and the Kuilima Estates with drinking water. Portions of the 12-inch line are situated within the SEIS Lands.

The existing system was designed for integration into the resort's expanded system that will include new distribution lines to be installed along circulation roads as part of the Proposed Action.

The existing water demand for the hotel, golf clubhouse, and Kuilima Estates is estimated to be 345,000 gallons per day. The regional BWS system can easily meet this demand.

B.7.c. [2] PROPOSED SYSTEM

The proposed water demand estimates and the proposed design of the system are derived from the City and County of Honolulu's BWS Water System Standards. Calculation of the projected domestic water demands for the Proposed Action are based on the presumption that the Resort receives water service from the BWS except for golf course irrigation which will be served by the resort's non-potable system described in the next section. The resort's non-potable water system is and will continue to be completely independent of the resort's potable (drinkable) water system. (As discussed in the following section, non-potable water demand at the resort is served by non-potable wells owned by TBR and supplemented by reclaimed water from the Kuilima Wastewater Treatment Plant.)

Future water demand created by the Proposed Action will be supplied by new wells that have already been developed by the Resort and ~~will be~~ have been dedicated to the BWS. Called the ʻŌpana Wells, they are located *mauka* of the SEIS Lands at an elevation between 125 and 131 feet. Two of the three ʻŌpana Wells are identified as State Nos. 4100-04 and 4100-05 and are located on property identified as TMK 5-7-002:009. They have a combined allowable capacity of 890,000 gpd of average daily demand[1]. A third ʻŌpana Well has been drilled and cased. It has an estimated capacity of 450,000 gpd of average daily demand. Collectively, the three ʻŌpana Wells have a capacity of up to 1,340,000 gpd. The wells were constructed in 1991 but were not dedicated to the BWS at that time. The pumps were re-tested in 2006. A building permit application to complete renovations to the existing facility, including the refurbishment of the

[1] Each of the three wells has a capacity of 700 gpm or 1 million gallons per day. However, BWS standards limit the amount of water that a developer can receive as a credit from the BWS for their development, so although the first two wells can produce a combined maximum of two million gallons per day, the Resort is allocated a capacity of 890,000 gallons per day for the two.

pumps, piping and controls was submitted in July, 2006 and issued in December, 2008. The construction and final testing is now complete and final testing is ongoing. In consideration of TBR's ~~anticipated~~ dedication of the ʻŌpana Wells to the City and County BWS ~~by late 2012 or early 2013~~, the BWS has agreed to allocate a sufficient amount of potable water for the Proposed Action.

~~Once~~ As a result of the ʻŌpana Wells ~~are~~ being dedicated to the BWS, the current in-place regional water system can support development of up to seventy-five (75) percent of the Proposed Action. As the average daily water demand approaches 890,000 gallons per day as the result of the phased development, the third ʻŌpana Well will need to be added to the system. The Developer has the ability to unilaterally complete development of the third ʻŌpana Well to meet all potable demand for the Proposed Action. Although the existing Kawela Reservoir site has sufficient room for a second reservoir, the Proposed Action does not include the construction of a second reservoir. The existing Kawela Reservoir has the capacity to provide the estimated 24-hour maximum daily water demand for the Proposed Action, in accordance with BWS criteria. Water from the ʻŌpana Wells will be conveyed to the Kawela Reservoir via a 20-inch water line.

Water service for the Proposed Action is planned to be divided into two parts; east and west. See Figure 3-4**.** For the western area of the Proposed Action, a new 12-inch water line will be incorporated into the construction of Kaihalulu Drive, the primary connector road included in the Proposed Action. As is the case with the existing system, the new water line is planned to be connected to the existing 16-inch water main under Kamehameha Highway. The existing 12-inch line under Kuilima Drive is planned to remain in place and is planned to connect to the new 12-inch line. For the eastern area of the Proposed Action, a new 12-inch water line is planned to be incorporated into the widening of Marconi Road. This line is planned to also connect to the 16-inch main under Kamehameha Highway.

B.7. d. Irrigation Water

B.7.d. [1] EXISTING SYSTEM

Non-potable irrigation water at the resort is supplied by two (2) non-potable wells that have been approved by the State Water Commission. One is located *mauka* and adjacent to Kamehameha Highway on resort-owned property directly south of the Gathering Place in the Proposed Action. Well #4100-01 provides an average of approximately 200,000 gallons per day (gpd) over the course of a year primarily as a source to irrigate the Fazio Golf Course. The other is located *makai* to Kamehameha Highway on resort owned SEIS lands to the south of the middle of Hole #5 on the Palmer Course. Well #4158-14 provides an average of approximately 130,000 gpd over the course of a year.

Presently, the total irrigation from non-potable sources is approximately 347.5 million gallons a year. Irrigation of the Palmer Golf Course in 2012 was estimated to be approximately 144.9 million gallons per year: approximately 65.1 million of non-potable water plus approximately 79.8 million gallons of treated effluent. In 2012, the Fazio Golf Course used approximately 91.3 million gallons of non-potable water. An additional 31.5 million gallons of potable water are estimated to have been used for irrigation purposes on the Resort property. This estimate is

based on the assumption that the Board of Water Supply builds into its per unit allocation: the BWS assumes that 25% of the water used on a per-unit basis goes towards irrigation.

B.7.d. [2] PROPOSED SYSTEM

Future demand for irrigation water will be met with water from these or other existing non-potable wells (located *mauka* of Punahoʻolapa Marsh as depicted on Figure 3-1, supplemented by treated effluent from the WWTP where allowable. The golf course irrigation system will be maintained independent from the potable system, and use of non-potable water for resort landscaping will be considered where appropriate.

For the Proposed Action, approximately 404.3 million gallons will be required for irrigation. This includes approximately 294.7 million gallons of treated wastewater effluent and approximately 109.6 million gallons of potable water estimated for irrigation use. The increased availability of treated effluent will be used to offset the need for non-potable water.

B.7. e. Wastewater Collection and Treatment

B.7.e. [1] EXISTING SYSTEM

The SEIS Lands are vacant and are not presently served by the Resort's existing wastewater collection and treatment system. The wastewater collection system required for the Proposed Action will consist of an expansion of the existing system. The existing treatment plant has the capacity to serve the requirements of the Proposed Action.

The existing wastewater collection and treatment system consists of privately owned gravity sewers designed to collect peak flows from the Turtle Bay Hotel, Kuilima Estates and other resort facilities. Wastewater from the existing resort facilities is treated at wastewater treatment plant (WWTP) situated on the *mauka* side of Kamehameha Highway (see Figure 3-1). The WWTP is owned and operated by Turtle Bay Wastewater Treatment, a privately owned utility providing a service to the resort in much the same manner as other public utilities such as the Board of Water Supply's municipal water system and the Hawaiian Electric Company's electrical service. To that end, while the SEIS addresses the demand for public utility services such as the WWTP, the actual operation of the WWTP is not included within the scope of the SEIS because the plant is not located within SEIS Lands. The WWTP was built in 1994 to replace the original oxidation ponds within the SEIS Lands that treated the wastewater from the resort. The WWTP has an ultimate average design capacity of 1.32 million gallons per day (mgd) and is rated for ultimate peak flows of 4.24 mgd. Presently, the facility treats around 0.31 mgd as flows will vary between 290,000 gpd to 320,000 gpd. Based on records from the existing WWTP and the WWPS, the average existing wastewater flow at the resort is approximately 310,000 gallons per day (gpd), which is equivalent to 215 gallons per minute (gpm).

The existing WWTP produced about 79.772 million gallons of treated effluent a year in 2012. Of that amount, 8.950 million gallons of treated effluent was sent to the injection wells, primarily to exercise and maintain the injection wells. The remainder was returned to the resort to

supplement irrigation of the Palmer Golf Course. The injection wells are not in continuous use. The regular maintenance of the injection wells occurs only once or twice a year.

During extended rain events (continuous rain for 10 or more days), treated wastewater may need to be diverted to injection wells located within the Palmer Golf Course. However, wastewater is always filtered, aerated, and chlorinated before being diverted to an injection well. Regular offshore ocean monitoring conducted at the resort over the past 20 years demonstrates that the occasional use of the injection wells for routine maintenance and/or emergency use has resulted in no measureable negative impact on marine water quality.

Because both the lift station and the WWTP are equipped with emergency back up generators, wastewater collection or treatment is not disrupted during regional power failures.

Because the ground elevation of the WWTP is about 26 feet above mean sea level, an elevation approximately 18 feet higher than the existing resort facilities on the *makai* side of the highway, the wastewater has to be pumped from the resort uphill to the treatment plant. To accomplish this, wastewater generated from the existing resort facilities is conveyed through underground pipelines to the Kuilima Wastewater Pump Station (WWPS), located near the existing Golf Clubhouse parking lot (see Figure 3-5). It is then pumped uphill from the WWPS to the WWTP via a 16-inch diameter force main that crosses under Kamehameha Highway as shown in Figure 3-5. The WWPS consists of one centrifugal pump plus one standby, with a design flow of 1,200 gpm. Based on the calculated existing peak flow of the resort (583 gpm), the existing WWPS has an excess pumping capacity of 617 gpm.

Sewage arriving at the WWTP first passes through a headworks that is designed to remove solid and floating components in the sewage. The filtered wastewater is then pumped into an aerated lagoon where it is held for several days before being transferred to a second lagoon adjacent to the first. During its residence in the lagoons, its exposure to oxygen and sunlight allows bacteria to flourish and consume pathogens, and suspended solids are able to settle to the bottom of the lagoon. Once the aeration process is complete, the wastewater is pumped from the second lagoon through a sand filter to remove any remaining suspended solids and into a tank for chlorination. The treated effluent then flows by gravity down to the holding pond at the Palmer Golf Course where it is combined with non-potable water, rain water and used to irrigate the golf course and roadway medial strips at the resort.

Treatment of wastewater at the WWTP generates two products for disposal; treated wastewater (effluent) and solids. Wastewater is pumped into large holding lagoons at the facility for aeration and settling, before the treated effluent is returned to the resort as described above. The lagoons are lined to prevent percolation of the wastewater into the ground. Each lagoon is approximately 15 feet deep and measures 150-feet by 450-feet at its bottom and 240-feet by 540-feet at its top. The operating lagoons have a freeboard of about 3 feet, meaning that the current depth of the wastewater is maintained at about 12 feet. The 3-foot freeboard translates to an available capacity of an additional 2.75 mg for each lagoon. The design of the Kuilima

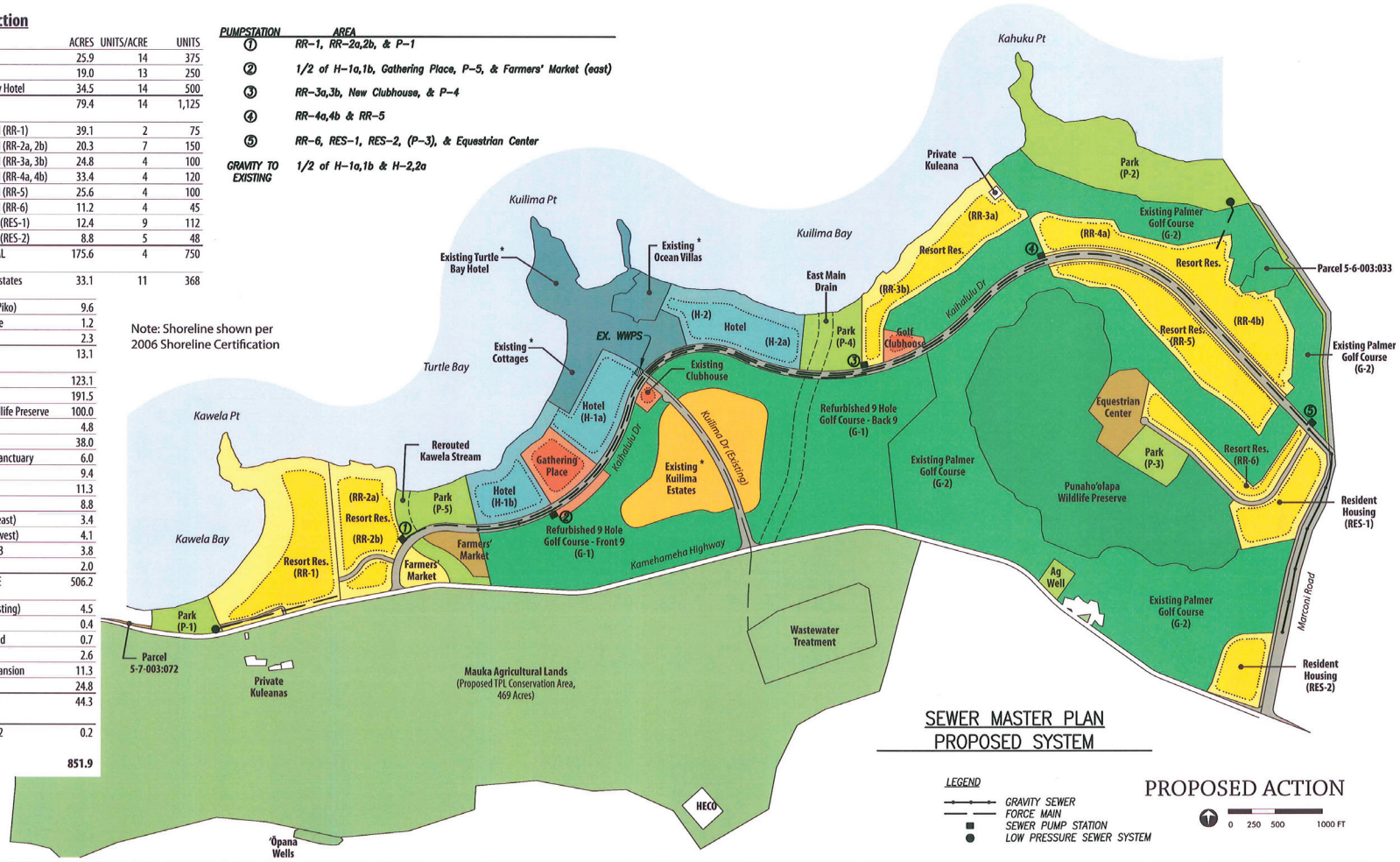
Figure 3-5: Sewer Master Plan, Proposed System

Proposed Action

AREA	ACRES	UNITS/ACRE	UNITS
Hotel (H-1a, 1b)	25.9	14	375
Hotel (H-2, 2a)	19.0	13	250
Existing Turtle Bay Hotel	34.5	14	500
TOTAL HOTEL	79.4	14	1,125
Resort Residential (RR-1)	39.1	2	75
Resort Residential (RR-2a, 2b)	20.3	7	150
Resort Residential (RR-3a, 3b)	24.8	4	100
Resort Residential (RR-4a, 4b)	33.4	4	120
Resort Residential (RR-5)	25.6	4	100
Resort Residential (RR-6)	11.2	4	45
Resident Housing (RES-1)	12.4	9	112
Resident Housing (RES-2)	8.8	5	48
TOTAL RESIDENTIAL	175.6	4	750
Existing Kuilima Estates	33.1	11	368
Gathering Place (Piko)	9.6		
Existing Clubhouse	1.2		
New Clubhouse	2.3		
TOTAL OTHER	13.1		
Golf Course (G-1)	123.1		
Golf Course (G-2)	191.5		
Punahoolapa Wildlife Preserve	100.0		
Park (P-1)	4.8		
Park (P-2)	38.0		
Park (P-3) - Bird Sanctuary	6.0		
Park (P-4)	9.4		
Park (P-5)	11.3		
Equestrian Center	8.8		
Farmers' Market (east)	3.4		
Farmers' Market (west)	4.1		
Parcel 5-6-003:033	3.8		
AG Well (Lot 524)	2.0		
TOTAL OPEN SPACE	506.2		
Kuilima Drive (Existing)	4.5		
P-1 Access Road	0.4		
RR-1/2 Access Road	0.7		
Equestrian Road	2.6		
Marconi Road Expansion	11.3		
Kaihalulu Drive	24.8		
TOTAL ROADWAYS	44.3		
Parcel 5-7-003:072	0.2		
TOTAL SITE	**851.9**		

PUMPSTATION	AREA
1	RR-1, RR-2a,2b, & P-1
2	1/2 of H-1a,1b, Gathering Place, P-5, & Farmers' Market (east)
3	RR-3a,3b, New Clubhouse, & P-4
4	RR-4a,4b & RR-5
5	RR-6, RES-1, RES-2, (P-3), & Equestrian Center
GRAVITY TO EXISTING	1/2 of H-1a,1b & H-2,2a

Note: Shoreline shown per 2006 Shoreline Certification



WCITARCHITECTURE

BELTCOLLINS

* Not in SEIS Area

TURTLE BAY RESORT ~~MASTER PLAN~~ EXPANSION

07.31.2012 |

WWTP is considered to be preferable to closed systems used in more urban areas because the settlement lagoons provide it with far greater capacity. In the event of a mechanical failure, a system in an urban setting has no storage capacity, which leads to the requisite diversion of untreated sewage, sometimes in less than a day of downtime. However, the Kuilima WWTP is able to accommodate several days of system failure (which has never happened) or heavy rainfall allowing ample time for mechanical repairs or moving of treated effluent to the golf course or injection wells if needed.

Because the WWTP is operating at only about 25% of it design capacity, only one of the existing four lagoons has accumulated sludge (the second lagoon in the couplet accumulates no sludge because it all settles out in the first). Sludge accumulation is presently estimated to be about a half inch per year. Over its 22 years of operation, Lagoon 1 has accumulated about 6 inches of sludge at the bottom. Lagoon 2 has no sludge. Lagoons 3 and 4 are not currently in service, but will be phased into service as a second couplet during implementation of the Proposed Action.

Based on the slow accumulation rate, no sludge removal is anticipated for at least the next 20 years. When the lagoons are eventually cleaned, each will be drained (one at a time), the sludge will be dried, and then either trucked to a landfill, or if certified by the State Department of Health to qualify for use as a soil amendment, it will be applied to soil around the WWTP. During sludge removal, regular wastewater treatment will be diverted to the remaining three lagoons with no disruption of service. ~~The solids are trucked from the WWTP to the Honouliuli Municipal Landfill by a private service contracted by the plant owner.~~

The wastewater is oxidized, disinfected, and filtered at the plant and then returned to the resort by gravity flow through a 12-inch diameter discharge pipe. The treated effluent is stored in the Palmer Golf Course Storage Ponds where it is blended with non-potable water and used to irrigate the Palmer Golf Course.

Based on the level of treatment provided at the WWTP, the reclaimed water is classified by the State Department of Health (DOH) as R2 effluent, which has a partially restricted use, according to the department's Guidelines for the Treatment and Use of Recycled Water". The median fecal coliform bacteria densities of the treated effluent are not allowed to exceed 23 per 100 milliliters. The treated effluent has an approximate turbidity of 45 nephlometric turbidity units (NTU).

B.7.e. [2] PROPOSED SYSTEM

The proposed gravity sewer system will likely be constructed with Polyvinyl Chloride (PVC) pipe. The expanded wastewater collection system will consist of new underground collection lines that direct wastewater to transmission lines, which will in turn convey the wastewater to five new wastewater pump stations situated at strategic points along Kaihalulu Drive as depicted in Figure 3-5 same figure as above. The five new pump stations will direct the wastewater via new force mains to the Kuilima WWPS which will use the existing force main to deliver the wastewater to the WWTP for treatment.

B.7. f. Solid Waste Collection and Disposal & Recycling

B.7.f. [1] EXISTING SYSTEM

Solid waste generated by existing activities at the Resort, the Kuilima Estates, and private operations (restaurants), is collected by Honolulu Disposal, a private contractor, under separate contracts. Ultimately, the waste is transported to either H-Power at Campbell Industrial Park or the Waimānalo Gulch Landfill.

On-site recycling is performed in a number of ways. The Hotel utilizes bins for sorting of glass, plastic, and paper, and operates its own cardboard compactor/baling machine. On-site green waste generated from the Hotel and golf course maintenance is mulched and re-used on-site. Privately owned restaurants manage their own recycling of glass. Kuilima Estates has independent arrangements for recycling, and green waste recycling/disposal.

The total volume of solid waste presently generated at the resort (exclusive of Kuilima Estates) is estimated to be approximately 1,689 tons per year, or on average just over 4.5 tons per day.

B.7.f. [2] PROPOSED SYSTEM

The Proposed Action will increase the number of hotel and residential units, expand the commercial square footage, and provide new public park facilities. Solid waste collection and disposal will continue to mirror current operations, utilizing private waste hauling contractors for collection and disposal at the two City waste handling facilities.

B.7. g. Electrical and Telecommunication Services

B.7.g. [1] EXISTING SYSTEM

Electricity is provided to the Resort by Hawaiian Electric Company (HECO). Communications are provided by Hawaiian Telcom and Oceanic time Warner Cable. An existing electrical substation, called the Kuilima Substation, is located *mauka* of the resort (about a half mile south of the intersection of Kuilima Drive and Kamehameha Highway) and receives electrical energy from an overhead 40 KW transmission line. Electricity is provided to the resort via overhead and underground transmission lines, presently energized at 11.5 kV, which are owned and maintained by HECO. The electrical components serving the resort represent a portion of the electrical grid maintained by HECO for the island of Oʻahu. To energize this grid, HECO generates electricity from several power plants located in Honolulu, Pearl City, Campbell Industrial Park in Ewa, and Kahe Point on the leeward coast. Additional power is provided by renewable resources including the City's H-Power waste-to-energy facility at Campbell Industrial Park and the wind turbine generators at Kahuku maintained by First Wind.

HECO's current island-wide generation capacity is approximately 1,669 MW. The present peak coincident demand for electricity on Oʻahu is approximately 1,327 MW.

Hawaiian Telcom (HTCO) is the local area telephone provider and presently serves the Resort from their Lāʻie Central Office. HTCO shares the wood polies along Kamehameha Highway to

support cables from the Central Office, and has installed underground facilities along Kuilima Drive.

Oceanic Time Warner Cable (Oceanic) is the local CATV provider, and has an agreement with HTCO for use of the wood poles along Kamehameha Highway to link transmission cable from their Sunset Office to the resort. Oceanic has underground facilities along Kuilima Drive and two power supplies at the Turtle Bay Hotel to serve the resort.

B.7.g. [2] PROPOSED SYSTEM

Hawaiian Electric Company will need to install two new distribution feeders from the Kuilima Substation and will require additional duct line to extend the feeders to serve the SEIS Lands. In addition, the company intends to upgrade the substation by adding a second transformer.

Both HTCO and Oceanic will require easements on-site to accommodate new equipment, and must extend their trunking facilities from Kamehameha Highway along the new resort access road, Kaihalulu Drive, to serve the SEIS Lands.

Although the existing resort (the Turtle Bay Hotel and appurtenant recreational facilities, and Kuilima Estates East and Kuilima Estates West) is not part of the Proposed Action, for purposes of evaluation it is necessary to understand how much electrical energy the resort consumes. The electrical usage of the present facilities is estimated to be approximately 1,450,412 kilowatt-hours (KWH) per month.

B. 8. Views

With the exception of community housing parcel Res-2, which abuts Kamehameha Highway at the southeastern corner of the resort property, and development parcels RR-1 and RR-2 at Kawela Bay, none of the remaining development parcels in the Proposed Action are visible from the highway.

The existing hotel is a prominent feature on Kahuku Point. Portions of the Palmer and Fazio golf courses are visible from the shoreline. Much of the remaining SEIS Lands are obscured from shoreline views by dense groves of ironwood trees.

B. 9. Construction and Funding Source

The proposed project is estimated to cost $769.9 million, which includes approximately $148.5 million for new infrastructure. The project is planned to be entirely privately funded. No public investment will be required.

B. 10. Use of Public Funds or Lands

The Proposed Action will require no public funds to be implemented. No public lands will be developed.

B. 11. Phasing and Timing

The estimated absorption table below reflects a reasonable estimate by TRB's expert market assessment consultant based on historical market data and their current interpretation. As market fluid market conditions change, the phasing and future absorption will also change and the reader should be aware that this only forecast.

Construction of the hotel and residential units comprising the Proposed Action is currently planned to be phased over eleven (11) years, with groundbreaking in approximately 2015 dependent on receipt of final bulk subdivision, other approvals and market conditions, as summarized in ~~the~~ Table ~~below~~ 3-1. Because the two hotels are planned to consist of a series of smaller structures, rather than single towers, they may be developed in increments based upon anticipated market absorption rates.

The development of the hotel and residential units is planned to be preceded and accompanied by the construction of requisite infrastructure. Because the new roadways will constitute the principal routes for subterranean pipelines (water, utilizes, and wastewater collection/ transmission) and will also contain culverts for drainage, they constitute the principal component of the infrastructure phasing plan. Infrastructure phasing contemplates the option to install required utility lines prior to construction of roads where it makes feasible sense.

Implementation of the infrastructure phasing plan proposes to start with the construction of the intersection of Kaihalulu Drive (formerly known as Alpha Road) and Kamehameha Highway near Kawela Bay. Kaihalulu Drive will extend from Kamehameha Highway to the East Main Drain, providing access to Hotel site H-2. Roadway runoff will be directed to the golf course water features or channelized routing through the landscape. This segment of Kaihalulu Drive will also contain the culvert structures for the future widening of the West Main Drain. The construction of this portion of Kaihalulu Drive will coincide with the re-contouring of the Fazio Golf Course and the improvement of runoff flow to the Kuilima Drain and through the existing breaks in the sand dunes.

The second segment of Kaihalulu Drive from the East Main Drain to Marconi Road will be constructed to support the Golf Course Clubhouse, Resort Residential RR-3 to RR-6, the Equestrian Center, and Community Housing CH-1. Roadway runoff also will be directed to the golf course water features or channelized routing through the landscape. This segment of Kaihalulu Drive will also contain the culvert structures for the future widening of the East Main Drain. The Golf Course Clubhouse and the recountouring of the Fazio and Palmer Golf Courses to improve the flow of runoff will be constructed concurrently and precede the construction of the second phase of Kaihalulu Drive.

The Intersection of Marconi Road and Kamehameha Highway will likely be required to develop the Community Housing CH-2 site.

The West Main Drain will be widened to support the development on the western portion of the property. The East Main Drain and Punahoʻolapa Ditch will be widened to support the

Table 3-1: Proposed Action Phasing Plan

Parcel	Market Product	Average Sq, Footage	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
Resort Residential (RR-1)	Luxury	2,750	21	11	11	11	11	10						**75**
Resort Residential (RR-2a)	Townhome	2,200	20	10	10	10								**50**
Resort Residential (RR-3a)	Luxury	2,600						2	12	12	12	12		**50**
Resort Residential (RR-4a)	Mid Luxury	1,600				8	12	12	12	1				**45**
Resort Residential (RR-5)	Mid	1,000	26	14	15	15	15	15						**100**
Resort Residential (RR-6)	Mid Luxury	1,700	20	11	11	3								**45**
Resort Residential (RR-4b)	Mid	1,300							15	15	15	15	15	**75**
Resort Residential (RR-3b)	Townhome	1,400					10	10	10	10	10			**50**
Resort Residential (RR-2b)	Condominium	1,300	44	28	28									**100**
Resident Housing (RES-1)	Early Single Family	1,200	26	13	13	13	13	13	13	8				**112**
Resident Housing (RES-2)	Condominium	1,000	18	12	6	6	6							**48**
Total			**175**	**99**	**94**	**66**	**67**	**62**	**62**	**46**	**37**	**37**	**15**	**750**
Hotel (H-2)	Timeshare	1,200							35	35	35	35	35	**175**
Hotel (H-2a)	Condo Hotel	1,100									9	36	30	**75**
Hotel (H-1a)	Timeshare	1,200	30	30	30	30	30	25						**175**
Hotel (H-1b)	Condo Hotel	1,100				34	35	35	35	35	26			**200**
Total Hospitality			**30**	**30**	**30**	**64**	**65**	**60**	**70**	**70**	**70**	**71**	**65**	**625**
Grand Total			**205**	**129**	**124**	**130**	**132**	**122**	**132**	**116**	**107**	**98**	**80**	**1,375**

development on the east side of the property. In the interim, the re-contouring of the golf courses will improve the flow of runoff to the existing drains and the breaks in the sand dunes. The increase in runoff volume due to the proposed developments will be controlled by the re-contouring of the Fazio and Palmer Golf Courses.

The development phasing plan forecasts Hotel site H-1, Resort Residential RR-1, RR-2, RR-5 and RR-6 and Community Housing CH-1 and Ch-2 as the first sites to be developed. Resort Residential RR-1 and RR-2 are located west of the West Main Drain and are planned to be constructed prior to the restoration of the Kawela Stream alignment to the West Main Drain. The sheet flows from Kamehameha Highway onto the RR-1 and RR-2 sites is planned to be diverted by grassed swales to the existing west main drain or Kawela Stream. The site runoff is planned to be directed to the West Main Drain, the Fazio Golf Course, or directed by sheet flow to the ocean according to Best Management Practices (*BMPs*). Runoff directed to the ocean is planned to pass through the shoreline setback area.

Hotel site H-1 is planned to be developed along with the RR-1 and RR-2 sites. The runoff from the H-1 site is planned to be directed to the West Main Drain or directed by sheet flow to the ocean with *BMPs*. Runoff directed to the ocean is planned to pass through the shoreline setback area. The site runoff from Resort Residential RR-5 and RR-6 and Community Housing CH-1 and 2 is planned to also be developed along with RR-1 and RR-2 and runoff is planned to be directed to Palmer Golf Course.

Hotel site H-2 is planned to be developed after Hotel site H-1. The site runoff is planned to be directed to the Fazio Golf Course or directed by sheet flow to the ocean with *BMPs*. Runoff directed to the ocean is planned to pass through the shoreline setback area.

Resort Residential site RR-3 is planned to be developed after sites RR- 5 and RR-6. The site runoff is planned to be directed to the Palmer Golf Course or directed by sheet flow to the ocean with *BMP*s. Runoff directed to the ocean is planned to pass the shoreline setback area. The construction of the East Main Drain improvements is planned to precede the development of RR-3.

Resort Residential site RR-4 is planned to be developed along with site RR-3. Runoff from the site is planned to be directed to the Palmer Golf Course.

The exact points of storm water discharge is planned to be determined by the individual hotel, resort residential, and community housing developments. The options available is planned to include discharge to the golf courses as noted above or by sheet flow to the ocean. Ocean discharges is planned to be subject to *BMPs* such as vegetated swales, infiltration, of physical treatment through the use of inlet filters or structural measures.

B. 12. Necessary Approvals

The SEIS Lands are contained within the State Urban District, pursuant to a boundary amendment granted by the State Land Use Commission on March 27, 1986 (Docket No. A85-595). No adjustments to the State Land Use district are anticipated.

The SEIS Lands were zoned for resort development ~~in 1986.~~ by the Honolulu City Council on August 14, 1986, pursuant to Ordinance 86-99. The land uses presented in the Proposed Action are believed to be allowable under the previously granted zoning.

The Resort's prior owner, Kuilima Resort Company, filed a subdivision application with the DPP on November 8, 2005; this application was assigned the file number 2005/SUB-310. The DPP issued notices deferring action on the application on January 27, 2006, February 17, 2006, March 17, 2006 and September 1, 2006. The DPP granted tentative approval of the application on September 29, 2006. The DPP granted the first extension of the tentative approval on August 31, 2007, and the second extension of the tentative approval on March 7, 2008. The DPP granted final approval of the application on March 25, 2010. Subdivision 2005/SUB-310 was based upon the Full Build-Out Alternative. A new subdivision application will need to be filed in order to implement the Proposed Action.

At the time this Supplemental EIS is being prepared it has not been determined by the City and County of Honolulu ~~if the Proposed Action will necessitate the processing of a Change of Zoning application to adjust existing zoning boundaries, to accommodate the Proposed Action, or if the changes can be addressed by an administrative Zoning Boundary Adjustment.~~ whether the implementation of the Proposed Action will require adjustments to be made to the boundary lines of any existing zoning district. If, and to the extent such adjustments do become necessary, TBR will apply for administrative zoning district boundary amendments. Pursuant to Section 21-3.30(e), Honolulu Revised Ordinances, the Planning Director may adjust boundary lines of a district or precinct under the following conditions:

- The change does not result in an increase or decrease of any zoning district affecting more than five percent or one acre of any zoning lot, whichever is less;
- The resulting boundary adjustment is in conformance with the general plan and development plan; and
- The resulting boundary adjustment does not confer more than a five percent net increase in development potential, as measured by the number of dwelling units or floor area, as permitted by the applicable zoning districts.

If a Change of Zone is determined to be necessary, the process is estimated to take approximately eight months from the date the application is accepted for processing. A Zoning Boundary Adjustment can typically be processed in approximately 45 calendar days. TBR anticipates submitting the appropriate applications once the environmental review process has been completed.

The Resort is operating under an existing Special Management Area Use Permit granted by the Honolulu City Council in 1986 pursuant to Resolution No. 86-308. The Proposed Action may require a ~~minor~~ modification to the existing SMA Use Permit to address the fact that the resort's original master plan is being revised. The determination as to the form of modification (Major or Minor SMA Use permit) will be made by the Planning Director.

Implementation of the Proposed Action will also require a National Pollution Discharge Elimination System (NDPES) permit approval from the State Department of Health for construction disturbing in excess of one acre, and grading and building permits from the City and County of Honolulu's ~~Building~~ Department of Planning and Permitting.

The proposed realignment of Kawela Stream will require a Stream Channel Alteration, a Section 404 permit from the U.S. Army Corps of Engineers, ~~and~~ a Section 401 Water Quality Certification from the State Department of Health, a Chapter 343 environmental assessment, a Conservation District Use Permit from the State Board of Land and Natural Resources, a Coastal Zone Management Certificate of Consistency from the State Office of Planning, and a shoreline setback variance from the Honolulu City Council. ~~Additional restoration activities at Punahoʻolapa Marsh will require a 404 permit and 401 certification.~~ Restoration activities at Punahoʻolapa Marsh will require similar approvals from the U. S. Army Corps of Engineers and the Hawaiʻi State Department of Health, the Board of Land and Natural Resources, the State Office of Planning, and the Honolulu City Council. The combined time to process and approve these permits would be approximately one to three years.

Implementation of a Marine Life Conservation District will require a Conservation District Use Permit from the State's Board of Land and Natural Resources. A CDUP typically requires a processing time of about 180 days.

The implementation of improvements to the East and West Main Drains will result in a change to the flood boundaries at the resort. Any change to the flood boundaries requires a Letter of Map Revision from the Federal Emergency Management Agency (FEMA)

An amendment to the existing Joint Development Agreement may also need to be ~~required~~ approved by the City and County of Honolulu~~. This~~ Department of Planning and Permitting. If required, ~~T~~ this approval is typically executed through a Conditional Use Permit (Minor), which is processed by the City's Department of Planning and Permitting.

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CHAPTER FOUR: Alternatives

A. Alternate Site Plans and Uses 4-1
- **1.** Height Alternatives 4-3
- **2.** Alternate Locations 4-3
- **3.** Alternate Implementation Strategies. 4-3
  - *a. Accelerated Implementation Strategies* 4-3
  - *b. Delaying Implementation*. 4-3
  - *c. No Action Alternative* 4-4

B. Alternate Development Plans 4-5
- **1.** Full Build Out Alternative 4-5
- **2.** Resort Residential Only Alternative 4-8
- **3.** Conservation Partner Alternative 4-11
- **4.** No Action Alternative 4-15

C. Comparative Evaluation of Reasonable Alternatives. 4-15
- **1.** Qualitative Comparison 4-15
- **2.** Comparison of Environmental Effects . . . . . ~~4-17~~ 4-18
- **3.** Quantitative Comparison . . . . . ~~4-18~~ 4-24
  - *a. Construction Spending, Employment, and Wages*. . . . . ~~4-18~~ 4-24
  - *b. Population* . . . . . ~~4-22~~ 4-28
  - *c. Fiscal Effects* . . . . . ~~4-24~~ 4-30
  - *d. Housing* . . . . . ~~4-28~~ 4-33
  - *e. Public Safety* . . . . . ~~4-28~~ 4-34
  - *f. Education*. . . . . ~~4-28~~ 4-34
  - *g. Health*. . . . . ~~4-29~~ 4-35
  - *h. Recreation* . . . . . ~~4-30~~ 4-35
  - *i. Potable Water Use*. . . . . ~~4-31~~ 4-37
  - *j. Wastewater Demand* . . . . . ~~4-31~~ 4-37
  - *k. Summary* . . . . . ~~4-32~~ 4-38

LIST OF FIGURES

Figure	Title	Page
4-1	Full Build-Out Alternative	4-7
4-2	Resort Residential Alternative	4-9
4-3	Conservation Partner Alternative	4-13

LIST OF TABLES

Table	Title	Page	
4-1	Full Build-Out Alternative	4-6	
4-2	Resort Residential Alternative	4-10	
4-3	Conservation Partner Alternative	4-14	
4-4	Comparative Evaluation of Alternatives to SEIS Key Objectives (Qualitative) (revised)	4-16	
4-5	Comparison of Environmental Effects Among Alternatives (revised)	~~4-17~~	4-18
4-6	Construction Plans, Development Alternatives	~~4-18~~	4-24
4-7	Construction-Related Employment and Wages, Proposed Action and Development Alternatives	~~4-19~~	4-25
4-8	On-Site Employment and Wage Impacts, Proposed Action and Development Alternatives	~~4-20~~	4-26
4-9	Off-Site Employment and Wage Impacts Associated with Visitor Spending, Proposed Action and Development Alternatives	~~4-21~~	4-27
4-10	New On-Site Population, Proposed Action and Development Alternatives	~~4-22~~	4-28
4-11	Regional Population Associated with Proposed Action and Development Alternatives, 2025	~~4-23~~	4-29
4-12	Government Revenues Associated with Construction, Proposed Action and Development Alternatives	~~4-24~~	4-30
4-13	Government Revenues Associated with Visitor Spending, Proposed Action and Development Alternatives	~~4-25~~	4-31
4-14	Increased Property Tax Revenues for the City and County of Honolulu, Proposed Action and Development Alternatives	~~4-26~~	4-32
4-15	Revenue-Cost Summary, Proposed Action and Development Alternatives, through 2025	~~4-27~~	4-33
4-16	Potential New Public School Enrollment, Proposed Action and Development Alternatives, to 2025	~~4-29~~	4-35
4-17	Potential New Preschool Enrollment, Proposed Action and Development Alternatives, to 2025	~~4-30~~	4-36
4-18	Comparison of Potable Water Use	~~4-31~~	4-37
4-19	Comparison of Wastewater Generation	~~4-31~~	4-37
4-20	Comparative Quantitative Summary of Proposed Action and Development Alternatives	~~4-32~~	4-38

CHAPTER FOUR:

ALTERNATIVES

For the purposes of master planning, a full range of alternatives to the Proposed Action has been considered. These alternatives are presented below. The merits of each alternative are evaluated utilizing the Resort development objectives presented in Chapter Two of this document to determine which alternatives are reasonable; that is to say, which are best suited to fulfill the development objectives. The anticipated impacts of the resulting Reasonable Alternatives are then compared to the Proposed Action. The alternatives addressed in the SEIS are intended to provide a more robust and comprehensive evaluation than that which was presented in the 1985 EIS.

The 1985 EIS disclosed an expansion plan that was eventually approved to allow a total of 4,000 resort units at Turtle Bay (the existing hotel plus 3,500 additional units, including 2,500 hotel units and 1,000 resort-residential units). The 1985 EIS presented five alternatives to the 3,500-unit expansion plan: No Action; No Further Development; Alternative Site; More Development Than Proposed; and Less Development Than Proposed. Under the 1985 EIS's No Action Alternative, entitlements for the 3,500-unit expansion proposal would not be granted and the owner would have likely sold the fee-simple properties for development allowable under the then-existing zoning designations. The No Further Development Alternative went a step further than the No Action Alternative by contemplating the eventual downzoning of all undeveloped portions of the resort property. The Alternative Site Alternative briefly evaluated the merits of relocating resort development at Turtle Bay to Lāʻie, Makaha or West Beach (now known as Ko ʻOlina). The More Development Alternative was based upon a development plan for the resort that was considered in 1979 that would have allowed a total of 4,700 hotel units (six new hotels), 1,700 resort condominium units, 50 resort-residential units, 425 residential units, and 100,000 square feet of commercial development.

A. Alternate Site Plans and Uses

As discussed above, site planning for the undeveloped portions of the SEIS Lands is constrained by a combination of existing land uses and zoning requirements that surround them. Punahoʻolapa Marsh is a permanent feature that cannot be moved.

The existing Turtle Bay Hotel cannot be physically moved. Notwithstanding the cost, the structure could be demolished and rebuilt elsewhere on the property but this is not considered to be a reasonable or feasible alternative: the hotel structure was renovated in 2001-2, and again more recently, and the structure will likely remain viable for many decades. Eventually, when it is determined that the structure has reached the end of its useful lifecycle, it may undergo another significant rehabilitation and renovation.

Similarly, the combined 368-unit complex (including two resident manager units) of Kuilima Estates East and West cannot be moved, but individual structures will likely be renovated over

time, subject to a 75% approval of the owners' association. Kuilima Estates East and West was formerly a leasehold project, but the Resort owner has sold the lease fee to the various condominium owners and the two developments are now essentially independent of the Resort.

The routing of Marconi Road can be altered at significant cost and impact. However, the routing of Kuilima Drive is relatively fixed because it bisects Kuilima Estates and any shift in its route would require the demolition of existing residential structures. The routing of the East and West Main Drains can be altered at significant cost and impact. The rerouting of the drainage ways and Marconi Road may provide greater flexibility in site planning for the entire property, but it is not likely that they will contribute substantively to the character of the resort.

More developable land can be created by reducing one of the existing 18-hole golf courses to nine holes or by closing one or both of them. However, it is unlikely that both courses would be closed because of the value of golf as a recreational and open-space amenity to the hotel and the Kuilima Estates. Utilizing land made available by closing a golf course to accommodate hotel development further inland from the shoreline is not considered to be a reasonable alternative because it would undermine the success of the resort from a competitive point of view. Proximity to the shoreline is a vital component of a successful hotel property in Hawai'i: it is what visitors desire. If hotels were moved a quarter to a half mile inland, they would struggle to command occupancy and room rates sufficient to cover the costs of resort operations. To achieve higher room rates, the structures would likely have to be built tall enough for visitors to see the ocean over the treetops. However, as the Resort has an overall height limit of 90 feet, only the top stories of an inland hotel would command views of the ocean and horizon, and therefore, the number of 'premium' rooms would constitute only a fraction of the total rooms, rendering this option financially infeasible.

TBR has considered the above constraints in its development of the alternatives presented in the SEIS. The alternatives constitute what TBR believes to be a synthesis of the available permutations for potentially feasible site planning on the property.

Alternative lands uses such as industrial and high density residential are not considered to be reasonable alternatives because they are not allowed under the existing zoning of the property. Industrial land use activities would be incompatible with the character of the property and the surrounding region. As discussed above, the development of the property as a high-density residential area would be contrary to the Oahu General Plan and the Ko'olau Loa Sustainable Communities Plan. Restoration of the property to its former agricultural use or to a preservation use limited to open space are both contrary to the O'ahu General Plan and the Ko'olau Loa Sustainable Communities Plan which, together with the State Land Use Commission, established the property as a visitor destination several decades ago. The visitor industry constitutes O'ahu's primary source of revenue and there appears to be no desire on the part of lawmakers to take actions that would significantly reduce visitor expenditures on O'ahu.

A. 1. Height Alternatives

The allowable height of structures at the Resort was established in the 1980s by the zoning classifications granted for the property and the accompanying Unilateral Agreement. The maximum allowable building height is 90 feet, a limit that cannot be exceeded without a variance granted by the City and County of Honolulu. Building to 90 feet, or seeking a variance to exceed it, is not considered to be appropriate by TBR and has been rejected as a reasonable alternative. Buildings exceeding five or six stories in height are considered by TBR to be inconsistent with the rural character of the property.

A. 2. Alternate Locations

At approximately 840 acres, the size of the Resort exceeds that of Waikīkī and is similar in size to Ko ʻOlina. There is no vacant location zoned for resort development within the State of Hawaiʻi of a comparable size. Thus, the proposed resort expansion cannot be replicated elsewhere unless coastal property zoned for another use were reclassified to accommodate resort development. However, such an action would be contrary to the Oahu General Plan, which limits the location of resort properties to Waikīkī, Ko ʻOlina, Turtle Bay, and a modest sized hotel at Lāʻie, and is, therefore, infeasible and unreasonable. The process of amending the General Plan to allow a new resort destination area on Oʻahu, followed by the process of rezoning the property to a classifications suitable for resort development would likely take well in excess of five years. Several more years would be likely required to secure approvals for and to construct the infrastructure necessary to support a destination resort. When the time needed for construction, based on market absorption, is added to that, the actual implementation of an alternative location could over 20 years or more into the future; a period well beyond the development horizon for Turtle Bay.

A. 3. Alternate Implementation Strategies

As described in Chapter Three, implementation of the Proposed Action is planned to span over an 11-year period, beginning in 2015 and ending in 2025. The phasing schedule is based on the anticipated rate of market demand for the hotel, resort-residential, and community housing units. The actual rate of market absorption may vary in response to market forces that cannot be predicted at this time. Alternative implementation strategies involve either bringing more units to market in a shorter time frame or a longer time frame.

A.3. a. Accelerated Implementation Strategies

The construction of new units in a shorter time frame would result in a reduction of the time period associated with construction impacts. However, if there is no market for constructed units, they will remain vacant; representing added maintenance and upkeep costs for the developer. This alternative is rejected.

A.3. b. Delaying Implementation

Extending implementation of the Proposed Action to a period longer than 11 years will lengthen the construction period and its associated impacts, and for that reason, a longer development period is rejected.

A.3. c. No Action Alternative

Under Hawai'i's environmental assessment law, an environmental assessment for a Proposed Action must be prepared at the "earliest practicable time", pursuant to Chapter 343-5b, Hawaii Revised Statutes. In most cases, compliance with Chapter 343 is triggered by a proposed activity that requires some form of development approval. In these instances, the evaluation of alternatives to the Proposed Action typically includes assessing the impacts of no action (a No Action alternative); meaning what would the impacts upon the environment be if no action were taken. Inclusion of a No Action alternative in an alternatives analysis assists decision-makers in evaluating the extent of a Proposed Action's impacts by providing a baseline against which impacts can be measured.

However, the Resort expansion project is a unique case that may very well be unprecedented. An environmental impact statement was prepared and approved in 1985 for the proposed expansion of the resort to include 3,500 new resort units. The State Land Use Commission, the Honolulu City Council, and the Mayor of Honolulu subsequently granted all land use approvals for the resort expansion and thereby establishing private property values on this basis. These approvals significantly affected the valuation of the property proposed for resort expansion. Land that was previously zoned for agricultural use was subsequently designated for resort development.

As discussed earlier in this document, due mostly to macro-economic conditions involving economic upheaval in domestic and foreign markets, implementation of the approved resort expansion pursuant to the entitlements previously granted was delayed by approximately two decades. But when circumstances eventually changed and the Resort's owners prepared to move forward with the Resort expansion, the Hawaii Supreme Court determined that the 1985 EIS was no longer valid and needed to be supplemented with new information and analyses.

In view of these existing approvals, doing nothing with the entitled land is determined to be unreasonable and infeasible. Doing nothing with the property fails to achieve not only the resort's objectives, but also fails to fulfill the policies of the State of Hawai'i and the City and County of Honolulu as expressed in the land use permits and approvals already granted for the expansion of the Resort. The long awaited new employment opportunities for the region would not be provided and both the State and the City would be deprived of a source of significant new tax revenue. The community would be deprived of new public parks. New affordable housing opportunities would not be provided in a district where they are needed.

The property owners are focused on responsibly achieving a reasonable return on their investment and are not land speculators. Zoning was in place when they invested. The major land use approvals have already been granted for the proposed resort expansion. It is unreasonable for the property owners to forego the sizeable investment they made when they purchased the resort in 2010. The preparation of the SEIS is evidence of their intention. Once the SEIS process has been completed, TBR intends to move forward with the Resort expansion, albeit with a modified plan intended to reduce adverse impacts. ~~For this reason, a No Action alternative is rejected as unreasonable and is excluded from further consideration~~. Nonetheless, for the purposes of this SEIS, a No Action Alternative is evaluated in the following alternatives analysis.

B. Alternate Development Plans

As discussed earlier in the SEIS, the Comprehensive Plan presents TBR's vision for the Turtle Bay Lands that include both the SEIS Lands and the Other Lands. The Proposed Action presented in the SEIS is limited to the SEIS Lands. If any activities or development on the Other Lands trigger the need for an environmental assessment pursuant to Chapter 343 HRS as amended, those assessments will be prepared separately pursuant to the requirements of Chapter 343, if triggered.

The Proposed Action is presented in Chapter Three. Following are description of three development plan alternatives for the SEIS Lands that are determined to be reasonable alternatives. The three alternatives constitute land use plans of varying density. Because the subject property constitutes a mature resort area, it contains several relatively fixed elements: the existing hotel; the Kuilima Estates condominiums; the entrance road, Kuilima Drive; two golf courses (Fazio and Palmer); and the 100-acre Punahoʻolapa marsh. Moreover, the existing entitlements require several additional elements: numerous parks; a spine road extending laterally along the length of the property; an affordable housing component; and a shoreline setback area extending approximately 100 feet inland from the certified shoreline. The presence of these fixed and required elements makes the three alternative land use plans below appear at first glance to be rather similar. However, they are not. They vary widely in the density and distribution of land uses.

B. 1. Full Build Out Alternative

If TBR were to proceed with development of the SEIS Lands maximizing development to the extent allowable under existing land use entitlements and approvals, a total of five new hotels containing a maximum of 2,500 ~~units~~ Hotel Units along with 1,000 new Resort ~~r~~Residential ~~u~~Units would be allowed. This maximized development scenario is presented here as the Full Build Out Alternative and was the subject of the 1985 EIS where it was presented as the proposed action. Figure 4-1 depicts the Full Build Out Alternative. Table 4-1 summarizes the components of the Full Build Out Alternative.

Under this alternative, development would be set back approximately 100 feet from the certified shoreline, except for Kawela Bay where development over 50 feet in height would be setback a minimum of 300 feet. Building heights would be limited to 90 feet for hotel, commercial, and residential structures with more restrictive height limits in the coastal area. In effect, the coastal area of the SEIS Lands would be comprised of almost continuous hotel development from Kawela Bay to nearly Kahuku Point.

Full build out of the Resort would include a five-acre shopping village situated in close proximity to the existing hotel and a 3.4 acre commercial area at the intersection of the resort's new access road with Kamehameha Highway. Both existing golf courses would be retained and four new parks would be provided; one at each end of the resort, one adjacent to the East Main Drain and one adjacent to the marsh. The existing equestrian center would be relocated to a property adjacent to the intersection of Marconi Road and Kamehameha Highway. Ninety units of affordable housing would be provided adjacent to Marconi Road along the eastern property boundary of the resort.

Table 4-1: Full Build-Out Alternative

Land Use	Area (in acres)	Density (units/acre)	Total Units
Hotel:			
Hotel (H-1)	29.7	19	551
Hotel (H-2)	24.5	16	383
Hotel (H-3)	37.0	14	530
Hotel (H-4)	10.5	59	621
Hotel (H-5)	21.7	19	415
Existing Hotel	*32.8*	*15*	*500*
Subtotal	**156.2**	**19**	**3,000**
Residential:			
Resort Residential (R-1a & b)	33.5	13	420
Resort Residential (R-2)	25.6	10	255
Resort Residential (R-3)	22.0	8	175
Resort Residential (R-4)	6.7	9	60
~~Resident~~ Community Housing (RES-1)	5.5	16	90
Subtotal	**93.3**	**11**	**1,000**
Kuilima Estates	*33.1*	*11*	*368*
Commercial:			
Shopping Village	5.0		
Lot 118 (at highway)	3.4		
Beach Club	2.8		
Existing Golf Clubhouse	*1.8*		
New Golf Clubhouse	7.6		
Subtotal	20.6		
Open Space/Recreation:			
Golf Course (G-1)	143.8		
Golf Course (G-2)	189.3		
Punahoolapa Marsh Preserve	*100.0*		
Park (P-1)	4.8		
Park (P-2)	38.0		
Park (P-3) Bird Sanctuary	6.0		
Park (P-4)	2.0		
Equestrian Center	8.8		
Former Kuleana Lot	3.8		
Ag Well (Lot 524)	*2.0*		
Subtotal	**498.5**		
Roadways:			
Kuilima Drive	*4.5*		
Kaihalulu Drive	33.8		
P-1 Access Road	0.4		
Marconi Road Expansion	11.3		
Subtotal	50.0		
Parcel 5-7-003:072	0.2		
TOTAL SITE	**851.9**		

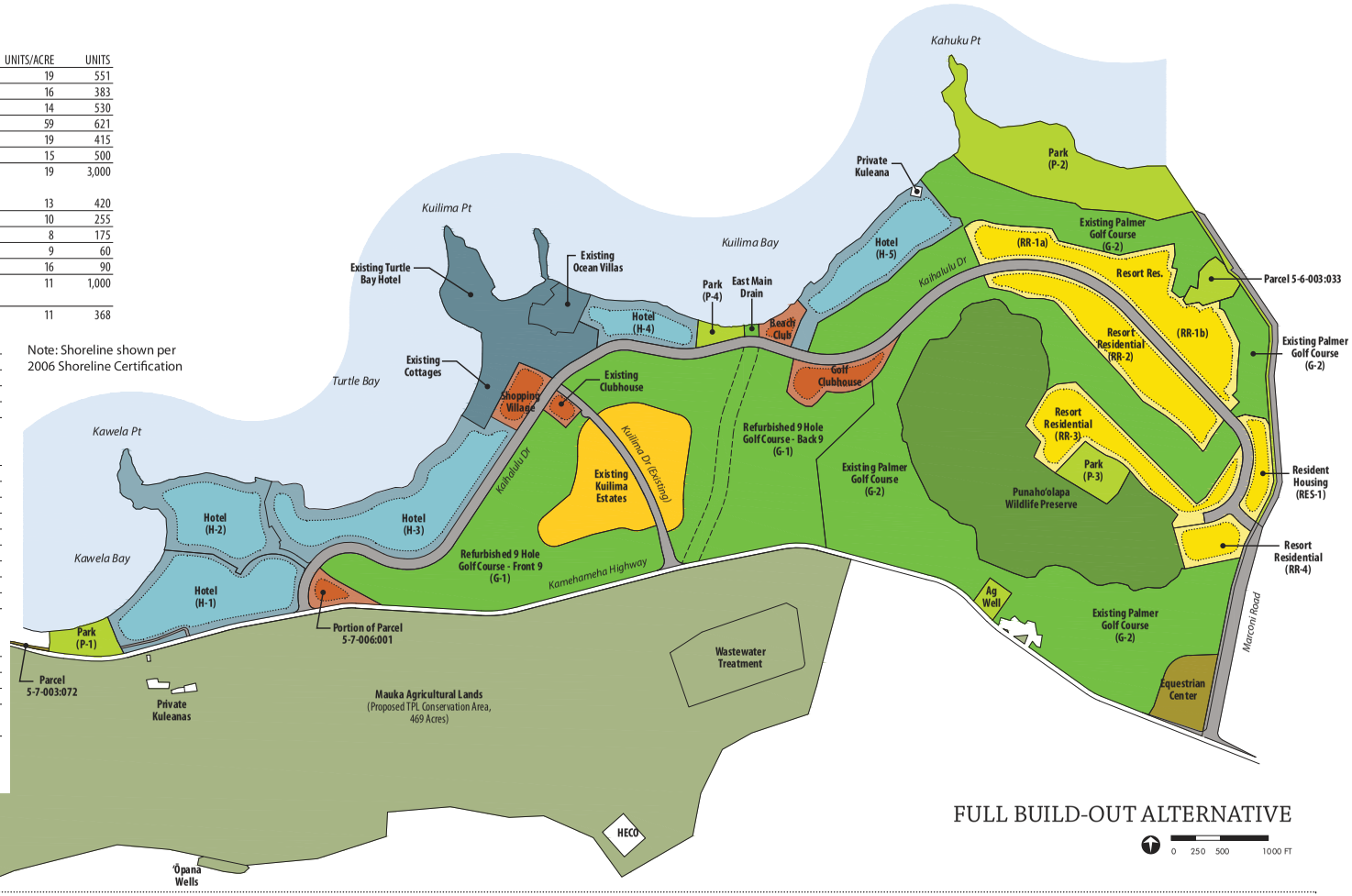
NOTE: *Italics* denote *existing* land uses.

Figure 4-1: Full Build-Out Alternative

Full Build-Out

AREA	ACRES	UNITS/ACRE	UNITS
Hotel (H-1)	29.7	19	551
Hotel (H-2)	24.5	16	383
Hotel (H-3)	37.0	14	530
Hotel (H-4)	10.5	59	621
Hotel (H-5)	21.7	19	415
Existing Turtle Bay Hotel	32.8	15	500
TOTAL HOTEL	156.2	19	3,000
Resort Residential (RR-1a, 1b)	33.5	13	420
Resort Residential (RR-2)	25.6	10	255
Resort Residential (RR-3)	22.0	8	175
Resort Residential (RR-4)	6.7	9	60
Resident Housing (RES-1)	5.5	16	90
TOTAL RESIDENTIAL	93.3	11	1,000
Existing Kuilima Estates	33.1	11	368
Shopping Village	5.0		
Portion of Parcel 5-7-006:001	3.4		
Beach Club	2.8		
Existing Clubhouse	1.8		
New Clubhouse	7.6		
TOTAL OTHER	20.6		
Golf Course (G-1)	143.8		
Golf Course (G-2)	189.3		
Punahoolapa Wildlife Preserve	100.0		
Park (P-1)	4.8		
Park (P-2)	38.0		
Park (P-3) - Bird Sanctuary	6.0		
Park (P-4)	2.0		
Equestrian Center	8.8		
Parcel 5-6-033:033	3.8		
AG Well (Lot524)	2.0		
TOTAL OPEN SPACE	498.5		
Kuilima Drive (Existing)	4.5		
P-1 Access Road	0.4		
Marconi Road Expansion	11.3		
Kaihalulu Drive	33.8		
TOTAL ROADWAYS	50.0		
Parcel 5-7-003:072	0.2		
TOTAL SITE	**851.9**		

Note: Shoreline shown per 2006 Shoreline Certification



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Based upon the proprietary market analysis conducted for the resort owners, it is estimated that current and anticipated market conditions would require 39 years for the market to absorb the available new resort and residential units. Assuming construction of a Full Build-Out Alternative was to begin in 2015, it is estimated based on anticipated market absorption rates that the final units would be constructed in 2053.

B. 2. Resort Residential Only Alternative

Based upon ongoing dialogue with community stakeholders, TBR recognizes that a vocally active minority, while offering no constructive alternative, opposes any new hotel development at the Resort. TBR has, therefore, developed this Resort Residential Only alternative (hereinafter, Resort Residential Alternative) as a means of exploring the implications of no additional hotels. (i.e. How could the property be used if no additional hotels were built?) TBR has made a substantial investment in the property over time. In order to recoup that investment, the only viable option would be to develop a residential community surrounding the existing hotel throughout the developable resort residential sites. It would be possible to limit such residential development to a scale and density consistent with the rural character of the region and in keeping with the resort character of the property.

It should be noted here that a higher density residential subdivision consisting of lot sizes ranging from 5,000 to 7,500 square feet was rejected from further consideration because it would likely be found to be inconsistent with the population guidelines of Oahu General Plan and the existing Koʻolau Loa Sustainable Communities Plan. A higher density residential alternative is similar to the No Action Alternative presented in the 1985 EIS. It was rejected at that time and it is rejected here.

As a land use, ~~R~~resort ~~R~~residential typically constitutes low-density development consisting of one to four single-family luxury homes per acre. House sizes would typically range from 2,500 to over 5,000 square feet in area. Individual homes would be marketed as second homes and vacation residences for several million dollars each. Resort Residential ~~homes~~ units might also include a range of concierge services offered by the existing hotel staff including full kitchen staff and maid/butler service. Residential yards and amenities are typically maintained as common-area grounds by resort maintenance staff. Resort Residential ~~homes~~ units are often vacant over 50% of the year because they are legally used as short-term transient rentals or vacation units focused on holidays or peak periods.

A conceptual land use plan for the Resort Residential Alternative is presented as Figure 4-2 and a summary of its components is presented below in Table 4-2. Please note that the references in the table to Hotel refer to the hotel parcels identified in the Full Build Out Alternative and represent a means of identifying parcels of land. The Resort Residential Alternative would include the existing hotel but no new hotel development. Rather, ~~r~~Resort ~~r~~Residential ~~homes~~ Units would be built on the various hotel parcels.

Under this alternative, development would be set back approximately 100 feet from the certified shoreline, except for Kawela Bay where development over 50 feet in height would be setback

Figure 4-2: Resort Residential Alternative

Resort Residential

AREA	ACRES	UNITS/ACRE	UNITS
Existing Turtle Bay Hotel	32.8	15	500
TOTAL HOTEL	32.8	15	500
Resort Residential (RR-1)	29.7	2	60
Resort Residential (RR-2a, 2b)	24.5	2	50
Resort Residential (RR-3a, 3b)	37.0	4	155
Resort Residential (RR-4a, 4b)	10.5	6	60
Resort Residential(RR-5)	21.7	2	40
Resort Residential (RR-6)	33.5	1	35
Resort Residential (RR-7)	25.6	1	25
Resort Residential (RR-8)	22.0	1	25
Resident Housing (RES-1)	5.5	8	46
Resort Residential (RR-9)	6.7	1	4
TOTAL RESIDENTIAL	216.7	2	500
Existing Kuilima Estates	33.1	11	368
Shopping Village	5.0		
Beach Club	2.8		
Portion of Parcel 5-7-006:001	3.4		
Existing Clubhouse	1.8		
New Clubhouse	7.6		
TOTAL OTHER	20.6		
Golf Course (G-1)	143.8		
Golf Course (G-2)	189.3		
Punahoolapa Wildlife Preserve	100.0		
Park (P-1)	4.8		
Park (P-2)	38.0		
Park (P-3) - Bird Sanctuary	6.0		
Park (P-4)	2.0		
Equestrian Center	8.8		
Parcel 5-6-003:033	3.8		
AG Well (Lot524)	2.0		
TOTAL OPEN SPACE	498.5		
Kuilima Drive (Existing)	4.5		
P-1 Access Road	0.4		
Marconi Road Expansion	11.3		
Kaihalulu Drive	33.8		
TOTAL ROADWAYS	50.0		
Parcel 5-7-003:072	0.2		
TOTAL SITE	**851.9**		

Note: Shoreline shown per 2006 Shoreline Certification

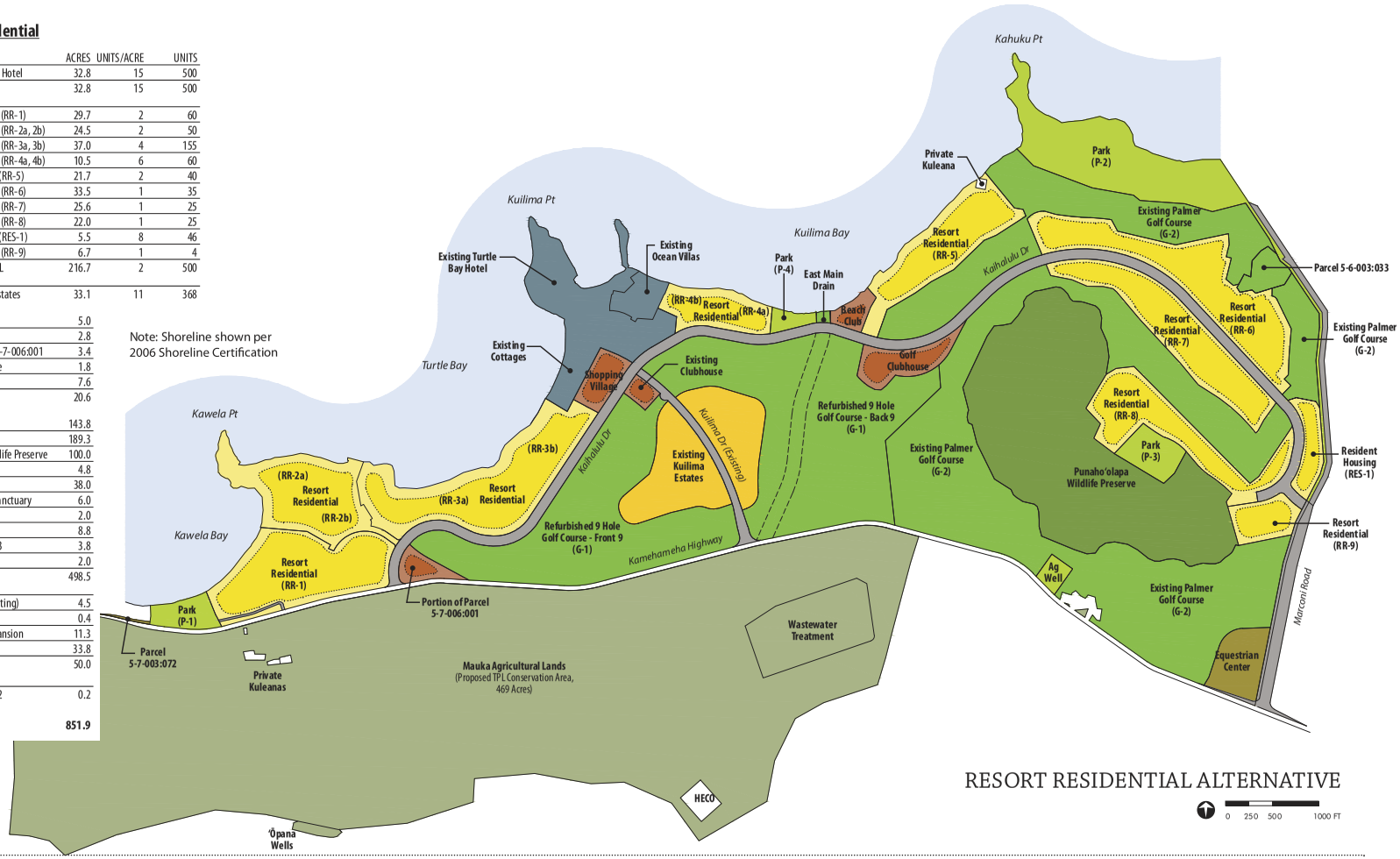

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Table 4-2: Resort Residential Alternative

Land Use	Area (in acres)	Density (units/acre)	Total Units
Existing Hotel	*32.8*	*15*	*500*
Resort Residential:			
Hotel (RR-1)	29.7	2	60
Hotel (RR-2a & b)	24.5	2	50
Hotel (RR-3a & b)	37.0	4	155
Hotel (RR-4a & b)	10.5	6	60
Hotel (RR-5)	21.7	2	40
Resort Residential (RR-6)	33.5	1	35
Resort Residential (RR-7)	25.6	1	25
Resort Residential (RR-8)	22.0	1	25
Resort Residential (RR-9)	6.7	1	4
~~Resident~~ Community Housing:			
~~Resident~~ Community Housing (RES-1)	5.5	8	46
Subtotal	**216.7**	**2**	**500**
Kuilima Estates	*33.1*	*11*	*368*
Commercial:			
Shopping Village	5.0		
Lot 118 (at highway)	3.4		
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Open Space/Recreation:			
Golf Course (G-1)	143.8		
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Park (P-1)	4.8		
Park (P-2)	38.0		
Park (P-3) Bird Sanctuary	6.0		
Park (P-4)	2.0		
Equestrian Center	8.8		
Former Kuleana Lot	3.8		
Ag Well (Lot 524)	*2.0*		
Subtotal	**498.5**		
Roadways:			
Kuilima Drive	*4.5*		
Kaihalulu Drive	33.8		
P-1 Access Road	0.4		
Marconi Road Expansion	11.3		
Subtotal	38.3		
Parcel 5-7-003:072	0.2		
TOTAL SITE	**851.9**		

NOTE: *Italics* denote *existing* land uses.

a minimum of 300 feet. Building heights throughout the property would be limited to 90 feet as established by the prevailing zoning. However, single-family residential structures seldom exceed 25 feet in height. 46 units of affordable housing would be provided adjacent to Marconi Road along the eastern property boundary of the resort.

Because of the flood zone boundaries established in many coastal areas of the property, the first habitable floor of any residential structure must be built above the identified flood elevation. On the lands fronting Kawela Bay, for example, flood elevations range from 11 to 14 feet above mean sea level. Therefore, the requirement that habitable floor be elevation above flood elevations would likely constrain the development of single family homes in some areas. While it may be possible to elevate an entire single family home, it is not necessarily a practical, aesthetically pleasing, or cost-effective strategy. On the other hand, duplex and multi-family units can be easily elevated because the first floor can be devoted to garage space. Thus, under the Resort Residential Alternative, the distribution of single-family homes will likely be constrained or limited by flood zone designations.

The non-residential components of the Resort Residential Alternative would be similar to those included in the Full Build-Out Alternative.

Based on existing and anticipated market conditions, it is estimated that implementation of the Resort Residential Alternative would span the same time period as the Proposed Action (2015-2025).

B. 3. Conservation Partner Alternative

As has been discussed elsewhere in this document, TBR has been engaged in an extensive community dialogue about the future of the resort. TBR first raised the possibility of excluding the shoreline of Kawela Bay from any resort related development in the Environmental Assessment/Supplemental Environmental Preparation Notice published in August 2011. This alternative was designated the Kawela Conservation Alternative. In response to community feed-back on this alternative, provided to TBR by various members of the Koʻolau Loa North Shore Alliance (KNSA) after publication of the EA/SEISPN, TBR offered to develop a plan that reflected even a greater degree of conservation than that which was presented as the Kawela Conservation alternative.

The Conservation Partner ~~concept~~ Alternative presumes that the property owner will receive economic consideration in lieu of the foregone development rights. Accordingly, expanding the level of conservation was initiated under the premise that the amount of economic consideration necessary for the Kawela Conservation Alternative would need to be adjusted accordingly. A revised Kawela Conservation Alternative (Alternative 6A) was presented to KSNA members for discussion purposes only on November 13, 2011. It was intended to attempt to interpret the feed-back described above. Discussions ensued with respect to its appropriateness for consideration and what might it take for it to be supported by the KSNA, if not endorsed. Variables discussed at that time included building height, setbacks, affordable housing, and the number of lockout units.

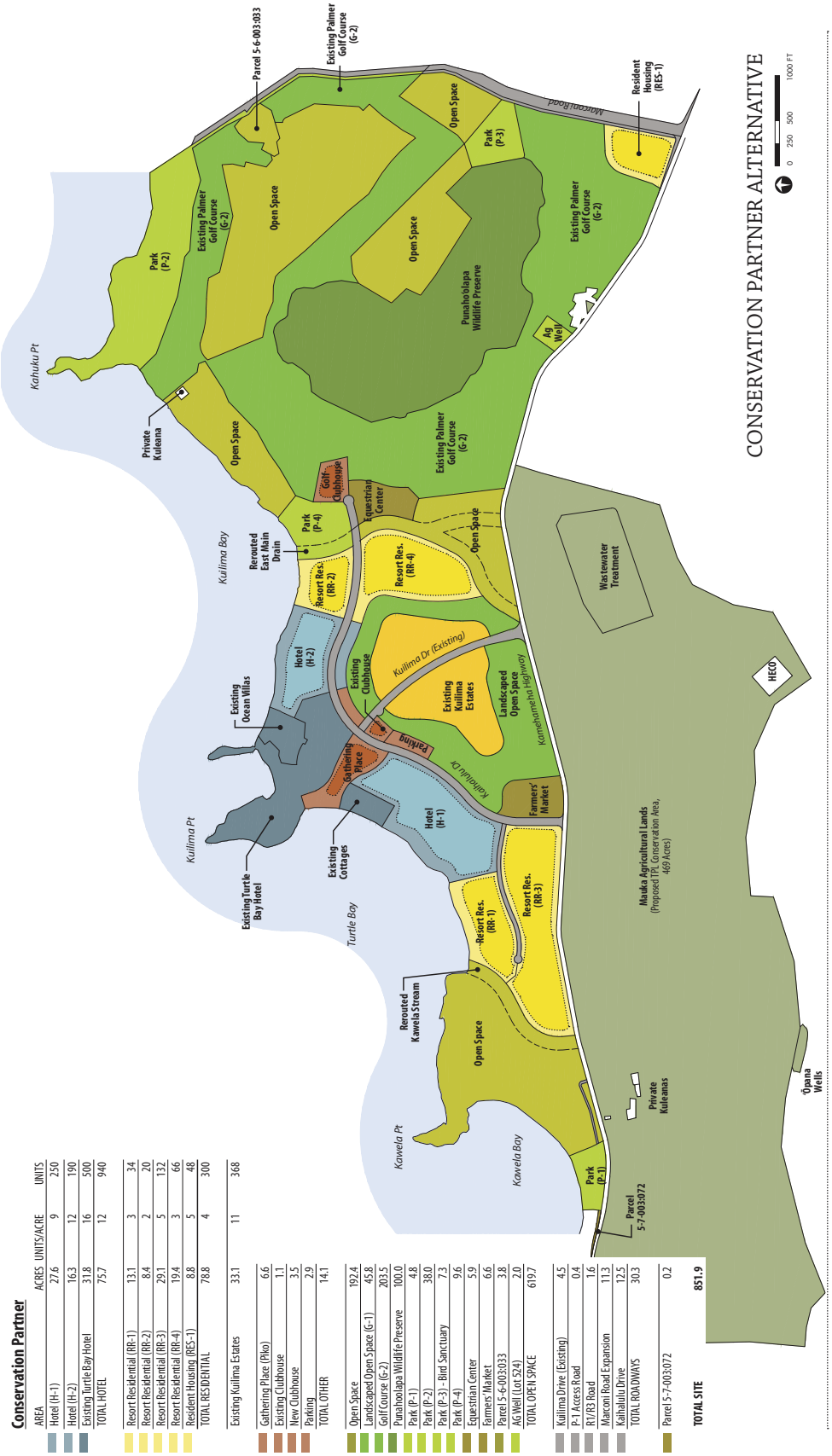
Based on the foregoing, TBR has developed a Conservation Partner Alternative that attempts to interpret the informal comments discussed on November 13, 2011 and preserve the option for extensive conservation. The key elements of the Conservation Partner Alternative are the elimination of any development west of the proposed alignment of the rerouted Kawela Stream at the West Main Drain, and the elimination of all resort residential development east of the East Main Drain. To accomplish this, the Conservation Partner Alternative would require economic consideration to compensate for the reduced overall density. In other words, to preserve the coastal areas from further development, a third party in the form of a brokered conservation organization, must partner with the resort owners to provide monetary compensation for the loss of potential value that would otherwise result from the development of these properties. At the time of this writing, although the owners' intention has been made known to the KNSA, no third party has yet to step forward to continue this dialogue. In the absence of a conservation partner, the value of the coastal lands over which a conservation easement might be placed has not been determined. Nevertheless, it is an alternative worth evaluating subject to the emergence of an interested partner.

The Conservation Partner Alternative focuses hotel development in the Hanakaʻoe *ahupuaʻa* with one new hotel on either side of the existing hotel and a commercial Gathering Place situated between the west side hotel and the existing hotel. See Figure 4-3. A ~~r~~Resort ~~r~~Residential development area would define the eastern and western extent of development. Previously proposed resort residential development areas at Kawela Bay and at the eastern end of the resort would be replaced with undeveloped open space areas. The concentration of development within Hanakaʻoe would result in the shortening of the resort's proposed spine road, Kaihalulu Drive, which would be no longer needed to extend the length of the resort and intersect with Marconi Road. Two smaller roads would be constructed to access the Park P-1 at Kawela Bay and the west side ~~r~~Resort ~~r~~Residential development parcel adjacent to the realigned West Main Drain. A Farmer's Market would be developed at the intersection of Kaihalulu Drive and Kamehameha Highway.

Building heights at the two new hotels would be limited to 60 feet, which would allow four habitable floors above the non-habitable ground floor. No lock-off units would be allowed, meaning that one hotel unit equals one key. Building heights for the resort residential development area RR-1 and RR-2 would be limited to 40 feet (one habitable floor above the non-habitable ground floor). Remaining Resort ~~r~~Residential development would be limited to 20 feet in height. Oceanfront setbacks would be increased to 200 feet. The 160 community housing units proposed in the ~~Preferred Alternative~~ Proposed Action would be reduced to a 48-unit development at the intersection of Marconi Road and Kamehameha Highway. Table 4-3 ~~below~~ summarizes the components of the Conservation Partner Alternative.

Based on existing and anticipated market conditions, the Conservation Partner Alternative could be implemented in 9 years (2015-2022).

Figure 4-3: Conservation Partner Alternative



Conservation Partner

AREA	ACRES	UNITS/ACRE	UNITS
Hotel (H-1)	27.6	9	250
Hotel (H-2)	16.3	12	190
Existing Turtle Bay Hotel	31.8	16	500
TOTAL HOTEL	75.7	12	940
Resort Residential (RR-1)	13.1	3	34
Resort Residential (RR-2)	8.4	2	20
Resort Residential (RR-3)	29.1	5	132
Resort Residential (RR-4)	19.4	3	66
Resident Housing (RES-1)	8.8	5	48
TOTAL RESIDENTIAL	78.8	4	300
Existing Kuilima Estates	33.1	11	368
Gathering Place (Pko)	6.6		
Existing Clubhouse	1.1		
New Clubhouse	3.5		
Parking	2.9		
TOTAL OTHER	14.1		
Open Space	192.4		
Landscaped Open Space (G-1)	45.8		
Golf Course (G-2)	203.5		
Punahoolapa Wildlife Preserve	100.0		
Park (P-1)	4.8		
Park (P-2)	38.0		
Park (P-3) - Bird Sanctuary	7.3		
Park (P-4)	9.6		
Equestrian Center	5.9		
Farmers' Market	6.6		
Parcel 5-6-003:033	3.8		
AG Well (Lot 524)	2.0		
TOTAL OPEN SPACE	619.7		
Kuilima Drive (Existing)	4.5		
P-1 Access Road	0.4		
R1/R3 Road	1.6		
Marconi Road Expansion	11.3		
Kaihalulu Drive	12.5		
TOTAL ROADWAYS	30.3		
Parcel 5-7-003:072	0.2		
TOTAL SITE	**851.9**		

Table 4-3: Conservation Partner Alternative

Land Use	Area (in acres)	Density (units/acre)	Total Units
Hotel:			
Hotel (H-1)	27.6	9	250
Hotel (H-2)	16.3	12	190
Existing Hotel	*31.8*	*16*	*500*
Subtotal	**75.7**	12	940
Resort Residential:			
Resort Residential (RR-1)	13.1	3	34
Resort Residential (RR-2)	8.4	2	20
Resort Residential (RR-3)	29.1	5	132
Resort Residential (RR-4)	19.4	3	66
~~Resident~~ Community Housing:			
~~Resident~~ Community Housing (RES-1)	8.8	5	48
Subtotal	**78.8**	**4**	**300**
Kuilima Estates	*33.1*	*11*	*368*
Commercial:			
Gathering Place	6.6		
Existing Golf Clubhouse	*1.1*		
New Golf Clubhouse	3.5		
Parking	2.9		
Subtotal	**14.1**		
Open Space	196.2		
Landscaped Open Space (G-1)	45.8		
Golf Course (G-2)	203.5		
Punahoolapa Marsh Preserve	100.0		
Park (P-1)	4.8		
Park (P-2)	38.0		
Park (P-3) Bird Sanctuary	7.3		
Park (P-4)	9.6		
Equestrian Center	5.9		
Farmers Market	6.6		
Ag Well (Lot 524)	*2.0*		
Subtotal	**619.7**		
Roadways:			
Kuilima Drive	4.5		
RR1/RR3 Road	1.6		
P-1 Access Road	0.4		
Marconi Road Expansion	11.3		
Kaihalulu Drive	10.6		
Subtotal	**30.3**		
Parcel 5-7-003:072	0.2		
TOTAL SITE	**851.9**		

B. 4. No Action Alternative

The No Action Alternative would result in the continuation of the resort in the form that exists today (see Figure 1-2). The existing resort contains the following elements, which would continue into the foreseeable future:

- 500-unit Turtle Bay Hotel;
- 368-unit Kuilima Estates;
- 18-hole Fazio Golf Course;
- 18-hole Palmer Golf Course;
- Resort stables;
- Resort tennis courts;
- Kuilima Drive;
- 100-acre Punahoʻolapa Marsh;
- Kuilima Wastewater Treatment Plan (*mauka* of Kamehameha Highway); and
- Ancillary infrastructure.

C. Comparative Evaluation of Reasonable Alternatives

An evaluation of alternatives can be based on both quantitative and qualitative assessments. From the perspective of a landowner, the most desirable alternative might be the one that generates the greatest revenue (quantitative). Or, it might be the one that contributes the most to fulfilling the dreams and expectations of the landowner (qualitative). From the perspective of parties that may be opposed to a project, the most desirable alternative might be the one that contributes the most to preserving the status quo, or even reversing it in the instance where the status quo is deemed to be unacceptable (qualitative). Or, it might be the alternative that provides the most of a desirable outcome or the least of an undesirable outcome (quantitative). Obviously, evaluating alternatives from either of these perspectives is quite subjective.

To overcome this challenge, the state agency responsible for overseeing the environmental assessment process, the OEQC, has determined that alternatives should be evaluated with respect to the extent to which they are able to satisfy the objectives guiding the applicant (or land owner's) preferred course of action.

C. 1. Qualitative Comparison

As set forth in Section 11-200-17F, HAR: "The draft EIS shall describe in a separate and distinct section alternatives which could attain the objectives of the action, regardless of cost, in sufficient detail to explain why they were rejected…In each case, the analysis shall be sufficiently detailed to allow the comparative evaluation of the environmental benefits, costs, and risks of the proposed action and ***each reasonable alternative.***"

Following are the objectives presented in Chapter Two.

I. *Manage design, development, construction, and operations sustainably in a manner that embodies the spirit of long-established traditional ahupuaʻa system of planning and proactive resource management*

II. *Integrate the Resort into the fabric and daily activities of the local community.*

III. *Create a balance of economic, social and cultural vitality while maintaining the rural character of the Resort's coastal area by focusing critical development mass within the ahupuaʻa of Hanakaʻoe (around the existing hotel).*

ʻ

IV. *Operate the Resort as a place that will be equally welcoming to residents from neighboring communities as to visitors from afar.*

V. *Provide enhanced access to the shoreline for residents, visitors and residents from nearby communities, and cultural practitioners including fishermen and gatherers, by the provision of additional parks, shoreline access points and a shoreline trail interconnecting them.*

VI. *Enhance and protect the environment with specific attention to Punahoʻolapa Marsh, Kawela Bay, and the Agricultural Lands.*

VII. *Ensure the long-term preservation of the Agricultural Lands through the implementation of a conservation easement on the Agricultural Lands.*

VIII. *Assist with local housing needs by providing additional housing units affordable to members of the local community beyond what is presently required.*

Using these objectives as the criteria for evaluating the alternatives, Table 4-4 presents an evaluation of the alternatives based upon their individual ability to implement the identified objectives of the Proposed Action.

Table 4-4: Comparative Evaluation of Alternatives to SEIS Key Objectives (Qualitative) (revised)

Alternative	Ob. I	Ob. II	Ob. III	Ob. IV	Ob. V	Ob. VI	Ob. VII	Ob. VIII	sum
1=actively supports, 0=conforms, -1=inconsistent									
Proposed Action	1	1	1	1	1	1	1	1	**8**
Full Build Out	1	1	-1	1	1	1	-1	-1	**2**
Resort Res Only	-1	-1	-1	0	1	-1	-1	-1	**-5**
Conserv. Partner	1	1	1	1	1	1	1	-1	**6**
No Action	-1	1	-1	1	-1	-1	-1	-1	**-4**

Of the ~~three reasonable~~ four alternatives considered, the Conservation Partner Alternative scores nearly as high as the Proposed Action, yet, it falls short of fulfilling one of the key objectives of the Proposed Action, specifically in the area of providing housing units affordable to the local community beyond what is required by law. This is largely due to the fact that the reduction in density, beyond that which is proposed in the Proposed Action, renders the development project economically infeasible. As discussed in Section B.3 above, some form of economic consideration to compensate for the loss of density would be required to implement the Conservation Partner Alternative. Given the amount of land designated for conservation the compensation would likely be tens or even hundreds of millions of dollars and since introduction of this alternative in November of 2011, there have been no viable offers presented.

The Full Build-Out Alternative fulfills some of the Proposed Action's objectives except for the distribution of density along the entire shoreline as opposed to concentrating it in the Hanakaʻoe *ahupuaʻa* and the provision of housing that is affordable to the local community in excess of what is required. While this alternative would provide construction employment over a longer period of time, the associated construction impacts would also be extended well beyond the horizon for the Proposed Action. The increased resort population would likely contribute at least twice the traffic impacts as those anticipated for the Proposed Action.

The Resort Residential Only Alternative is the least desirable because it does virtually nothing to increase environmental and cultural sensitivities or provide housing that is affordable to the community beyond what is required by law.

The No-Action Alternative is similar to the Resort Residential Only Alternative in its limited ability to fulfill the development objectives. It scores slightly higher than the Resort Residential Only Alternative because of operational policies already enacted by the owner; specifically the relaxing of entry security and the elimination of parking regulations within the hotel parking lot. These measures were intended to help fulfill, in part, Objective IV.

C. 2. Comparison of Environmental Effects

The environmental affects of each of the proposed alternatives are summarized in the following table.

Table 4-5: Comparison of Environmental Effects Among Alternatives (revised)

I = Identifiable Impact; SA = Significant Adverse; N = None or Not Significant; SB = Significant Beneficial

Environmental Effect	Proposed Action	Full Build-Out	Resort Residential	Conservation Partner	No Action
Topography	N	~~Same~~ N	~~Same~~ N	~~Less~~ N	N
Soils	I	Same	Same	Less	Less
Vegetation	I	More	Same	Less	Less
Fauna	N	~~More~~ N	~~Same~~ N	~~Less~~ N	N
Avifauna	SA	Same	Same	Same	N
Groundwater	I	Same	Same	Same	Less
Drainage	SB	Same	Same	Same	Less
Marine Water Quality	SB	Same	Same	Same	Less
Marine Biota	I	Same	~~Same~~ More	~~Less~~ Same	Less
Sea Turtles	I	More	Same	Same	Less
Hawaiian Monk Seals	I	More	Same	Same	Less
Views	I	More	Less	Less	Less
Air Quality	N	~~More~~ N	~~Less~~ N	~~Same~~ N	N
Traffic	SA	More	Less	Less	Less
Noise	I	More	Less	Less	Less
Archaeological Sites	SA	Same	Same	Less	Less
Cultural Resources	SA	Same	Same	Less	Less
Agricultural Resources	N	~~Same~~ N	~~Same~~ N	~~Same~~ N	N
Population Growth	I	More	Less	Same	Less
Wastewater	N	~~More~~ N	~~Less~~ N	~~Same~~ N	N
Solid Waste	I	More	Less	Same	Less
Water Use	N	~~More~~ N	~~Less~~ N	~~Same~~ N	N

Given the general character of development among the alternatives, when compared to the Proposed Action, the physical area disturbed by the Full Build-Out would be generally greater than the Proposed Action because the density would be higher and the expanded shoreline setbacks proposed in the Proposed Action would not be provided. The physical area impacted by the Resort Residential ~~a~~Alternative would be about the same as the Proposed Action, but the physical area impacted by the Conservation Partner Alternative would be less because the foot print of development would be greatly reduced.

In terms of activity on the property, the Full Build-Out Alternative would generate more activity because its daily population would be higher than the Proposed Action. Without hotels, the physical activity associated with the Resort Residential Alternative would be less than the

Proposed Action because its daily population would be smaller. The physical activity associated with the Conservation Partner Alternative would be less than the Proposed Action, but greater than the Resort Residential Alternative.

~~Using a simple scoring system, where Same = 0, More = 1, and Less equals -1, when compared to the Proposed Action, the environmental effects of the alternatives result in a score of +12 for the Full Build-Out Alternative, -8 for the Resort Residential Alternative, and -10 for the Conservation Partner Alternative. Of the three alternatives, the Conservation Partner Alternative would have the least relative environmental effects.~~

Following is discussion of the reasoning for each element assessed in Table 4-5. This discussion is limited to an evaluation of environmental effects, and does not take into account measures that might be taken to mitigate those effects. The discussion in Chapter Five addresses both impacts and mitigations.

Topography: Neither the Proposed Action nor the alternatives will have a significant impact upon the topographic character of the resort property.

Soils: Development of the Proposed Action will impact the property soils through disturbance during construction and the replacement of some soils with building foundations. The Full Build-Out and Resort Residential Alternatives will have a similar impact as the Proposed Action because they will result in development of the same approximate physical area. Disturbance of soils by the Conservation Partner Alternative will be less than the Proposed Action because the physical area of development will be greatly reduced. The No Action Alternative would have the least impact because no new development would occur.

Vegetation: Development of the Proposed Action will impact the property vegetation through disturbance or loss during construction and the replacement of some vegetation with new landscaping. Potential impacts upon the Coastal Strand include increased human activity along the shoreline. The Full Build-Out will have a greater impact on vegetation than the Proposed Action because the net physical area of building foot prints will be greater, resulting in more vegetated areas being replaced with impermeable surfaces, and even greater human activity in the coastal area. The Resort Residential Alternative will have a similar impact as the Proposed Action because it will result in development of the same approximate physical area. While the daily population will be less, the development of the resort area in residential uses will provide more access likely increasing human activity along the coast, which would impact the sensitive Coastal Strand. Disturbance of vegetation by the Conservation Partner Alternative will be less than the Proposed Action because the physical area of development will be greatly reduced. The No Action Alternative would have the least impact because no new development would occur and the existing vegetation would remain.

Fauna: Development of the Proposed Action will impact the property fauna through displacement during construction. The Full Build-Out will have a greater impact on vegetation than the Proposed Action because the net the physical area of building foot prints will be greater,

resulting in more vegetated areas being replaced with impermeable surfaces, and a greater reduction in fauna habitat. The Resort Residential Alternative will have a similar impact as the Proposed Action because it will result in development of the same approximate physical area. Disturbance of fauna by the Conservation Partner Alternative will be less than the Proposed Action because the physical area of development will be greatly reduced. The No Action Alternative would have the least impact on fauna because no new development would occur and the habitat areas would remain.

Avifauna: Development of the Proposed Action will have a significant adverse impact the avifauna because of the increase in night lighting, unless mitigated. This is particularly the case for seabirds, which are susceptible to disorientation from night lighting. The Full Build-Out will have a greater impact on avifauna than the Proposed Action because the net the number of multi-story hotels will be greater, likely resulting in more night lighting, unless mitigated. The Resort Residential Alternative will have a similar impact as the Proposed Action because it will result in development of the same approximate physical area. Disturbance of avifauna by the Conservation Partner Alternative will be less than the Proposed Action because the physical area of development will be greatly reduced. The No Action Alternative would have the least impact on avifauna because no new development would occur and the general character of the existing habitat would remain the same.

Groundwater: The Proposed Action will impact groundwater by increasing the amount of private lots and common areas that will be landscaped, and therefore irrigated by either home owners or resort staff respectively. This will result in a potential increase in the volume of fertilizers and/or pesticides generally used on the resort property, and these chemical agents could make their way to the water table. The three development alternatives would have a similar impact as the Proposed Action because they would also result in the increase use fertilizers and/or pesticides on the property, but likely less depending on total density. The No Action alternative would have less impact than the Proposed Action because no new development would occur.

Drainage: The Proposed Action will have a significant beneficial impact upon drainage because it would result in the improved management of drainage on the resort property through the improvements proposed to the East and West Main Drains. Each of the three development alternatives would have a similar beneficial effect because it is anticipated that the same drainage improvements would likely occur. However, the No Action Alternative would have less beneficial impacts than the Proposed Action because no further improvements would be made to the existing drainage system.

Marine Water Quality: The Proposed Action will have a significant beneficial impact upon marine water quality because it would result in the improved management of drainage and filtering on the resort property through the improvements proposed to the East and West Main Drains. Each of the three development alternatives would have a similar beneficial effect because it is anticipated that the same drainage improvements would likely occur. However, the No

Action Alternative would have less beneficial impacts on marine water quality than the Proposed Action because no further improvements would be made to the existing drainage system.

Marine Biota: The Proposed Action will impact marine biota by improving shoreline access at the resort, which will result in more people (resort guests, resort residents, and the general public) using the coastal area for recreational purposes. While it is not anticipated that many resort guests will participate in fishing, long-term resort residents and the general public will have improved access and will likely result in an increase of fishing activities along the resort coast. The Full Build-Out Alternative and Conservation Partner Alternative would have impacts similar to the Proposed Action. Impacts to marine biota resulting from the Resort Residential Alternative may increase over those of the Proposed Action because the number of long-term residents would increase, resulting in a potential for greater fishing impacts on the coastline. Marine biota impacts of the No Action Alternative would be less than the Proposed Action because no additional shoreline parks or shoreline pedestrian access ways would be provided, and human activities along the coastline would be less than those generated by the Proposed Action.

Sea Turtles: The Proposed Action will impact sea turtles because it will generate an increase in human presence along the shoreline and in the near shore waters, resulting in increased interactions over what occurs at present, as well as the potential for increased night lighting that can disorient hatchlings if present. The Full Build-Out Alternative would increase impacts to sea turtles, when compared to the Proposed Action, because the increase in visitor units would result in greater numbers of people on the coastline and in the near shore waters. While resident and/or guest populations associated with the Resort Residential and Conservation Partner Alternatives would be somewhat less than the Proposed Action, the general impact of these alternatives on sea turtles is anticipated to be similar to the Proposed Action, because each would result in increasing accessibility to the coastal area. The No Action Alternative would have the least impact upon sea turtles because it would result in no significant increase in coastal recreational uses.

Hawaiian Monk Seals: The Proposed Action will impact monk seals because it will generate an increase in human presence along the shoreline and in the near shore waters, resulting in increased interactions over what occurs at present. The Full Build-Out Alternative would increase impacts to monk seals, when compared to the Proposed Action, because the increase in visitor units would result in greater numbers of people on the coastline and in the near shore waters. While resident and/or guest populations associated with the Resort Residential and Conservation Partner Alternatives would be somewhat less than the Proposed Action, the general impact of these alternatives on monk seals is anticipated to be similar to the Proposed Action, because each would result in increasing accessibility to the coastal area. The No Action Alternative would have the least impact upon sea turtles because it would result in no significant increase in coastal recreational uses. However, with the lack of increased resort security and planned expansion of ocean education/ management that would be present under the development alternatives, the potential for disturbing monk seals that haul out or pup on the shoreline may increase because it is less likely that these interactions would be observed.

Views: Development of the Proposed Action will impact views because of the construction of new buildings and the replacement of some vegetation with new landscaping. The Full Build-Out will have a greater impact on views than the Proposed Action because the number of multi-story hotel structures along the coastline will increase. The Resort Residential Alternative will have less impact than the Proposed Action because it does not include hotel structures and building heights will be limited to residential structures. Impacts on views by the Conservation Partner Alternative will be less than the Proposed Action because the physical area of development will be greatly reduced. The two hotels proposed under the Conservation Alternative would be clustered adjacent to the existing hotel, thereby reducing the number of multi-story hotel structures elsewhere on the property. The No Action Alternative would have the least impact on views because no new development would occur.

Air Quality: Neither the Proposed Action nor the alternatives will have significant impact on air quality because of the property's exposure to the prevailing trade winds.

Traffic: Development of the Proposed Action will have a significant adverse impact on traffic because it will increase the supply of vehicles on Kamehameha Highway. The Full Build-Out will have a greater impact on traffic than the Proposed Action because the daily resort population will be considerably greater. The Resort Residential Alternative and Conservation Partner Alternatives will have less impact on traffic than the Proposed Action because the number of new units will be less than the Proposed Action. The No Action Alternative would have the least impact on traffic because no new development would occur.

Noise: Development of the Proposed Action will have an impact on noise because it will increase human activity at the resort, and increase the supply of vehicles on Kamehameha Highway. The Full Build-Out will have a greater impact on noise than the Proposed Action because the daily resort population will be considerably greater, resulting in more activity and more vehicles. The Resort Residential Alternative and Conservation Partner Alternatives will have less impact on noise than the Proposed Action because population will be less than the Proposed Action. The No Action Alternative would have the least impact on noise because no new development would occur.

Archaeological Sites: The Proposed Action will have a some adverse impacts upon archaeological sites because it will result in the disturbance of areas where archaeological sites have been identified without mitigation. The Full Build-Out Alternative and Resort Residential Alternatives will have the same general impact because the physical development areas are similar. The impacts of the Conservation Partner Alternative on archaeological sites will be less than the Proposed Action because less acreage will be disturbed by construction activities. The No Action Alternative will have the least impact because no new development would occur.

Cultural Resources: The Proposed Action will have adverse impacts upon cultural resources because it will result in the disturbance of areas where cultural resources have been identified without mitigation. The Full Build-Out Alternative and Resort Residential Alternatives will have the same general impact because the physical development areas are similar. The impacts of the

Conservation Partner Alternative on cultural resources will be less than the Proposed Action because less acreage will be disturbed by construction activities. The No Action Alternative will have the least impact because no new development would occur.

Agricultural Resources: The Proposed Action and all alternatives will have no impact on agricultural resources because none exist within the SEIS Lands.

Population Growth: The Proposed Action will increase resident and visitor population growth by increasing the number of hotel, resort and to a lesser degree some permanent residences in the resort dedicated zone. The Full Build-Out Alternative would have a greater impact because it increases the number of new resort residential units more than the Proposed Action. The Resort Residential Alternative would have less population impacts because while the number of resort residences would be more than the Proposed Action, the overall unit count would be lower. The Conservation Partner Alternative would have an impact generally similar to the Proposed Action, albeit slightly lower because it would include less units. The No Action Alternative would have no impact upon population growth.

Wastewater: Neither the Proposed Action nor the alternatives will have an impact upon wastewater treatment because the existing wastewater treatment plant that was constructed in the early 1990s has sufficient capacity to accommodate the development. Under the No Action Alternative, the treatment plant would continue to operate as it does today.

Solid Waste: The Proposed Action will impact the generation of solid waste by increasing the population at the resort. The Full Build-Out Alternative would have a greater impact because it increases the population more than the Proposed Action. The Resort Residential Alternative would have less solid waste impacts because the overall unit count would be lower. The Conservation Partner Alternative would have an impact generally similar to the Proposed Action, albeit slightly lower because it would include less units. The No Action Alternative would have no impact upon solid waste.

Water Use: Neither the Proposed Action nor the alternatives will have an impact upon water use because the wells needed for the increased number of units have already been constructed and or approved to meet the demand associated with Proposed Action if existing wells cannot meet the demand has already been anticipated in the Koʻolauloa Watershed Plan by the Board of Water Supply. Under the No Action Alternative, water use would be essentially the same as it is today.

C. 3. Quantitative Comparison

The following discussion is summarized from the socio-economic impact analysis presented in Appendix F. The effects of the Proposed Action and each development alternative are quantified both over the period through 2025, and over the period leading to full occupancy for each alternative. (Full occupancy dates range from 2022 for the Conservation Partner alternative, to 2053 for the Full Build-Out alternative.)

To compare operations and fiscal effects of the Development Alternatives, calculations are t through 2025 – i.e., Full Absorption for the Proposed Action and the Resort Residential Alternative, and shortly after Full Absorption for the Conservation Partner Alternative -- and for the actual year of Full Absorption. Table 4-6 compares the construction schedules for the Proposed Action and the three alternatives to 2025. It shows that while the Full-Build Out alternative will over time involve far more hotel and resort residential units than the Proposed Action, fewer units would be built by 2025.

Table 4-6: Construction Plans, Development Alternatives

	Action and Alternatives			
	Proposed Action	**Full Build-out**	**Resort Residential**	**Conservation Partner**
Through 2025				
Hotel units	625	592	0	440
Residential Units				
Resort Residential	590	468	454	252
Community Residential	160	90	46	48
Build-out year	*2024*	*2052*	*2024*	*2021*

NOTE: When completed, the Full Build-Out Alternative would include 2,500 hotel units, 910 resort residential units, and 90 community residential units. Development schedule estimated by TBR.

C.3. a. Construction Spending, Employment, and Wages

In Table 4-7, construction spending, employment and wages are shown for the entire construction period for each of the development alternatives. The annual average on-site construction workforce provides a point of comparison among the alternatives. While the Full Build-Out Alternative, when finished, involves far more construction than the other alternatives, the Proposed Action brings the highest average annual construction workforce, simply because the larger Full Build-Out project could only be built over a very long time.

Table 4-7: Construction-Related Employment and Wages, Proposed Action and Development Alternatives

	Proposed Action	Full Build-Out	Resort Residential	Conservation Partner
Construction Spending (million, 2011 $s)				
Infrastructure	$148.5	$215.1	$120.0	$87.8
Buildings	$324.4	$1,138.6	$4.5	$167.3
Single Family	$297.0	$16.2	$304.1	$115.1
Total	$769.9	$1,369.9	$428.5	$370.2
Direct Construction Workforce				
Infrastructure	564	636	456	334
Buildings	1,363	4,782	19	702
Single Family	1,336	73	1,368	518
Total	3,263	5,491	1,843	1,554
On-site Const. workers	2,611	4,393	1,474	1,243
Construction period (yrs.)	11	39	11	8
Average annual on-site FTE	237	113	134	155
Indirect and Induced Jobs	5,482	9,225	3,096	2,611
Wages (million, 2011 $s)				
Direct	$225.3	$379.1	$127.3	$107.3
Indirect and Induced	$247.7	$416.8	$267.2	$118.0
Total	$473.0	$795.9	$394.4	$225.3

NOTE: The values shown are rounded, so totals may differ slightly from the sum of the individual values in the table.
SOURCES: See Tables 4-2, 5-1 in the socio-economic impact analysis.

The next two tables compare the long-term workforces associated with the development alternatives.

Table 4-8: On-Site Employment and Wage Impacts, Proposed Action and Development Alternatives

	Proposed Action	Full Build-Out	Resort Residential	Conservation Partner
As of 2025				
Operations-Related Workers				
Direct Workers	753	530	48	469
Indirect + Induced Workers	785	559	43	494
Total	1,539	1,089	91	963
Wages (Million 2011 $s)				
Direct Workers	$23.8	$16.8	$1.6	$14.8
Indirect and Induced Workers	$35.5	$25.2	$1.9	$18.5
Total	$59.2	$42.1	$3.5	$33.3
After Full Absorption				
Estimated Absorption	*2025*	*2053*	*2025*	*2022*
Operations-Related Workers				
Direct Workers	753	2,240	48	469
Indirect + Induced Workers	785	2,359	43	494
Total	1,539	4,598	91	963
Wages (Million 2011 $s)				
Direct Workers	$23.8	$71.1	$1.6	$14.8
Indirect and Induced Workers	$35.5	$106.6	$1.9	$18.5
Total	$59.2	$177.6	$3.5	$33.3

NOTE: The values shown are rounded, so totals may differ slightly from the sum of the individual values in the table.
SOURCES: See Tables 4-3, 5-1, socio-economic impact analysis.

Both 2025 and full-occupancy estimates are provided. As of 2025, the Proposed Action would bring the largest operations workforce – but the Full Build-Out would involve far more workers, both on-site and off-, as its visitor numbers and spending grow. The Resort Residential Alternative stands out as generating only modest numbers of new jobs. Moreover, the Resort Residential Alternative would support very few off-site jobs through visitor spending.

Table 4-9: Off-Site Employment and Wage Impacts Associated with Visitor Spending, Proposed Action and Development Alternatives

	Off-site Employment from Visitor Spending			
	Proposed Action	Full Build-Out	Resort Residential	Conservation Partner
As of 2025				
Visitors Staying in New Units				
Total	2,206	2,202	483	1,477
Adjusted total, spending	1,862	1,793	242	1,376
Spending, Non-lodging				
Per person per day	$104.73	$89.92	$132.24	$119.01
Annual (Million $s)	$71.2	$49.7	$11.7	$59.8
Jobs from Visitor Spending				
Total (Direct and Indirect)	765	534	125	643
minus On-site (DII)	322	261	91	240
Off-site (DI)	443	273	34	402
Regional Share (40%)	177	109	14	161
	-			
Wages, Off-site (Million $s)	$18.4	$11.3	$1.4	$16.7
Regional Share (40%)	$7.4	$4.5	$0.6	$6.7
After Full Absorption	***2025***	***2053***	***2025***	***2022***
Visitors Staying in New Units				
Total	2,206	5,968	483	1,477
Adjusted total, spending	1,862	5,669	242	1,376
Spending, Non-lodging				
Per person per day	$104.73	$89.92	$132.24	$119.01
Annual (Million $s)	$71.2	$189.3	$11.7	$59.8
Jobs from Visitor Spending				
Total (Direct and Indirect)	765	2,035	125	643
minus On-site (DII)	322	1,103	91	240
Off-site (DI)	443	933	34	402
Regional Share (40%)	177	373	14	161
Wages, Off-site (Million $s)	$18.4	$38.7	$1.4	$16.7
Regional Share (40%)	$7.4	$15.5	$0.6	$6.7

Notes: See Table 4-4 in the socio-economic impact analysis for methodology. Non-lodging visitor spending estimated for the Proposed Action and alternatives as follows:

	Prop. Action	Full Build	Res. Res.	Consv. Part.
Relation to average spending	99%	85%	125%	113%
Per-Person per day, non-lodging Spending	$104.73	$89.92	$132.24	$119.01

Please note: The regional share estimate was developed by Belt Collins Hawaii LLC on the basis of visitor spending patterns. The values shown are rounded, so totals may differ slightly from the sum of the individual values in the table.

Table 4-10: New On-Site Population, Proposed Action and Development Alternatives

	Existing Resort (No Action Alt.)	New Daytime Population with			
		Proposed Action	Full Build-out	Resort Residential	Conservation Partner
As of 2025					
Hotel , Ocean Villa guests	638	1,139	1,291	-	957
Resort Residential (including Kuilima Estates)					
FT Residents	167	41	52	43	24
PT residents, visitors	146	516	334	362	151
Community Residential		479	269	138	144
Day Visitors	96	180	190	161	173
Operations workforce	439	561	530	34	350
Construction workforce	-	-	127	-	-
Subtotal	1,485	2,916	2,795	737	1,798
Total at Resort (Combined)	1,485	4,401	4,280	2,223	3,284
Existing share of Combined Total	100%	34%	35%	67%	45%
After Absorption					
Year		*2025*	*2053*	*2025*	*2022*
Hotel , Ocean Villa guests	638	1,139	5,370	-	957
Resort Residential					
FT Residents	167	41	94	43	24
PT residents, visitors	146	516	599	362	151
Community Residential		479	269	138	144
Day Visitors	96	180	323	161	173
Operations workforce	439	561	2,240	34	350
Construction workforce	-	-	-	-	-
Subtotal	1,485	2,916	8,894	737	1,798
Total at Resort (Combined)	1,485	4,401	10,380	2,223	3,284
Existing share of Combined Total	100%	34%	14%	67%	45%

NOTES: Weekday state holiday midday population estimated. Only construction workers involved in new construction (rather than renovations) are included. The values shown are rounded, so totals may differ slightly from the sum of the individual values in the table.
SOURCES: See Table 4-6, socio-economic impact analysis.

C.3. b. Population

By 2025, the development alternatives would result in quite distinct on-site populations. At that time, the Full Build-Out Alternative would support a population much like that of the Proposed Action: the difference between the two emerges as Full Build-Out construction continues until 2052, as shown in Table 4-10. The Resort Residential Alternative would bring the smallest new

population. With this alternative, the existing resort's population would account for two-thirds of the people on-site. Finally, the Conservation Partner Alternative would bring a smaller on-site population than the Proposed Action. However, that alternative concentrates the population in the central section of the property, so the density would be similar in that area.

Table 4-11 applies to the development alternatives the assumptions developed to estimate the regional population for the Proposed Action. Again, the Resort Residential Alternative stands out as generating smaller visitor and employee populations.

The Full Build-Out Alternative regional population would continue to grow with further development until after 2050. While the regional population associated with that alternative after build-out can be calculated, its share of the regional population cannot, since no regional projections extend so far into the future.

Table 4-11: Regional Population Associated with Proposed Action and Development Alternatives, 2025

	Action and Alternatives			
all figures are persons, year 2025	**Proposed Action**	**Full Build-out**	**Resort Residential**	**Conservation Partner**
Resident Population Groups (Islandwide)				
A. TBR Resort Recreation Residents	55	70	43	24
B. TBR Community Housing Residents	638	359	138	144
C. Direct Operations Workforce Households	1,613	1,135	102	1,004
Indirect and Induced Operations				
D. Workforce Households (islandwide)	896	1,196	92	1,058
E. Off-Site Workforce Households	505	584	74	862
Total (assuming unduplicated counts)	3,707	3,344	448	3,090
Potential New Regional Resident Population				
A. 100% of group	55	70	43	24
B. 30% of group	192	108	41	43
C. 20% of group	323	227	20	201
D. 20% of group	179	239	18	212
E. 40% of group	202	234	30	345
Total	951	877	152	824
Share of Projected Regional Pop. Increase	36.7%	33.9%	5.9%	31.8%
Regional New De Facto Population Change				
Regional Resident Population	951	877	152	824
New TBR Visitor and Part-time Population	2,206	2,202	483	1,477
Total	3,157	3,079	635	2,301

NOTES: The values shown are rounded, so totals may differ slightly from the sum of the individual values in the table. On completion (as of 2053), the Full Build-Out Alternative would involve a Potential New Regional Resident Population of 3,000. The Regional De Facto Population Change associated with that alternative would climb to 8,968.
SOURCES: See Tables 4-7, 5-4, socio-economic impact analysis.

C.3. c. Fiscal Effects

Tables 4-12 through 4-14 estimate government revenues due to construction, sales and operations, and property values with development. They show significant revenue flows for both the State of Hawai'i and the City and County of Honolulu with development.

The average cost analysis used to analyze the Proposed Action can be applied for all the development alternatives. Table 4-15 shows the net revenue (i.e., amount of revenues in excess of costs). The ratio of revenues to costs by 2025 is positive for all development alternatives. As of that point, the net revenues for the City and County of Honolulu are largest with the Proposed Action. Over time, the additional development in the Full Build-Out Alternative would make the return from that alternative the highest for both levels of government.

Table 4-12: Government Revenues Associated with Construction, Proposed Action and Development Alternatives

	Cumulative, through Build-out			
All figures are Millions of 2011 $s	**Proposed Action**	**Full Build-out**	**Resort Residential**	**Conservation Partner**
Construction cost (1)	$769.9	$1,369.9	$428.5	$370.2
Construction-related Wages (2)	$473.0	$795.9	$394.4	$225.3
Excise Taxes To State (3)				
On Construction	$31.2	$53.5	$17.4	$15.0
On Spending by Workforce (4)	$12.0	$20.2	$10.0	$5.7
Excise Taxes to City and County				
On Construction	$3.5	$5.9	$1.9	$1.7
On Spending by Workforce (4)	$1.3	$2.2	$1.1	$0.6
Income Taxes				
Corporate (5)	$1.3	$2.2	$0.7	$0.6
Personal (6)	$28.8	$48.5	$24.0	$13.7
Total Revenues from Construction Spending				
State of Hawaii	$73.3	$124.5	$52.1	$35.1
City and County of Honolulu	$4.8	$8.2	$3.0	$2.3

NOTE: The values shown are rounded, so totals may differ slightly from the sum of the individual values in the table.
SOURCES: See Table 4-8, socio-economic impact analysis.

Table 4-13: Government Revenues Associated with Visitor Spending, Proposed Action and Development Alternatives

All figures are Millions of 2011 $s	Proposed Action	Cumulative Full Build-out	Cumulative Resort Residential	Cumulative Conservation Partner
Through 2025				
Conveyance Taxes	$5.1	$2.4	$9.7	$1.9
Taxes on Visitor Accommodations				
Transient Accommodations Tax (Hotel Condominiums and Visitors in Resort Residential Units)	$32.9	$18.1	$23.2	$26.3
Transient Occupancy Tax (Time Shares)	$16.3	$3.7	$0.0	$6.6
Taxes on Cash Flows from Visitor Spending				
Excise Taxes				
On Lodging (Visitors only)	$16.0	$8.8	$11.3	$12.8
On Other Visitor Spending	$17.7	$11.6	$6.0	$21.5
On On- and Off-Site Workers' Spending	$11.7	$7.3	$1.6	$11.9
Excise Tax Total	$45.5	$27.7	$19.0	$46.2
State of Hawai'i Share	*$40.9*	*$25.0*	*$17.1*	*$41.6*
City and County of Honolulu Share	*$4.5*	*$2.8*	*$1.1*	*$4.6*
Income Taxes				
On- and Off-Site Workers	$25.3	$15.9	$3.5	~~$41.8~~ $25.7
State of Hawai'i Total	$120.6	$65.0	$56.1	~~$164.6~~ $102.1
City and County of Honolulu Total	$4.5	$2.8	$1.1	~~$7.5~~ $4.6
Through Full Absorption *Year:*	***2025***	***2053***	***2025***	***2022***
Conveyance Taxes	$5.1	$7.1	$9.7	$1.9
Taxes on Visitor Accommodations				
Transient Accommodations Tax (Hotel Condominiums and Visitors in Resort Residential Units)	$32.9	$193.3	$13.2	$17.3
Transient Occupancy Tax (Time Shares)	$16.3	$41.6	$0.0	$3.9
Taxes on Cash Flows from Visitor Spending				
Excise Taxes				
On Lodging (Visitors only)	$16.0	$94.0	$6.4	$8.4
On Other Visitor Spending	$17.7	$173.0	$3.4	$13.5
On On- and Off-Site Workers' Spending	$11.7	$121.8	$0.9	$7.4
Excise Tax Total	$45.5	$388.8	$10.7	$29.3
State of Hawai'i Share	*$40.9*	*$349.9*	*$9.7*	*$26.4*
City and County of Honolulu Share	*$4.5*	*$38.9*	*$1.1*	*$2.9*
Income Taxes				
On- and Off-Site Workers	$25.3	$263.2	$2.0	$16.1
State of Hawai'i Total	$120.6	$855.1	$34.5	$65.5
City and County of Honolulu Total	$4.5	$38.9	$1.1	$2.9

Notes: All taxes estimated from current rates (excise at 4.5%; TAT at 9.25%; TOT at 7.25% of half of maintenance fee for period of occupancy; conveyance taxes at escalating rates depending on cost and whether buyer is a Hawai`i resident) and historic ratios between earnings or revenues and taxes. Excise tax on workers' income estimated for taxable disposal income. Property sales values and maintenance fees estimated by Belt Collins Hawaii LLC are based on information from TBR and review of comparable projects. The values shown are rounded, so totals may differ slightly from the sum of the individual values in the table.
SOURCES: See Table 4-9, socio-economic impact analysis.

Table 4-14: Increased Property Tax Revenues for the City and County of Honolulu, Proposed Action and Development Alternatives

All $ figures are Millions of 2011 $s	Proposed Action	Cumulative Full Build-out	Cumulative Resort Residential	Cumulative Conservation Partner
Through 2025				
Land Redeveloped (acres)				
Cumulative	221	74	217	123
Value of Redevelopment (Mill $s)				
Residential Construction	$441.0	$146.8	$304.1	$115.1
Residential Land	$586.8	$136.7	$918.7	$281.5
Hotel Construction	$175.9	207.2		$162.8
Hotel/Resort Land	$202.7	$125.7	$0.0	$198.7
Cumulative Property Taxes				
Residential	$26.0	$7.6	$31.3	$12.7
Hotel, Resort	$24.3	$20.3	$0.0	$35.4
Total Collections	$50.3	$27.9	$31.3	$48.1
Through Full Absorption *Year:*	***2025***	***2053***	***2025***	***2023***
Land Redeveloped (acres)				
Cumulative	221	217	217	123
Value of Redevelopment (Mill $s)				
Residential Construction	$441.0	$291.5	$304.1	$115.1
Residential Land	$586.8	$291.0	$918.7	$281.5
Hotel Construction	$175.9	$863.3		162.75
Hotel/Resort Land	$202.7	$547.5	$0.0	$198.7
Cumulative Property Taxes				
Residential	$26.0	$51.4	$31.3	$8.5
Hotel, Resort	$24.3	$359.9	$0.0	$22.0
Total Collections	$50.3	$411.3	$31.3	$30.5

NOTES: Land development totals take into account new hotel and residential parcels. Commercial development, changes from golf course use to open space, and increased commercial land values are not considered. The values shown are rounded, so totals may differ slightly from the sum of the individual values in the table.
SOURCES: See Table 4-10, socio-economic impact analysis.

Table 4-15: Revenue-Cost Summary, Proposed Action and Development Alternatives, through 2025

All $ figures are Millions of 2011 $s	Cumulative Proposed Action	Full Build-out	Resort Residential	Conservation Partner
Through 2025				
State of Hawai'i				
Revenues (Mill. $s)	$193.9	$108.3	$108.2	~~$199.6~~ $137.2
Average cost, Visitors $2,171				
Cumulative Census, Visitor-years at Resort	12,729	13,517	3,989	6,664
Visitor-Related Costs (Mill. $s)	$27.6	$29.3	$8.7	$14.5
Average cost, Residents $6,830				
Full-time Resort Residents at Resort	416	557	372	210
Resident-Related Costs (Mill. $s)	$2.8	$3.8	$2.5	$1.4
Total Costs	$30.5	$33.1	$11.2	$15.9
Net Revenues > Costs	$163.4	$75.1	$97.0	~~$183.7~~ $121.3
Revenue/Cost Ratio	6.4	3.3	9.7	~~12.6~~ 8.6
City and County of Honolulu				
Revenues (Mill. $s)	$59.7	~~$69.6~~ $33.5	$35.4	~~$35.7~~ $37.4
Average cost, Visitors $1,060				
Cumulative Census, Visitor-years at Resort	12,729	13,517	9,352	6,664
Visitor-Related Costs (Mill. $s)	$13.5	$14.3	$9.9	$7.1
Average cost, Residents $1,485				
Full-time Resort Residents at Resort	416	557	372	210
Resident-Related Costs (Mill. $s)	$0.6	$0.8	$0.6	$0.3
Total Costs	$14.1	$15.2	$10.5	$7.4
Net Revenues > Costs	$45.6	~~$54.4~~ $18.3	$24.9	~~$28.3~~ $30.0
Revenue/Cost Ratio	4.2	~~4.6~~ 2.2	3.4	~~4.8~~ 5.1

NOTE: See Tables 4-12 and 4-13, socio-economic impact analysis, for average cost analyses. Revenue calculations bring together information from Tables 5-7 through 5-9, socio-economic impact analysis. The values shown are rounded, so totals may differ slightly from the sum of the individual values in the table.

C.3. d. Housing

Housing impacts differ among the alternatives because they involve fewer Community Housing units than the Proposed Action, and because the alternatives vary in the number of workers (and hence workers' households) they support in the region. Both the Proposed Action and the Resort Residential Alternative involve a larger increase in housing supply than in demand. The Full Build-Out Alternative might generate more demand than housing for residents. The Conservation Partner Alternative would clearly involve more demand for resident housing than the supply of Community Housing provided.

When construction of the Full Build-Out Alternative is complete around 2053, demand for housing from operations-related workforce households is estimated as 234 to 469 additional units, resulting in a net excess of demand over the supply provided by the resort expansion of 144 to 379 housing units in the KNS region.

C.3. e. Public Safety

Following the ratios and projections used in the socio-economic impact analysis, new public safety services demand associated with the Full Build-Out Alternative could come to about 4.8 police patrol positions and 3.3 fire control positions by 2025; the total public service demand would climb to 14.0 police positions and 9.6 fire positions at completion.

The eventual new population with the Full Build-Out might well justify acquisition of new equipment such as an additional fire truck. It might justify construction of additional space for public safety operations, if perhaps not a new facility.

The Proposed Action and the other development alternatives could justify modest increases in public safety personnel and equipment, but not new facility construction. The Resort Residential Alternative could, based on current staffing ratios, justify 1.0 additional police patrol positions and 0.7 fire control positions. The Conservation Partner Alternative could justify an additional 3.6 police positions and 2.5 fire positions.

The cost of new fire control and police services has already been estimated through the average cost analysis (in Table 4-14 above).

As noted for the Proposed Action, redevelopment of the resort would bring increased patrols by resort security. New roadways, park facilities and landscaping would remove large areas of brush from the SEIS Lands. New construction would be to current fire codes, reducing the risk of fire and increasing access to the entire resort. All of these factors would tend to reduce the effects of development on public safety services.

C.3. f. Education

The high estimate of potential new school enrollment associated with the other development alternatives is lower than with the Proposed Action, because the Proposed Action includes a larger commitment to Community Housing. Table 3-16 shows that the development alternatives would generate less demand for spaces in the public schools than the Proposed Action as of 2025.

For the Full Build-Out Alternative, construction and increases in operations jobs would continue until about 2053. By that time, total potential regional project-related new school enrollment would be in the range from 98 to 210 students. That range is much larger than those in Table 4-16. Based on the high estimate, project-related enrollments could reach up to 4.4% of the 2011 total regional DOE enrollment. If that enrollment increase occurred on a regional level within a year or two, the DOE might need to take steps to assure that all students can be housed and taught effectively. However, the increase projected here would occur over forty years. In that time, other changes in standards, practices, and demography would intervene, so it is simply not clear whether the eventual project-related growth with the Full Build-Out Alternative (i.e., the growth anticipated under existing permits) would present a small challenge to the regional DOE schools or a large one.

Table 4-16: Potential New Public School Enrollment, Proposed Action and Development Alternatives, to 2025

	Action and Alternatives			
	Proposed Action	**Full Build-out**	**Resort Residential**	**Conservation Partner**
New Community Housing	160	90	46	48
New Households Formed by Workers				
Low Estimate	83	57	6	57
High Estimate	167	115	11	113
Potential New K-12 Enrollment				
Low Estimate	49	32	7	27
High Estimate	123	77	21	61

NOTES: See Table 4-15, socio-economic impact analysis, for multipliers used to estimate school impacts, and Table 5-11 for housing estimates. See text of the socio-economic impact analysis for discussion of potential enrollment after completion of the Full Build-Out Alternative.

Based on current enrollment levels, demand for new preschool places in the region would be modest by 2025 (See Table 4-17). By full absorption of the Full Build-Out Alternative, regional demand could climb to about 16 to 34 places.

With more resort employment and renewed state support, enrollments could climb. As noted earlier, these calculations are based on current demand for preschools in the KNS region, and could underestimate demand in more prosperous conditions.

C.3. g. Health

The new population associated with the Full Build-Out Alternative by 2025 could create demand for as many as 8.3 acute care beds and 0.9 Emergency Medical staff positions. The demand for medical services and facilities would be smaller with the Resort Residential Alternative or the Conservation Partner Alternative than with the Proposed Action. After construction of the Full Build-Out Alternative finishes by 2053, demand for health care services for the new population at the resort could climb to 24.2 beds and 2.7 Emergency Medical staff positions.

The eventual demand associated with the Full Build-Out would be large in a region with limited health care facilities. It could make expansion of local health care facilities necessary. However, that demand would be realized over a period of many decades, so the impact of that demand cannot be clearly assessed at this time.

C.3. h. Recreation

Under the Full Build-Out Alternative, much the same recreation facilities would exist as with the Proposed Action. Resort visitor demand for golf tee times would be even greater. The potential effects on other courses noted for the Proposed Action would also arise, and would probably be even greater.

Table 4-17: Potential New Preschool Enrollment, Proposed Action and Development Alternatives, to 2025

	Action and Alternatives			
	Proposed Action	**Full Build-out**	**Resort Residential**	**Conservation Partner**
New Community Housing	160	90	46	48
New Households Formed by Workers				
Low Estimate	83	57	6	57
High Estimate	167	115	11	113
Potential New Preschool Enrollment				
Low Estimate	8	5	1	4
High Estimate	20	13	4	10

NOTES: See Table 4-16, socio-economic impact analysis, for multipliers used to estimate preschool impacts, and Table 5-11 for housing estimates. See text of socio-economic impact analysis for discussion of potential enrollment after completion of the Full Build-Out Alternative.

In order to reposition the resort as an exclusive, upscale site for the Resort Residential Alternative or the Conservation Partner Alternative, the golf course operator could limit rounds on one course or both, and could offer preferential access to residents of the new resort homes. Consequently, access by hotel guests, nearby residents and golf tours would be limited and could become more expensive.

Since the Conservation Partner Alternative reduces golf at Turtle Bay to the Palmer Course alone, golf access would be even more limited than under the other alternative scenarios.

The Full Build-Out and Resort Residential Alternatives both include a beach club on Kuilima Bay. This would provide a separate venue for resort residents to enjoy beach and ocean activities. With the beach club serving part-time residents, the higher onsite population of the Full Build-Out Alternative might help reduce resource conflicts among residents, resort residents and visitors.

The Conservation Partner Alternative could increase access to Kawela Bay and would likely increase public knowledge of the area, while minimizing adjacent development. The resort and the Partner agency would need to anticipate a major increase in usage of the bay and its park.

As with the Proposed Action, the new park development under the various Development Alternatives could help visitors to spread out along the North Shore. However, the Full Build-Out Alternative includes a much larger on-site visitor population. In this case, the beneficial effect of park development for the region could be offset by the increased visitor numbers.

C.3. i. Potable Water Use

The following table presents a summary of the water demand generated by the Proposed Action and the Alternatives.

Table 4-18: Comparison of Potable Water Use

Activity	Estimated Water Demand (gpd)	Percent Increase over Existing Use
Existing Resort	345,000	
Proposed Action*	1,201,100	+248%
Full Build-Out Alternative*	1,787,200	+418%
Resort Residential Alternative*	690,500	+100%
Conservation Partner Alternative*	756,400	+119%

*Includes existing uses

Of the three development alternatives, Resort Residential would require the least amount of additional drinkable water (about twice as much as the resort presently uses). The Proposed Action would require approximately four times as much water, while the Full Build-Out Alternative would require five times the amount presently utilized at the resort. The Proposed Action and the Conservation Partner Alternative fall within that range, with the former on the high side and the latter on low side.

C.3. j. Wastewater Demand

Table 4-19 compares wastewater demand among the Proposed Action and alternatives.

Table 4-19: Comparison of Wastewater Generation

Activity	Estimated Wastewater Generation (gpd)	Percent Increase over Existing Use
Existing Resort	301,000	
Proposed Action*	598,406	+98%
Full Build-Out Alternative*	885,766	+194%
Resort Residential Alternative*	395,210	+31%
Conservation Partner Alternative*	405,366	+35%

*Includes existing uses

The Full Build-Out Alternative would nearly double the volume of wastewater compared to the Proposed Action, and triple the volume generated by the existing facilities. Both the Resort Residential Alternative and Conservation Partner Alternative would increase wastewater generation by about a third over existing demand. However, as discussed in Chapter Three, the existing wastewater treatment plant has sufficient capacity for wastewater generated by the Proposed Action ~~or any of the alternatives.~~

C.3. k. Summary

~~Table 4-20 presents a comparative summary of the Proposed Action and the Development Alternatives. All information is projected from 2014 through the year 2025, unless otherwise stated.~~

Table 4-20: Comparative Quantitative Summary of Proposed Action and Development Alternatives

	Proposed Action	Full Build-Out Alternative	Resort Residential Alternative	Conservation Partner Alternative
Total Construction Spending	$770 million	$1,370 million	$429 million	$370 million
Total Direct Construction Workforce	3,263	5,491	1,843	1,554
Total Indirect/Induced Jobs	5,482	9,225	3,096	2,611
On-Site Jobs at Build Out	1,539	4,598	91	963
Total Daytime Population	4,401	10,380	2,223	3,284
Total Statewide Tax Related Construction Revenue	$73 million	$125 million	$52 million	$35 million
Total County Tax Related Construction Revenue	$5 million	$8 million	$3 million	$2 million
Total Statewide Visitor Spending	$121 million	$855 million	$35 million	$66 million
Total County Visitor Spending	$5 million	$39 million	$1 million	$3 million
Total Real Property Tax Revenue	$50 million	$411 million	$31 million	$31 million
New Community Housing	160 units	90 units	46 units	48 units
Total Potable Water Use	~~1.2 mgd~~ 1,201,100 gpd	~~1.78 mgd~~ 1,787,200 gpd	~~691,000 gpd~~ 690,500 gpd	~~756 gpd~~ 756,400 gpd
Total Wastewater Generated	~~598,000 gpd~~ 598,406 gpd	~~886,000 gpd~~ 885,766 gpd	~~395,000 gpd~~ 395.210 gpd	~~405,000 gpd~~ 405,366 gpd

The No Action Alternative would generate no new employment opportunities, no new population impacts, no new tax revenues, no new affordable housing opportunities, and no additional impacts on local or regional infrastructure.

CHAPTER FIVE: Probable Impacts of the Proposed Action

A. Impacts to the Natural Environment 5-1

1. Topography 5-1

a. Impacts 5-1

b. Recommended Mitigation Measures 5-1

2. Soils . . . . . ~~5-1~~ 5-2

a. Impacts . . . . . ~~5-1~~ 5-2

b. Recommended Mitigation Measures 5-2

3. Terrestrial Vegetation 5-2

a. Impacts 5-2

b. Recommended Mitigation Measures 5-2 5-3

4. Terrestrial Fauna and Avifauna 5-3 5-4

a. Impacts 5-3 5-4

b. Recommended Mitigation Measures 5-4 5-5

5. Groundwater Resources 5-4 5-6

a. Impacts 5-4 5-6

b. Recommended Mitigation Measures 5-5 5-7

6. Surface Water and Drainage 5-5 5-7

a. Impacts 5-5 5-7

b. Recommended Mitigation Measures 5-5 5-8

[1] FAZIO AND PALMER GOLF COURSES 5-6 5-8

[2] EAST MAIN DRAIN 5-7 5-9

[3] WEST MAIN DRAIN 5-8 5-10

7. Marine Resources 5-9 5-11

a. Water Quality 5-9 5-11

[1] IMPACTS 5-9 5-11

[2] RECOMMENDED MITIGATION MEASURES 5-10 5-13

b. Marine Biota . . . . . ~~5-13~~ 5-15

[1] IMPACTS ON FISH AND CORAL . . . . . ~~5-13~~ 5-15

[2] RECOMMENDED MITIGATION MEASURES . . . . . ~~5-12~~ 5-16

[3] IMPACTS ON TURTLES . . . . . ~~5-12~~ 5-17

[4] RECOMMENDED MITIGATION MEASURES . . . . . ~~5-14~~ 5-18

[5] IMPACTS ON MONK SEALS . . . . . ~~5-15~~ 5-19

[6] RECOMMENDED MITIGATION MEASURES . . . . . ~~5-15~~ 5-20

8. Views . . . . . ~~5-16~~ 5-22

a. Impacts . . . . . ~~5-16~~ 5-22

b. Recommended Mitigation Measures . . . . . ~~5-17~~ 5-26

9. Air Quality . . . . . ~~5-17~~ 5-26

a. Short Term Impacts . . . . . ~~5-19~~ 5-27

[1] FUGITIVE DUST EMISSIONS . . . . . ~~5-19~~ 5-27

[2] CONSTRUCTION EQUIPMENT EXHAUST EMISSIONS . . . . . ~~5-19~~ 5-27

[3] SLOW-MOVING CONSTRUCTION EQUIPMENT . . . . . ~~5-20~~ 5-27

b. Longer Term Impacts . . . . . ~~5-20~~ 5-28
[1] TRAFFIC: PREDICTED WORST-CASE 1-HOUR CONCENTRATIONS. . . . . ~~5-20~~ 5-28
[2] TRAFFIC: PREDICTED WORST-CASE 8-HOUR CONCENTRATIONS. . . . . ~~5-22~~ 5-30
[3] POWER GENERATION: INDIRECT EMISSIONS. . . . . ~~5-23~~ 5-31
[4] SOLID WASTE DISPOSAL AT H-POWER FACILITY . . . . . ~~5-24~~ 5-32
c. Recommended Mitigation Measures . . . . . ~~5-25~~ 5-33

B. Impacts on the Human Environment . . . . . ~~5-26~~ 5-34
1. Traffic . . . . . ~~5-26~~ 5-34
a. Analysis of Future Conditions . . . . . ~~5-26~~ 5-34
[1] YEAR 2025 AM PEAK HOUR TRAFFIC WITHOUT THE PROPOSED ACTION . . . . . ~~5-29~~ 5-37
[2] YEAR 2025 PM PEAK HOUR TRAFFIC WITHOUT THE PROPOSED ACTION . . . . . ~~5-29~~ 5-37
[3] YEAR 2025 WEEKEND PEAK HOUR TRAFFIC WITHOUT THE PROPOSED ACTION. . . . . ~~5-30~~ 5-38
[4] TRAFFIC FACILITY IMPACTS WITH THE PROPOSED ACTION AND THE ALTERNATIVES . . . . . ~~5-31~~ 5-38
[5] YEAR 2025 AM PEAK HOUR TRAFFIC WITH THE PROPOSED ACTION. . . . . ~~5-31~~ 5-39
[6] YEAR 2025 PM PEAK HOUR TRAFFIC WITH THE PROPOSED ACTION . . . . . ~~5-31~~ 5-39
[7] YEAR 2025 WEEKEND PEAK HOUR TRAFFIC WITH THE PROPOSED ACTION . . . ~~5-32~~ 5-40
[8] YEAR 2025 WITH THE FULL BUILD-OUT ALTERNATIVE . . . . . ~~5-32~~ 5-40
[9] YEAR 2025 WITH THE RESORT RESIDENTIAL ALTERNATIVE . . . . . ~~5-32~~ 5-40
[10] YEAR 2025 WITH THE CONSERVATION PARTNER ALTERNATIVE . . . . . ~~5-32~~ 5-40
[11] ~~YEAR 2025~~ REGIONAL TRAFFIC IMPACTS . . . . . ~~5-32~~ 5-40
b. Recommended Mitigation Measures . . . . . ~~5-33~~ 5-41
2. Acoustic Environment. . . . . ~~5-39~~ 5-47
a. Impacts of Future Traffic Noise . . . . . ~~5-39~~ 5-47
b. Recommended Mitigation Measures . . . . . ~~5-43~~ 5-52
c. Impacts of Future Construction Noise. . . . . ~~5-44~~ 5-53
~~*b.*~~*d. Recommended Mitigation Measures* . . . . . ~~5-45~~ 5-54
3. Archaeological Resources . . . . . ~~5-45~~ 5-54
a. Impacts. . . . . ~~5-45~~ 5-54
b. Recommended Mitigation Measures . . . . . ~~5-45~~ 5-54
[1] ARCHAEOLOGICAL CONSULTATION . . . . . ~~5-46~~ 5-55
[2] SIGNIFICANCE ASSESSMENTS . . . . . ~~5-47~~ 5-56
[3] RECOMMENDED TREATMENTS . . . . . ~~5-48~~ 5-57
4. Cultural Resources . . . . . ~~5-50~~ 5-59
a. Impacts. . . . . ~~5-50~~ 5-64
[1] MARINE RESOURCES . . . . . ~~5-55~~ 5-64
[2] ARCHAEOLOGICAL RESOURCES . . . . . ~~5-59~~ 5-68
[3] IWI KŪPUNA . . . . . ~~5-59~~ 5-68
[4] SPIRITUAL CONNECTIONS TO THE LAND . . . . . ~~5-59~~ 5-68
[5] CONTEMPORARY USES OF LAND AND SEA . . . . . ~~5-59~~ 5-69
b. Recommended Mitigation Measures . . . . . ~~5-59~~ 5-69

5. Agricultural Resources . . . . . ~~5-62~~ 5-71
a. Impacts . . . . . ~~5-62~~ 5-71
b. Recommended Mitigation Measures . . . . . ~~5-62~~ 5-72
6. Socio-Economic Characteristics . . . . . ~~5-62~~ 5-73
a. Population Growth . . . . . ~~5-63~~ 5-73
b. Recommended Mitigation Measures . . . . . ~~5-64~~ 5-73
c. Employment and Wages . . . . . ~~5-64~~ 5-74
[1] CONSTRUCTION . . . . . ~~5-64~~ 5-74
[2] OPERATIONS . . . . . ~~5-65~~ 5-74
d. Recommended Mitigation Measures . . . . . ~~5-68~~ 5-78
e. Fiscal ~~Effects~~ Impacts . . . . . ~~5-68~~ 5-78
[1] REVENUES . . . . . ~~5-69~~ 5-79
[2] GOVERNMENT COSTS AND BENEFITS . . . . . ~~5-69~~ 5-79
f. Recommended Mitigation Measures . . . . . ~~5-70~~ 5-81
g. Housing Impacts . . . . . ~~5-70~~ 5-81
h. Recommended Mitigation Measures . . . . . ~~5-72~~ 5-84
i. Impacts to Education Facilities . . . . . ~~5-72~~ 5-84
j. Recommended Mitigation Measures . . . . . ~~5-74~~ 5-85
k. Impact to Health Care Facilities . . . . . ~~5-74~~ 5-86
l. Recommended Mitigation Measures . . . . . ~~5-75~~ 5-86
m. Impact to Recreational Amenities . . . . . ~~5-72~~ 5-86
[1] GOLF . . . . . ~~5-75~~ 5-87
[2] BEACH AND OCEAN ACTIVITIES . . . . . ~~5-76~~ 5-87
[3] OTHER ON-SITE ELEMENTS . . . . . ~~5-77~~ 5-88
[4] REGIONAL PARKS AND OTHER RECREATION SITES . . . . . ~~5-79~~ 5-90
n. Recommended Mitigation Measures . . . . . ~~5-79~~ 5-90
o. Public Services and Facilities . . . . . ~~5-80~~ 5-91
p. Recommended Mitigation Measures . . . . . ~~5-80~~ 5-91
7. Disaster Preparedness . . . . . ~~5-80~~ 5-92
a. Impacts of Coastal Inundation and Flooding . . . . . ~~5-80~~ 5-92
b. Recommended Mitigation Measures . . . . . ~~5-81~~ 5-92
c. Impact From Tropical Cyclones . . . . . ~~5-81~~ 5-92
d. Recommended Mitigation Measures . . . . . ~~5-81~~ 5-92
e. Impact of Earthquakes . . . . . ~~5-81~~ 5-93
f. Recommended Mitigation Measures . . . . . ~~5-82~~ 5-93
g. Impact of Severe Winds . . . . . ~~5-82~~ 5-93
h. Recommended Mitigation Measures . . . . . ~~5-82~~ 5-93
i. Climate Change . . . . . ~~5-82~~ 5-93
j. Recommended Mitigation Measures . . . . . ~~5-82~~ 5-93
8. Infrastructure . . . . . ~~5-82~~ 5-94
a. Impacts of Wastewater Collection and Treatment . . . . . ~~5-82~~ 5-94
b. Recommended Mitigation Measures . . . . . ~~5-84~~ 5-96
c. Solid Waste Collection and Disposal . . . . . ~~5-85~~ 5-97
d. Recommended Mitigation Measures . . . . . ~~5-87~~ 5-99

e. Water Use and Conservation . . . . . ~~5-87~~ 5-99
f. Recommended Mitigation Measures . . . . . ~~5-90~~ 5-102
g. Utilities . . . . . ~~5-90~~ 5-102
h. Recommended Mitigation Measures . . . . . ~~5-91~~ 5-103
i. Roadway Improvements 5-103

C. Impacts of the Environment on the Proposed Action . . . . . ~~5-91~~ 5-104

D. Secondary and Cumulative Impacts . . . . . ~~5-92~~ 5-104

E. Probable Adverse Environmental Impacts That Cannot Be Avoided and Mitigation Measures Proposed to Minimize Impact . . . . . ~~5-93~~ 5-106
1. Traffic . . . . . ~~5-93~~ 5-106
2. Drainage . . . . . ~~5-93~~ 5-107
3. Dust Generation . . . . . ~~5-93~~ 5-107
4. Construction Noise . . . . . ~~5-94~~ 5-107
5. Water Consumption . . . . . ~~5-94~~ 5-108
6. Non-Renewable Resource Consumption . . . . . ~~5-94~~ 5-108
7. Cultural Resources . . . . . ~~5-93~~ 5-108

F. Any Irreversible and Irretrievable Commitments of Resources . . . . . ~~5-94~~ 5-109

G. The Relationship Between Local Short-Term Uses of Man's Environment and the Maintenance and Enhancement of Long-Term Productivity . . . . . ~~5-95~~ 5-110

LIST OF FIGURES

Figure	Title	Page	
5-1	Proposed ~~View: Kawela~~ Aerial View of Turtle Bay	~~5-16~~	5-22
5-2	Proposed View: Entry	~~5-17~~	5-23
5-3	Proposed View: Kahuku	~~5-18~~	5-24
5-4	Proposed View: Typical Residential	~~5-18~~	5-24
5-5	Receptor Locations Where Future Traffic Noise Levels Were Calculated	~~5-42~~	5-51
5-6	Anticipated Range of Construction Noise Levels vs. Distance	~~5-44~~	5-53
5-7	Available Work Hours Under DOH Permit Procedures for Construction Noise	~~5-46~~	5-55
5-8	Marine and Terrestrial Resources in Turtle Bay Resort - Proposed Action	~~5-51~~	5-60
5-9	Marine and Terrestrial Resources in Turtle Bay Resort - Full Build-Out	~~5-52~~	5-61
5-10	Marine and Terrestrial Resources in Turtle Bay Resort - Resort Residential	~~5-53~~	5-62

5-11	Marine and Terrestrial Resources in Turtle Bay Resort - Existing Footprint	~~5-54~~	5-63

LIST OF TABLES

Table	Title	Page	
5-1	Estimated Worst-Case 1-Hour Carbon Monoxide Concentrations Along Roadways Near Turtle Bay Resort Expansion Project (parts per million)	~~5-21~~	5-29
5-2	Estimated Worst Case 8-Hour Carbon Monoxide Concentrations Along Roadways Near Turtle Bay Resort Expansion Project (parts per million)	~~5-23~~	5-31
5-3	Estimated Annual Electrical Demand for Turtle Bay Resort Expansion Project	~~5-24~~	5-32
5-4	Estimated Indirect Air Pollution Emissions from Turtle Bay Resort Expansion Project Electrical Demand	~~5-24~~	5-32
5-5	Estimated Annual Solid Waste Disposal Demand for Turtle Bay Resort Expansion Project	~~5-25~~	5-33
5-6	Estimated Indirect Air Pollution Emissions from Turtle Bay Resort Expansion Project Solid Waste Disposal	~~5-25~~	5-33
5-7	Summary of 2012 TIAR Volume/Capacity Analysis	~~5-34~~	5-42
5-8	Summary of Shuttle Van/Bus Alternatives	~~5-36~~	5-44
5-9	Calculations of Project and Non-Project Traffic Noise Contributions (CY 2025) (PM Peak Hour LEQ or DNL)	~~5-40~~	5-48
5-10	Predicted Traffic Noise Levels at Various Receptor Locations (4.92 ft. High Receptor, 2025 DNL, with Proposed Action)	~~5-41~~	5-49
5-11	Site Significance Assessments and Recommended Treatments	~~5-49~~	5-58
5-12	Impact Summary for Marine and Terrestrial Resources	~~5-56~~	5-65
5-13	Population at Turtle Bay Resort, with Proposed Action	~~5-63~~	5-72
5-14	Employment and Wages Associated with the Proposed ~~Action~~ Project	~~5-65~~	5-75
5-15	Increased Real Property Revenues with Proposed Action (revised - enlarged for clarity)	~~5-69~~	5-80
5-16	Major Housing Effects Associated with Proposed Action KNS Region	~~5-71~~	5-82

5-17	Potential New Public School Enrollment, Proposed Action, to 2025	~~5-73~~	5-83
5-18	Potential New Preschool Enrollment, Proposed Action, to 2025	~~5-74~~	5-85
5-19	Summary of Projected Wastewater Demand	~~5-83~~	5-94
5-20	New Pump Station Service Areas	~~5-84~~	5-96
5-21	Comparison of Solid Waste ~~Generators~~ Generation – 1985 EIS Estimate and Proposed Action	~~5-87~~	5-99
5-22	Potable Water Demand Criteria	~~5-88~~	5-100
5-23	Potable Water Demand for the Proposed Action	~~5-89~~	5-101

CHAPTER FIVE:

PROBABLE IMPACTS OF THE PROPOSED ACTION

For the following discussion, the term "development alternatives" is used to collectively describe the ~~three~~ four alternatives to the Proposed Action that would result in physical disturbance of the SEIS Lands, i.e. the Full Build-Out, Resort Residential, ~~and~~ Conservation Partner and No Action alternatives.

A. Impacts to the Natural Environment

Following is a discussion of the Proposed Action's anticipated impacts on the SEIS Lands, the near shore area, and the surrounding region to the extent required by law. ~~The Proposed Action constitutes the activities to be undertaken by TBR, its successors, and assignees to implement the Comprehensive Plan as it relates to the SEIS Lands.~~ Specific measures that may be needed to mitigate significant adverse impacts are identified wherever appropriate. Where appropriate, the impacts of the Proposed Action are compared to the impacts associated with the ~~three~~ four alternatives considered in the SEIS.

A. 1. Topography

A.1. a. Impacts

Implementation of the Proposed Action will not result in any significant adverse impact to the existing topography of the SEIS Lands. The proposed development will be situated, at the minimum, from 150 to 300 feet inland of the certified shoreline, well inland of the existing dune system that abuts the shoreline. Inland of the dune system, the land is relatively flat with very little variation in grade. A combination of filling and/or elevating of structures in the flood hazard district will be required for the Proposed Action dwelling structures in accordance with regulatory requirements, as well as for the Full Build-Out alternative and the Resort Residential alternative, if implemented. No filling or elevating of structures in the flood hazard district is anticipated for the Conservation Partner alternative and the No Action alternative.

Increased pedestrian traffic along the coastline may potentially impact the existing dune system by disturbing vegetation that is beneficial to dune stabilization.

Some berm construction may be required for purposes of sound attenuation in very limited locations (see discussion in Section B2 below).

A.1. b. Recommended Mitigation Measures

The alteration to the topography will follow regulatory requirements and the fill materials will be contoured and landscaped to provide the appearance of natural landforms. Mitigation for fill placement is discussed under Soils below.

The provision of a pedestrian pathway paralleling the shoreline along the extent of the resort will help to minimize impacts to the coastal strand and dune system by providing resort guests and visitors a convenient means to traversing the resort coastline. Informational signage will alert pedestrians to sensitive ecosystems. In addition, the provision of new shoreline public access ways and public parks will help to focus coastal recreational uses away from sensitive areas.

A. 2. Soils

A.2. a. Impacts

Clearing, grading, and grubbing activities during construction associated with the Proposed Action or the development alternatives will disturb the soil retention values of the existing vegetation. Soil erosion can occur if graded and grubbed areas are exposed to flooding or strong winds. The movement of heavy construction equipment over exposed areas can also lead to soil erosion in the form of fugitive dust. Soil erosion caused by flooding can negatively impact near shore areas through the introduction of silt, increased turbidity, and soil-borne nutrients.

A.2. b. Recommended Mitigation Measures

To ensure that the navigable waters of the United States, including streams and coastal areas, are not impacted by soil erosion, all project-related construction activities associated with the Proposed Action or the development alternatives will comply with the City and County of Honolulu's rules and regulations for the control of grading, grubbing, stockpiling, soil erosion, and sedimentation, including the Rules Relating to Soil Erosion Standards (April 1999); and the applicable provisions of the State Department of Health's Water Quality Standards (Chapter 11-54, HAR), and Water Pollution Control requirements (Chapter 11-55, HAR). An application for a National Pollutant Discharge Elimination System (NPDES) permit will be submitted to the DOH for review and approval prior to construction. Grading, excavation, and erosion control plans will be prepared and submitted to the City's Department of Planning and Permitting for review and approval. Best Management Practices (BMPs) will be employed, as specified in approved grading, excavation, erosion control, and construction plans. BMPs may include limiting site grading, the phasing of construction activities, use of temporary berms, use of silt fencing and screens, thorough watering of graded areas during non-active construction periods, and the utilization of temporary water sprinkling in active construction zones.

A. 3. Terrestrial Vegetation

A.3. a. Impacts

Some existing vegetation will be removed in targeted development areas identified in the Proposed Action and the three development alternatives. No vegetation would be disturbed under the No Action Alternative. For the Proposed Action and development alternatives, t~~Th~~e overall site coverage of vegetation within the SEIS Lands will be reduced proportionate to the extent of new development footprints. This is not considered to be a significant adverse impact because the proposed development areas identified in the Proposed Action do not impact sensitive plant species, account for less than 35% of the total land area *makai* of Kamehameha Highway, and are located well inland from the most sensitive plant areas (the coastal strand).

No species of plant listed as threatened or endangered under state or federal statutes was recorded during either the March or September 2011 surveys of the SEIS lands, and none are expected to occur on this already highly disturbed site. Only endemic species or subspecies are likely to be listed as threatened or endangered in the future, and only one endemic species (*'akoko* recorded in the strand environment) was identified in the floral inventory surveys. There are a number of Hawaiian *'akoko* species either listed or considered species of concern (USFWS, 2011), but not *E. degeneri,* the species detected during the surveys. However, *E. degeneri* and *'ohelo kai* (Lycium *sandwicense)* are uncommon species on O'ahu due to limitations of this type of habitat (these species only occur in strand environments).

From a resources conservation perspective, both the Strand vegetation and Punaho'olapa Marsh are deserving of special attention with a goal towards preservation. Other wetlands and inland aquatic environments on the SEIS Lands are either well maintained ponds with wetland plants or otherwise protected as likely jurisdictional waters under the federal Clean Water Act; but in all cases, are partly or wholly integrated into the golf course landscapes on the site. Punaho'olapa Marsh is very well protected physically by moats that surround most of the former marshland. Expansion of the moat system is presently being contemplated by TBR to complete the ring around the marsh. Although not part of the present survey, the marsh appears to have sufficient hydrology but is overgrown with vegetation, much of it non-native and actually or potentially invasive. The majority of open water existing today in this marsh is the bordering moat system, providing habitats of value to water fowl. Thus, the resource value of the marsh, while not threatened, is certainly well below what it could be.

The native strand vegetation is present but poorly represented along most of the SEIS Lands coastline. However, from Kahuku Point eastward (see Photo 2 in Chapter Two), this community is well developed, forming a broad zone in from the beach. This community is heavily invaded by non-native species further inland across the dune complex. The greatest threat to this community appears to be from off-road vehicular (ORV) traffic entering without TBR's permission from the east side of the SEIS Lands. The numerous ORV trails across the beach and dunes cause destruction of the native vegetation, with resulting erosion (sand movement) and enhancement of the process of invasion by non-native weeds. Fortunately, strand plants are adapted to disturbances resulting from storm waves and moving sand, and tend to recover from man-made disturbances. However, there is a limit to such resilience and prevention of unwelcomed traffic on these dunes under the control of TBR should be made a priority. Considering just the native plant resources natural and extant on SEIS Lands, the plants of the strand (active dunes) in the northeast corner are most deserving of serious protection, development of educational awareness, and consideration of restoration and management efforts.

A.3. b. Recommended Mitigation Measures

Areas not impacted by new building footprints, roadways, sidewalks or parking areas, will be landscaped to minimize soil erosion. Future developments on the SEIS lands will continue utilizing appropriate native species in landscaping. As recommended in the consulting biologist's report (Appendix D), thinning of ironwood trees where these are invasive to either wetland or

strand plant communities will be implemented as a potentially valuable conservation activity. Efforts will continue or be increased to limit access (but particularly by All-Terrain and other mechanical vehicles) to coastal strand areas where the plant community is predominantly native.

The unavoidable loss of existing vegetation in development areas is offset by the benefits resulting from the increased productivity of the land. These benefits include new employment opportunities, recreational opportunities, and affordable housing opportunities. Informational signage will be provided along the resort's coastal pedestrian path, at public shoreline access paths, and at new parks to inform pedestrians about the sensitive vegetation in the coastal strand areas. The resort's educational program (described in Section 9 of Appendix A) will also help inform resort visitors and guests about the sensitive natural resources at the resort, including but not limited to Punahoʻolapa Marsh and the strand vegetation.

A. 4. Terrestrial Fauna and Avifauna

A.4. a. Impacts

Some terrestrial fauna existing on site will be temporarily displaced by construction activity associated with the Proposed Action or the development alternatives in areas that abut habitat. However, as the project area's terrestrial fauna consists entirely of domestic and invasive species, the impact is not considered to be significant and no mitigation measures are proposed.

Potential impacts in construction areas that abut wetland habitat may include effects to listed water bird species that have been and may be further attracted to the wetland features. These run the gamut from temporary disturbance of individual birds that may be attracted to the area as potential modifications of the ditch around Punahoʻolapa Marsh are constructed, to direct physical harm of individual birds. The use of certain herbicides, insecticides and fertilizers used in landscape and golf course maintenance can also pose threats to water birds, as can the unintentional migration of petroleum, oils, lubricants, cleaning agents and the like into water features. Golf course operations have the potential to result in physical harm to listed water bird species that may use resources on the active golf course. However, recent surveys in March and September of 2011 did not document any direct adverse impacts of the golf course operations to water bird species. As golf is an ongoing activity on the site, and the Proposed Action contemplates a reduction in golf operations, it is unlikely that any expansion of the Resort facilities will result in any increased threats to water birds by the golf operations.

Following build out, and operation of the proposed improvements to the Resort, nesting water birds could potentially be disturbed by human activity causing abandonment of the nest, broken eggs, trampled chicks, and increased predation of eggs and chicks when adults potentially flee human disturbance and leave their nests and young unguarded. An operating resort will by its very nature attract certain human commensal species such as cats and rats, which also pose threats to these avian species, especially to young birds and eggs. As the site is already operated as a resort it is unlikely that the proposed expansion of the facilities will attract any predators that are not already using resources on the property.

The principal potential impact that further modification of this site poses to protected seabirds is the increased threat that birds will be downed after becoming disoriented by lights associated with the project during the nesting season. The two main areas that outdoor lighting could pose a threat to these nocturnally flying seabirds is if, 1) during construction, if it is deemed expedient, or necessary to conduct nighttime construction activities, 2) following build-out, the potential use of streetlights or other exterior lighting during the seabird nesting season.

Although no bats have been identified on the SEIS Lands, the principal potential impact that development generally poses to bats is during the clearing and grubbing phases of construction as vegetation is removed. The removal of vegetation within a project site may temporarily displace individual bats if present, which may use the vegetation as a roosting location. As bats use multiple roosts within their home territories, the potential disturbance resulting from the removal of the vegetation is likely to be minimal. During the pupping season, females carrying their pups may be less able to rapidly vacate a roost site as the vegetation is cleared. Additionally, adult female bats sometimes leave their pups in the roost tree while they forage. Very small pups may be unable to flee a tree that is being felled. But, as stated above, because no bats are anticipated to be present, construction activities will not result in impacts to this species.

Implementing the No Action Alternative would not necessarily result in less impact to avian species than the Proposed Action or development alternatives. The cumulative impacts of the Proposed Action would result in improvements to the regional drainage system including water circulation at Punahoʻolapa Marsh, which would benefit the marsh habitat. Under the No Action Alternative, these improvements would not occur. In addition, expansion of the resort will result in active management of the entire property, including the provision of security and educational signage. Under the No Action Alternative, presently undeveloped areas would be left unmanaged and subject to predation by feral animals and disturbance by trespassers.

A.4. b. Recommended Mitigation Measures

If nighttime construction activity or equipment maintenance is proposed during the construction phases of the project, all associated lights will be shielded, and when large flood/work lights are used, they will be placed on poles that are high enough to allow the lights to be pointed directly at the ground. Streetlights or exterior facility lighting installed in conjunction with the project will be shielded to reduce the potential for interactions of nocturnally flying seabirds with external lights and man-made structures. Night sky protection is further addressed in Appendix A.

Although the use of pesticides and fertilizers associated with golf course operations constitute a potential adverse impact, in practice the operation of the Fazio and Palmer Golf Courses over the past 20 or more years has not resulted in any known adverse impacts to water birds. To ensure that no adverse impacts occur in the future, the golf courses will continue to be managed in a manner that minimizes the potential for accidental release of chemicals and/or petrochemicals into the environment.

The planned restoration of Punahoʻolapa Marsh will provide an educational and outreach opportunity to improve understanding of the marsh's sensitive environment for Resort guests, visitors, employees, and the surrounding community. An information and education program focused on the history of the marsh and the native flora and fauna will be implemented.

To minimize potential adverse impacts to the various species of wildlife that inhabit the SEIS Lands, TBR will restrict the free movements of pets (i.e., dogs off leash) within the SEIS Lands. Furthermore, educational signs will be used to inform path users of leash laws and the presence of sensitive species. Finally, TBR will use sturdy animal-proof garbage containers to reduce the attraction of the area to non-native and feral species, such as house mice, rats, and feral cats.

As no bats are present on the SEIS Lands, no measures to mitigate impacts are warranted. However, to avoid any adverse impacts to any endangered Hawaiian hoary bats, the US Fish and Wildlife Service recommends that woody plants greater than I5 feet (4.6 meters) tall not be removed or trimmed during the bat birthing and pup rearing season (June 1 through September 15). To the extent practicable, TBR will attempt to define construction timing to avoid disturbance to the Hawaiian hoary bats in areas where they could potentially occur during pupping and pup rearing season.

A. 5. Groundwater Resources

A.5. a. Impacts

Implementation of the Proposed Action or a development alternative will impact groundwater resources by increasing the amount of private resort residential lots and common areas that will be landscaped, and therefore irrigated by either home owners or resort staff respectively. This will result in a potential increase in the volume of fertilizers and/or pesticides, and these chemicals could make their way to the ground water. However, i~~I~~t is not anticipated that the Proposed Action will result in a significant adverse impact upon groundwater resources. Continuous near shore water quality monitoring at the Resort since the ~~mid-1980s~~ early 1990s demonstrates that the practice of using non-potable water combined with treated effluent from the Resort's wastewater treatment plant to irrigate the Palmer Golf Course has not resulted in identifiable impacts to near shore water quality. The use of treated effluent and non-potable water for irrigation is beneficial to the environment because it reduces demand for the use of potable water for irrigation purposes. Nutrients in the effluent also reduce the need for fertilizers on the golf course.

Irrigation of a typical golf course requires approximately a million gallons per day. As discussed in Chapter Two, water from a non-potable well located within the Resort property combined with treated effluent from the WWTP are the sources for irrigation water used on the Palmer Golf Course. Non-potable well #4158-14 provides an average estimated volume of 200,000 gallons per day over the course of a year, with higher volumes during the summer and much lower volumes during the winter. Other areas of the Resort are irrigated with potable water.

Under the Proposed Action, although the total number of golf holes will be reduced from 36 to 27, the irrigation requirements of those 27 holes will still exceed the volume of treated effluent that will be available from the WWTP.

Continuous near shore water quality monitoring also demonstrates that there have been no significant adverse impacts as the result of the use of pesticides and fertilizers on the Resort property.

Implementation of the No Action Alternative would not impact groundwater resources because no new development would occur.

A.5. b. Recommended Mitigation Measures

To enable treated effluent to be used for the irrigation of the Fazio Golf Course or common areas near dwelling units, TBR will recommend to the owners of the WWTP that improvements be implemented at the plant to improve the quality of the treated effluent used for irrigation from R2 to R1 quality.

To ensure that the water quality in near shore areas is not undermined by pesticide or fertilizer use, Resort personnel will continue to store, handle and use these chemicals in accordance with established Best Management Practices. As the Resort Residential Units are anticipated to be multi-unit complexes and have few owner-occupied units for long periods, it is expected that the landscaped areas will likely be maintained by resort staff who will employ Best Management Practices in their grounds-keeping duties to prevent excessive pesticide and/or fertilizer use.

A. 6. Surface Water and Drainage

A.6. a. Impacts

The existing golf courses were designed to be two independent natural bio-swale drainage infrastructure components accommodating storm runoff (the East Main Drain and West Main Drain drainage subsystems of the Resort). The West Main Drain system includes a smaller drainage channel called the Kuilima Drain, which is considered to be part of the larger West Main Drain system in the following discussion. The golf course fairways are shaped to provide channelized routing through the golf course landscaping leading runoff to the golf course water features, the East and West Main Drains, or the coast. Runoff to the golf course water features provides supplemental make-up water to sustain the created wetlands, with the wetlands being one of the Resort's BMP's to address long term near shore water quality concerns relative to ocean discharges. The golf course water features and channelized routing through the landscape serve as natural bio-swale BMP's prior to ocean discharge as sheet flow or through the East and West Main Drains.

A hydrologic analysis was performed to assess the change in runoff quantities from the Proposed Action's anticipated discharge during a major rain event to each golf course or subsystem, pursuant to a previously approved Drainage Master Plan, a copy of which

is available online at www.turtlebayseis.com. The Proposed Action and the development alternatives will continue to rely upon the golf courses as the principal means of addressing drainage and storm water runoff. Implementation of the Proposed Action is considered to constitute a beneficial impact upon the regional drainage system because it will result in substantial improvements to reduce flooding. The No Action Alternative would have less beneficial impacts because no additional improvements to the East Main Drain or West Main Drain would be implemented.

A.6. b. Recommended Mitigation Measures

The East Main Drain, West Main Drain and the Fazio and Palmer Golf Courses serve as the primary drainage facilities to handle the Resort's storm runoff as proposed in the Drainage Master Plan approved by the City.

A.6.b. [1] FAZIO AND PALMER GOLF GOURSES

Planned upgrades to the Fazio Golf Course include the re-contouring of the fairways to widen the West Main Drain and improve the flow of runoff through the existing breaks in the sand dunes and sheet flow areas, while still maintaining the storm water detention and water quality features of the course. Construction of the proposed Resort Residential (RR-3) adjacent to the East Main Drain may include re-contouring of the development to improve the flow of runoff through the existing breaks in the sand dunes and sheet flow areas.

Besides the Fazio Golf Course, portions of the Palmer Golf Course are also being evaluated for further re-design to enhance the drainage system. The proposed Community Housing (CH-2) development could benefit from the re-contouring of the golf course between Kamehameha Highway and the lagoons in the Palmer Golf Course to reduce the Hoʻolapa Stream Floodway. Grassed lined channels can be incorporated into the re-design because the Resort will be responsible for the maintenance of the channel. It is possible for the East and West Main Drains and the Punahoʻolapa Ditch to meander through the golf course, flowing through irregular channels with golf course features, slowing and further filtering runoff on its way towards the ocean.

As an enhancement to the regional drainage system, the east portion of the Fazio Golf Course and the entire Palmer Golf Course can accommodate the increase in runoff from the proposed developments through retention. The increase in runoff is calculated as the difference between the pre-development and post development runoff for the 24-hour 100-year storm. The increased runoff volume from the proposed developments on the east side of Kuilima Drive, which includes the Golf Course Clubhouse, the new Hotel Site (H-2, H2a) and Resort Residential and Community Housing sites (RR-3 to 6 and CH-1 and CH-2), served by the East Main Drain is approximately 79.4 ac-ft. The Fazio Golf Course and Palmer Golf Course provide a total of 179.29 ac-ft of runoff volume east of Kuilima Drive at an elevation of 6 feet msl. Punahoʻolapa Marsh provides 96.8 ac-ft of runoff volume at elevation 6 feet msl, for a total of 276.09 ac-ft. of runoff volume that receives runoff from offsite properties that flow across Kamehameha Highway and the Palmer Golf Course into the marsh.

As an enhancement to the regional drainage system, the west portion of the Fazio Golf Course can accommodate the increase in runoff through retention from the proposed developments on the west side of Kuilima Drive, Resort Residential sites (RR-1 and RR-2a, 2b), Hotel Site (H-1a, 1b) and the Farmer's Market (east and west) and Gathering Place. The increased runoff volume west of Kuilima Drive, which includes Kawela Stream, West Main Drain, and West Kuilima Drain, is approximately 39.8 ac-ft. of runoff volume. The existing Fazio Golf Course provides 69.09 ac-ft west of runoff volume of Kuilima Drive at an elevation of 8 feet above mean sea level.

The City is updating its Storm Drainage Standards as required by its NPDES Permit. As specified by the City,

> ***"…Within six (6) months of the effective date of this permit, the Permittee shall submit to State of Hawaii Department of Health (DOH) for review and acceptance, a plan for requiring LID in the standards to the Maximum Extent Practicable (MEP). LID refers to storm water management practices which seek to mimic natural processes and protect water quality via infiltration, evapotranspiration or reuse of storm water runoff at the site where it was generated. The standards shall be applicable to all construction projects disturbing at least one (1) acre and smaller projects (e.g., retail gas stations, restaurants, auto repair shops, parking lots) that have the potential to discharge pollutants to the City Municipal Separate Storm Sewer System (MS4). The plan for the implementation of LID provisions in the City's standards shall include at a minimum the following:***
>
> - ***Criteria for requiring implementation.***
> - ***Investigation into the development of quantitative criteria for a specific design storm to be managed by LID techniques. Examples of design storm requirements include: 24-hour, 85% storm through infiltration; on-site management of the first inch of rainfall within a 24-hour period; retention of the 100-year, 2-hour storm; or on-site management of the 24-hour, 95% storm." Feasibility criteria for circumstances in which a waiver could be granted for the LID requirements.***
> - ***When a LID waiver is granted, alternatives such as offsite mitigation and/or non-LID treatment control BMPs could be required."***

For the Proposed Action the individual developments will be required to retain the Water Quality Design Storm, the 1-inch storm, within the Fazio or Palmer Golf Courses or on-site, for disposal by infiltration, evapotranspiration or harvesting/reuse.

Drain lines from developments within the Resort will discharge into the golf courses for flood and filter control and or be directed by sheet flow to the ocean with BMPs.

A.6.b. [2] EAST MAIN DRAIN

Upon completion of the Proposed Action, flood control will be provided by the East Main Drain that conveys off-site drainage from ʻŌʻio Stream and on-site drainage east of Kuilima

Drive to the ocean. The design flow of the proposed East Main Drain Channel is 4,404 cfs up to the confluence with the Punahoʻolapa ditch, where the flow increases to 6,191 cfs from the confluence to the ocean. The existing grass channel and culverts are proposed to be replaced by a new grassed lined channel with a bottom width of 140 feet with 3:1 side slopes up to the confluence with the Punahoʻolapa Marsh ditch, when the bottom width increases to 160 feet wide. The Punahoʻolapa Marsh Ditch will be replaced with a new grassed lined channel with a bottom width of 120 feet with 2:1 side slopes. The East Main Drain and Punahoʻolapa Ditch will be slightly bermed to separate the faster moving offsite flows in the channel and maintain low velocities in the golf course which is also used as water quality feature. At the coastline, the channel will be lined with rip-rap and extend to the ocean up to a depth of 3 feet below mean sea level, replacing the four existing 72 inch culverts, which will be removed.

The DOT is presently designing a highway safety project that includes a new bridge on ʻŌʻio Stream that will discharge into the East Main Drain. The proposed bridge will have a 35-foot clear span and 8 foot opening height with provisions for an expansion to 73-foot span (the second span is 38 feet) in the future. The expansion to the 73-foot span will accommodate the previous Plate 6 flow of 5,636 cfs.

Kaihalulu Drive will cross the East Main Drain below the confluence with Punahoʻolapa Ditch. A system of 4 – 32 feet x 10 feet Con-span culverts was analyzed to convey the storm runoff under Kaihalulu Drive. The East Main Drain flows through the Fazio and Palmer Golf Courses which are maintained by the Resort, and there is little possibility of debris being carried to the Kaihalulu Drive crossing.

The proposed new Community Housing Sites (CH-1 and CH-2), new Golf Course Clubhouse, and Resort Residential Sites (RR-3a, 3b, RR-4a, 4b, RR-5 and RR-6) will drain into the existing golf course water features which can provide detention as one of the Resort's BMPs to address long-term water quality concerns relative to ocean discharges. Runoff from Resort Residential Site (RR-3) and Hotel Site (H-2, 2a) may be directed by sheet flow to the ocean with BMPs.

A.6.b. [3] WEST MAIN DRAIN

The original drainage master plan proposed to restore the original Kawela Stream alignment back to the West Main Drain. The existing grassed lined West Main Drain channel will be enhanced by a new grassed lined channel with a 120 foot bottom width and 3:1 side slopes which expands to a 140 foot bottom width to accommodate the Kaihalulu Drive Crossing. The West Main Drain will be slightly bermed to separate the faster moving offsite flows in the channel and maintain low velocities in the golf course, and will also function as a water quality feature. At the coastline, the channel will be lined with rip-rap and extend to the ocean up to a depth of 3 feet below mean sea level, replacing the existing 48-inch drains near the coastline, which will be removed. There will be a smaller channel with a 50 foot bottom width and 3:1 side slopes running from the proposed Kawela Stream Diversion to the west side of Kuilima Drive to capture sheet flow off of Kamehameha Highway.

Kaihalulu Drive crosses the West Main Drain between Resort Residential Site (RR-2, 2a) and the Farmer's Market (west) and Farmer's Market (east) and Park (P-5). A system of 5 – 24 feet x 5 feet Con-span culverts was analyzed. A system of arch pipes can be used to convey the storm runoff under Kaihalulu Drive as long as the arch pipes have similar hydraulics. The West Main Drain flows through the Fazio Golf Course which is well maintained by the Resort, and there is little possibility of debris being carried to the Kaihalulu Drive crossing.

~~The Resort~~ TBR will work with the DOT on the planning and design of a new bridge to coincide with any drainage improvements in the area. In the interim, the Fazio Golf Course is graded to receive the sheet flow off of Kamehameha Highway and convey this runoff to the West Main Drain. The DOT is presently planning to improve the existing Kawela Stream culvert without the diversion.

The proposed Resort Residential Sites (RR-1 and RR-2a, 2b) will drain into the West Main Drain. The Farmer's Market (west), Farmer's Market (east), Gathering Place and Hotel Site (H-1) will drain into existing golf course water features which provide detention as one of the Resort's BMPs to address long-term water quality concerns relative to ocean discharges. Runoff from Resort Residential Sites (RR-1 and RR-2, 2a), Gathering Place and Hotel Site (H-1) may be directed by sheet flow to the ocean with BMPs.

Long term actions to mitigate the Proposed Action's impacts on water resources are presented in Appendix A.

A. 7. Marine Resources

A.7. a. Water Quality

A.7.a. [1] IMPACTS

Potential near shore impacts to the marine ecosystem from any shore-side development anticipated under the Proposed Action or the development alternatives include:

- short-term construction impacts (primarily sediment from runoff or dewatering)
- nutrient enrichment or pollution of near shore waters from
  - use of fertilizers related to agriculture, horticulture, hotel grounds maintenance, or golf course management.
  - use of R2 water (treated wastewater effluent) for golf course irrigation
  - use of commercial herbicide application
- changes in ground water or surface water flow patterns

Water quality along the project shoreline has been monitored since the mid-1980s, and has been found to vary predictably with season, wave height, and the inflow from storm runoff from existing outfalls. The levels of nutrients monitored in the shoreline water samples have not appreciably changed over the data-gathering time period, indicating that the use effluent treated to the R2 level for golf course irrigation is a not a factor in near shore water quality.

During and shortly after runoff events, State water quality standards for turbidity, total nitrogen, and total phosphorus are typically exceeded in the near shore water of each bay. During prolonged periods when there is no outflow, the waters of both Turtle Bay and Kuilima Bay are usually within State water quality standards, but the waters of Kawela Bay typically do not meet these standards.

In Kawela Bay, total nitrogen and total phosphorus levels do not meet state standards. These nutrients likely inflow with the large flux of groundwater and become concentrated due to the high residence time of water in the bay. Turbidity in Kawela Bay usually does not meet State standards, particularly in the eastern portion of the bay. Turbidity is likely the result of both sediment input from Kawela Stream and phytoplankton growth associated with the inflow of nutrient rich ground water. Nitrogen is commonly high in groundwater inflow, but the high concentration of phosphorus is unusual. Potential sources of the high groundwater phosphorus concentration include septic waste systems from homes adjacent to the eastern and western boundaries of the Resort property, fertilizers from up-slope agriculture,and possibly runoff from military activities in *mauka* regions that flow into this drainage system.

Along the Resort shoreline, there are three (3) primary surface outfalls to the near shore waters and several focused points of groundwater input. Balancing the distribution of flow between these outfall points will be key to minimizing adverse impacts to near shore ecosystems. Results from the marine analyses presented in Appendix B of the Marine Impact Report indicate that storm runoff may presently be over-allocated to Kawela Bay, and significantly under allocated to the West Main Drain into Turtle Bay.

The other potential large source of nutrients to groundwater, and thereafter to near shore coastal waters, is typically human sewage. However, the Resort relies upon a wastewater treatment plant with lagoon treatment and effluent recycled as R2-water for irrigation of the golf course. A review of the operation of this plant is beyond the scope of this report as it is not located on the SEIS Lands, nor is it owned by TBR.

Implementation of the Proposed Action will constitute a beneficial impact upon marine water quality because it will result in the improved management of the regional drainage system within the resort and provide further ocean education.

No significant adverse impacts to limu growth in near shore waters are anticipated to result from the restoration of the Kawela Stream alignment. It is not a significant source of ground water flow compared to existing groundwater intrusion in Kawela Bay.

Implementation of the No Action Alternative would have no beneficial impacts because no new drainage improvements would be implemented. In addition, it would likely result in the continued over-siltation of Kawela Bay because the potential re-alignment of Kawela Stream would not occur under this alternative, which prevents the recovery of corals in the bay due to continued sediment pollution. No improvements to the Wastewater Treatment Plant would be implemented, and thus, no improvements to near shore water quality resulting from the conversion from R2 to R1 effluent would be realized.

A.7.a. [2] RECOMMENDED MITIGATION MEASURES

The first stage of avoiding adverse impacts is to recognize where these potential impacts may occur, and to then design to avoid, minimize, or mitigate for unavoidable impacts. The baseline survey of marine water quality serves as both a point of reference to gage any future impacts and as a source of information for project designers to incorporate all possible means to avoid, minimize or mitigate adverse impacts.

Because the site may include sub-surface caves, any dewatering that needs to occur as part of any construction activity should carefully control effluent water and not direct it to unlined dug pits where it will likely find a direct route to the shoreline. As construction of individual projects within the Proposed Action commences, the subsurface geology of a development site will be assessed on a case-by-case basis because of the unpredictable character of the karst geology in the region. Exploratory drilling will likely be employed by the contractor to determine the presence of subterranean voids in the vicinity of proposed building foundations. In instances were voids are identified, the design of the building foundation may need to be altered to ensure that the general character for the void is not adversely impacted.

The application of fertilizes on hotel grounds, at private residences, and in common areas needs to be carefully regulated to ensure that excessive fertilization does not occur that could seep into underground drainage flows.

The application of fertilizers on the Palmer Golf Course needs to continue to be carefully monitored in conjunction with the use of treated effluent for irrigation. If the nutrients from the two sources exceed the needs of the turf, the excess nutrients can make their way into the groundwater and near shore waters. The application of irrigation water needs to be adjusted for rainfall conditions, with the R2 water stored when not needed.

Along the Kuilima shoreline, there are three (3) primary surface outfalls to the near shore waters and several focused points of groundwater input. Balancing the flow distribution between these outfall points will be key to minimizing adverse impacts to near shore ecosystems. Results from the marine analyses conducted for the Proposed Action indicate that storm runoff may presently be over-allocated to Kawela Bay, and significantly under allocated to the West Main Drain in Turtle Bay. Engineering to modify these flows could have a significant positive impact upon the near shore environment. Specifically, restoring the Kawela Stream to its original alignment out-falling to the West Main Drain would have a new, large positive impact on Kawela Bay with minimal adverse impact in Turtle Bay.

Kawela Bay is one of the North Shore's natural treasures. Unfortunately, the offshore reefs that protect Kawela Bay from the forces of the ocean limit water circulation within the bay and inhibit sediment dispersion. For over a century, stream-borne sediments have been accumulating on the floor of the bay. With every heavy rain event, turbidity in Kawela Bay spikes and is slow to dissipate.

Kawela Stream enters the coastal plain *mauka* of the western end of the Resort. As the Kawela Stream emerges from its valley, it makes an abrupt turn to the west and parallels Kamehameha Highway until it is aligned with Kawela Bay where it again turns and enters near the center of the bay. *Makai* of the highway, the stream is intermittent with surface flows reaching the coast only during a few significant storm events each year. Often, especially during the winter, the stream may be flowing at upper elevations but as it approaches the coastal plain the flow percolates to groundwater and into the underground karst cave system.

However, Kahuku Plantation maps from the 1890s depict a different stream route, which suggests that the present day alignment is likely an artifact of plantation stream diversion. This possibility appears to be reinforced by a review of aerial photos. The mouth of Kawela Valley appears to be directly aligned with a large off-shore stream channel through the reef at the western end of Turtle Bay (See Figure 2-1). The project's consulting marine scientist believes this is a pre-historic channel that marks the location of the natural outfall site of Kawela Stream. Apparently, stream channel diversion was a common practice among plantation managers to augment irrigation of sugar cane fields and promote efficient drainage to improve crop growth.

The restoration of Kawela Stream to its historical channel would roughly follow the present West Main Drain. With the removal of the source of much of the sediment load entering Kawela Bay, it is anticipated that near shore water quality will improve significantly. It is also anticipated that with time, sediment on the floor of Kawela Bay will eventually flush out to sea.

The bay is roughly symmetrical with shallow shelves along the east and west edges. The middle of the bay is also relatively shallow. There are channels on both sides of the bay separating the shallow coastal (headland) shelves from the center shelve, but the western channel is much deeper and wider than the eastern channel. It is believed that these physical characteristics, coupled with the observed clockwise current in the eastern portion of the bay, are responsible for trapping Kawela Stream sediments.

The project's consulting marine scientist believes that Kawela Bay may have the most substantiated water quality baseline in the State of Hawai'i. Beginning in 2006 until the present, four water samples have been taken within the bay on a quarterly basis for a total of 80 samples. As discussed in Appendix C, comparison of these samples with data collected from the bay between 1989 and 1994 show no significant differences in water quality over the years. This comparison is particularly interesting because the 1989 sampling began not long after the last of the residents moved away from the eastern side of the bay and the cesspools associated with their homes became unused. If those cesspools were delivering a significant load of nutrients to the bay, one would expect a decrease in nutrient concentrations over time at the east end of the bay once the residents left. But this did not happen. According to the water quality analysis conducted for the SEIS, all nutrient concentrations from the sampling station at the east end of Kawela Bay from 2006 to the present are indistinguishable from the samples taken near this same location two decades ago. There has been no long-term change in the water quality with Kawela Bay. (see Chapter 2 of the SEIS and/or Appendix E for a more detailed discussion of existing water quality)

Water quality sampling indicates that the waters of Kawela Bay do not meet State water quality standards of an open coastline. While a large quantity of nutrients are likely delivered to the bay in groundwater, the majority of the sediments and their associated nutrients enter the bay during infrequent flow events of Kawela Bay. Removal of this source of nutrients and sediments to the bay would generally improve water quality over a period of years.

If restoration of the original alignment is implemented, it would likely focus on activities outside of the SEIS Lands. As the current stream channel upslope of Kamehameha Highway approaches the highway in a southerly direction, it turns to the west in a 90 degree turn, and then parallels the highway approximately 1,500 feet before turning north again, crossing under Kamehameha Highway, and ending at Kawela Bay. The current stream channel, before turning west, is almost directly above the West Main Drain on the SEIS Lands. The excavation of a diversion channel between its 90-degree bend and Kamehameha Highway will enable the intermittent stream flow to be delivered directly to the West Main Drain. A water quality basin may also be included in the project to allow suspended solids in the stream flow to settle out before reaching the coast. These activities would be outside the scope of the SEIS because they would not occur on SEIS Lands.

The Proposed Action includes a Best Management Practices plan that will be effective in restricting the discharge of contaminants to wetlands, streams, or the ocean.

While the operation of the Kuilima WWTP is beyond the scope of the Proposed Action, it is recommended that the plant operators consider implementing upgrades to improve the quality of effluent to R1.

At the new shoreline park in Kawela Bay, special consideration should be given to the public restroom facilities as any groundwater generated by this system will enter the bay at a point with minimal circulation, dilution, or offshore transport. For this reason, the wastewater collection system included in the Proposed Action will be extended to new park comfort stations.

A.7. b. Marine Biota

A.7.b. [1] IMPACTS ON FISH AND CORAL

Improving access and paths to the shoreline pursuant to the Proposed Action or the development alternatives will likely lead to an increase in fishing pressure and an equal increase in illegal or destructive fishing practices~~, but at the same time provides~~. The alternatives that include hotel development would provide improved access for monitoring and policing.

Expansion of Resort facilities typically leads to increased storm water runoff into near shore waters due to an increase in roof areas and paved areas, and increased nutrient loading as the result of additional use of fertilizers on common areas that were formally unmanaged.

The Proposed Action does not include any activities or amenities that are likely to increase off-shore fishing, recreational or commercial activities over the offshore reefs because there are no

boat launching facilities. The main potential threat to coral therefore lies with the possibility of land based activities, such as increased loads of non-point source pollutants emanating from the shoreline. Results of field testing efforts conducted over 20 years have, in fact, indicated a relatively serious impacts to near shore marine resources resulting from a stream diversion that occurred a century ago. Along this windward coastline, with its persistent waves and strong offshore currents both dilution and advection of any pollutants from diffuse land sources becomes rapidly untraceable. It is the very near shore ecosystem that can be at greatest risk and provides the most sensitive markers for long term monitoring.

It is anticipated that withdrawal of the sediment load from Kawela Bay would result in an increase, not decrease, in corals, particularly within the inner bay area. The potential for damage to corals in the near shore areas resulting from human interaction increases proportionate to their increased presence.

No significant decrease in the abundant algae is anticipated because of the strong groundwater intrusion into Kawela Bay, which will not likely be impacted by the Proposed Action.

Implementation of the No Action Alternative would not benefit marine biota because it would result in the coastal area being largely unmonitored when compared to the conditions anticipated under the Proposed Action, which could lead to a continuation or an increase in illegal or destructive fishing practices. It would also result in the continued over siltation of Kawela Bay due to the inappropriate alignment of Kawela Stream, which prevents corals in the bay from recovering from sediment pollution created by the stream. No efforts to implement a Marine Life Conservation District would occur under the No Action Alternative.

A.7.b. [2] RECOMMENDED MITIGATION MEASURES

Pursuant to the Proposed Action, ~~The~~ the creation of Advisory Councils for each *ahupuaʻa* in accordance with the Cultural and Natural Resources Management Plan (see Appendix ~~K~~ L) and *Tomorrow's Ahupuaʻa* (Appendix A) will provide a mechanism for collaborative decision-making to address the long-term preservation of coastal fisheries along the Resort coastline.

The Resort's Unilateral Agreement requires that best efforts be made to promote the creation of a Marine Life Conservation District at Kawela Bay. But to do so will require broad-based input from the community.

In addition to providing educational material about stewardship, it is recommended by the marine consultant that TBR work closely with State agencies charged with fisheries management and with concerned fishermen from this *ahupuaʻa* to investigate the initiation of marine protected area status for the coastline to include closed, rotational, or restricted fishing areas, seasons, or other methods of stewardship. The educational program recommended for implementation will also include information about the sensitivity of corals and the importance of avoiding direct physical contact with them.

The potential for increased ground water nutrient input should be addressed through appropriate vegetation management planning (integrated fertilizer and pest management plans), and may also include extension activities directed at farm operators located up-slope of the development. Development of a nutrient budget and continued tracking of fertilizer applications over time are keystones to good long term management. Controlling sediment influx from winter storms through upslope detention (desilting) basins and appropriate vegetation of bare exposed slopes could greatly reduce the adverse impact of these winter storms to the nearshore ecosystem.

A.7.b. [3] IMPACTS ON TURTLES

Improving access to the shoreline will lead to a greater probability of interactions between people and Hawksbill and/or green sea turtles that are on the Federal endangered species list. Any human interaction that causes an endangered species to alter its behavior may be considered as a "take" by Federal agencies. As defined by the ESA, take means "...to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in any such conduct." Harass is defined by the U.S. Fish and Wildlife Service as an intentional or negligent act or omission which creates the likelihood of injury to a listed species by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering. Harm is defined to include significant habitat modification or degradation that results in death or injury to listed species by impairing behavioral patterns including breeding, feeding, or sheltering." (Source: USFWS letter, Comments to the subject SDEIS, January 16, 2013) While this regulatory position may seem extreme, NOAA recognizes that minimal interaction with turtles and seals are not likely to result in permanent harm (at least not for the seals or turtles) and it is primarily concerned with overt interactions and conflicts with fishing gear.

Fibropapillomatosis (FP), a disease among the ~~Hawai'i~~ Hawaiian green sea turtle population, appears to have peaked about a decade ago (Chaloupka et al. 2009), but persists in the population at varying spatial scales (Van Houtan et al. 2010). According to Van Houtan et al. (2010), FP rates in the North Shore of O'ahu have declined over time, but have not declined at the same rate in Kahuku where the disease continues to persist. Importantly, Van Houtan et al. (2010) suggest a potential relationship exists between the expression of FP and the State's land use, and wastewater management practices, ~~and~~ as well as invasive macroalgae. Hence, care must be applied to ensure that proposed development does not increase nitrogen and other nutrient loads into the marine environment that is known to promote invasive algae grown (Smith et al. 2010).

Combined turtle mortalities related to man's activities (net and rope entanglement, gunshot, boat strike, and plastic ingestion) totals about 19% of all mortalities in the project area as discussed in Chapter Two. Man's activities, particularly involving fishing activities, are a significant factor in turtle mortalities (Nitta and Henderson 1993; Chaloupka et al. 2008).

Surveys of green sea turtles (only in Kawela Bay) showed a 50% increase in population number, and analyses of NOAA turtle stranding data from this shoreline indicate that the turtles are larger

as compared to two decades ago. Similarly the turtle survey data and NOAA database indicate that there has been an increase in the number of Hawaiian monk seals along this shoreline since 1985.

With reasonable precautions and expansion of educational outreach programs, it is unlikely that increased near shore human activity created by the anticipated development would have any measurable adverse impact on adult sea turtles along the coast. Two major causes of human-caused turtle mortality are from boat propeller impact and from gill net entanglement, neither of which activities are likely to increase as a result of the proposed development. Sea turtles are known to habituate to the presence of humans in or on the water and would not likely remove themselves from grazing habitat due to the presence of people in the water in quantities likely to result from the planned development.

As discussed above, no significant decrease in the abundance of algae is anticipated at Kawela Bay as the result of Turtle Bay Mauka Lands, LLC's intentions to restore Kawela Stream to its original alignment, because of the strong groundwater intrusion into the bay, which will not likely be impacted by the Proposed Action.

Some sea turtle nesting has been reported over the years along this shoreline, and as the population continues to recover the importance of this area to nesting turtles may increase. Artificial lighting is known to disorient hatchlings. This includes exterior lighting and interior building lighting that is visible from the exterior. It is likely that increased lighting and beach activity during breeding season evening hours could dissuade turtles from emerging to lay eggs on these beaches. Furthermore, when turtle hatchlings emerge from their nest in the middle of the night, they orient towards the brighter sky above the ocean. Any development that may increase relative ambient lighting contributing to lighting pollution in this area ~~should~~ will therefore adopt a lighting plan that shields direct light away from the beach and uses longer wavelength (yellow) lights that are not attractive to hatchling turtles. However, as reported in Section 2.5 of Appendix E, while basking and resting/sleeping turtles are commonly reported at Kawela Bay, during the past 40 years there has been no formal documentation by the National Marine Fisheries Honolulu office of either the success or failure of turtle nest hatchings at Kawela or Turtle Bay

A.7.b. [4] RECOMMENDED MITIGATION MEASURES

While increases in large marine animals in the region ~~is~~ are beneficial to the species, because the green sea turtles and the Hawksbill turtles are on the Federal Endangered Species List, it is important that visitors and residents treat these species in accordance with Federal guidelines.

To mitigate the impact of greater potential interactions between humans and turtles, a public education program that advises beach goers of their stewardship responsibility towards these creatures is recommended.

To avoid exacerbating the incidence of FP in green sea turtles, the careful management of the use of fertilizers on the Resort's golf courses and open space common areas is recommended to ensure that the Resort does not contribute to excessive nitrogen levels in near shore waters.

Federal wildlife managers have expressed concern that lighting from the expanded Turtle Bay Development may disorient juvenile turtles, and fledgling seabirds. Consideration will be given to a development-wide lighting design that minimizes light impact towards the beaches and ocean. The increased shoreline setbacks included in the Proposed Action may also help to reduce night-lighting impacts. The issue of night sky protection is further addressed in Appendix A.

A.7.b. [5] IMPACTS ON MONK SEALS

Implementation of the Proposed Action and the development alternatives will result in the construction of new buildings in coastal areas; increased ocean recreation activities by resort guests, residents, and the general public; and increased numbers of persons utilizing the beaches along the Turtle Bay coastline. While the construction of new buildings is not anticipated to impact monk seals because of the expanded shoreline setbacks included in the Proposed Action, the increased daily population at the resort and the requirement to provide new shoreline parks will likely result in increased interaction between humans and seals. The increased presence of humans on the beach may discourage expectant females from hauling out on resort beaches and giving birth (pupping).

Around the main Hawaiian Islands, the human activities of greatest concern to NOAA monk seal researchers are the potential for entanglement in fishing gear, impact from boats, or predation by fishermen who may view the seals as direct competitors for fish resources. None of these sources of mortality are likely to increase as a result of the Proposed Action because the majority of anticipated clientele are not likely to engage in these activities. However indirect impacts including increased interactions with fishermen, surfers, kayakers, and other ocean recreational uses can be anticipated as a result of improved access to the public and increases in shoreline population. And at the same time, there will be better access and viewing by stewardship organizations, Resort security, and other interested parties of the coastal areas where interactions occur. There have been known incidences elsewhere of beach users purposefully or unintentionally harassing seals that have hauled out on the shoreline.

While implementation of the No Action Alternative will likely result in less human activity along the Turtle Bay Resort coastline, it will likely result in no increase in the monitoring of hauled out seals by stewardship organizations or resort security. In the presence of an increasing seal population, the potential for human interaction with them increases, even under the No Action Alternative. However, when compared with the No Action Alternative, the Proposed Action offers greater protection to hauled-out seals in the form of resort security monitoring, further public education and more efficient access to the coastal area for volunteers.

Proceeding with implementation of the Proposed Action, despite unavoidable effects upon Hawaiian monk seals, is believed to be reasonable because the increase in the monk seal

population is not unique to the Turtle Bay Resort coastline. The combination of federal policies to relocate seal pups from the Northwestern Hawaiian Islands to the main Hawaiian Islands and to protect them as an endangered species has resulted in an increase in their presence around the island of Oʻahu. Hawaiian monk seals are increasingly seen hauling out on the most populated beaches on Oʻahu, including Waikiki and Kailua Beach, with general indifference to the presence of humans. From a practical point-of-view, resort coastal properties potentially offer superior protection to the species than what would occur on an unmonitored beach because resort properties typically include security presence and facility management that can respond more efficiently and effectively to the presence of a hauled up seal. Resorts also offer immediate opportunities for educating their guests and employees to the importance of protecting the species that is not readily available in the general community.

A.7.b. [6] RECOMMENDED MITIGATION MEASURES

The potential impacts to Hawaiian monk seals resulting from increase human activities along the Resort coastline may be minimized through public and community wide education programs to inform recreational enthusiasts and near shore users of their presence. To that end, the Cultural and Natural Resource Management Plan presented in Appendix ~~K~~ L recommends the creation of an Advisory Council for each of the three *ahupuaʻa* containing portions of the SEIS Lands. The proposed Councils will provide a mechanism for collaborative decision-making regarding the long-term protection of Hawaiian monk seals.

Ocean Education and Conservation at Turtle Bay Resort focuses on an active partnership with the North Shore Ocean Education Coalition (NSOEC). The NSOEC was developed by a group of community members from Koʻolauloa/North Shore, with the support of non-profits, state and federal organizations. Its mission is to expand awareness and educational opportunities for children, their families and other residents, as well as, visitors to Hawaiʻi. NSOE sites include Turtle Bay Resort and the James Campbell National Wildlife Refuge. Other sites will be added.

The NSOEC mission is to increase awareness/knowledge about the ocean, marine life and ecosystems in order to protect, restore, and manage the use of ocean resources and inspire local and global conservation including:

Local Hawaiian traditions remind us of the time-honored Native Hawaiian value of *kuleana* (responsibility) to care for this unique, fragile place and its many resources through strong conservation and protection principles. The need to *malama ka pae ʻaina* (care for the archipelago) continues in honoring the past and in looking to the future.

Teaching children, youth and the community how to *malama* (care for) the ocean as the ancient Hawaiians did may be one of the most important lessons that the NSOEC can teach. To do this, the NSOEC partners with non-profit organizations to protect, and restore the ocean and it's animals and educate children, youth, the local community and visitors about traditional

Native Hawaiian values, practices and traditions that will ensure the sustainability of our ocean, it's animals and the Hawaiian culture.

NSOEC at TBR is coordinated by Dottie Kelly, Chair, and includes the following partnership agencies and community groups:

- Hawaii Department of Education- Kahuku Complex
- Hawaiian Monk Seal Response Team Oʻahu – Leslie MacPherson
    - (ι) Includes a currently defined protocol with TBR security team, residents and guests to notify response team when Monk Seals are seen on property.
    - (ιι) Team members regularly come out and put signs and barriers to protect the seals from unhealthy interaction with humans.
        - Hawaiian Islands Humpback Whale National Marine Sanctuary – Joe Paulin
        - Hui O Hauʻula (Non-Profit Project in Koʻolauloa & Fiscal Agent) – Matt Limtiaco
        - MalamaPupukeawaimea.org – Bob Leinau
        - NOAA Fisheries Service – Pacific Islands Regional Office (PIRO)

    Turtle Bay Resort (TBR) – Office on site – www.turtlebayresort.com

The program includes providing trained staff members or volunteers at either the education desk in the main lobby of the hotel at least once a week during the whale season and from time to time for other education programs throughout the year.

Following is a description of existing NSOEC Center Activities:

- Annual North Shore Ocean Fest held at Turtle Bay Resort in June.
- Annual Welcome Back the Whales event held at Turtle Bay Resort
- Summer Camp for children, youth and parents hosted annually.

In addition, the following activities are planned:

- Educational classes/programs for K -12 students with a special emphasis on students from Koʻolauloa/North Shore of Oʻahu.
- Meeting space, wet labs, offices and exhibit space are needed for collaborators to meet, conduct activities and to store equipment, supplies and materials.
- Cultural teaching of Hawaiian practices to "*malama* the ocean." This includes programs/curriculum/activities on honoring the past (who we were), celebrating the present (who we've become), and envisioning the future (what we want).
- Service Learning programs/ projects will be planned and

implemented to enhance experiential learning.

- Habitats for Ocean animals will be provided/preserved to enhance experiential learning about the ocean, its animals and ecosystem.
- Media Center & Viewing Theatre to enhance visual learning.
- Center activities primarily focus on species that are indigenous to Hawaii including Hawaiian Monk Seals, Turtles, Humpback Whales, and Pacific Dolphins.
- Environmental learning with hands-on activities will be provided.

Resort management presently encourages volunteers to monitor seals and to work with security on cordoning off safe zones for seals that have hauled out on the beach to prevent beach users from intentionally or unintentionally harassing them. This program will be continued. Unlike existing conditions with large areas of unmonitored coastline, implementation of the Proposed Action will make it easier to monitor the coastline. Resort security personal, site management will also be trained with the proper protocols for protecting Hawaiian monk seals and will actively participate in the education of beach users to the extent practicable.

A. 8. Views

A. 8. a. Impacts

Implementation of the Proposed Action and the development alternatives will alter views of the Resort property from Kamehameha Highway and from the coastline.

As evidenced in Figure 5-1, under the Proposed Action, new landscape vegetation will be densest along the Kamehameha Highway corridor to maximum privacy for the low density

Figure 5-1: Proposed ~~View: Kawela~~ Aerial View of Turtle Bay

residential properties. The rooftops of residential structures closest to Kamehameha Highway at Kawela Bay may be visible but it is likely that most of the structures themselves will be screened from view by landscape vegetation. The rooftops of low to medium density hotel structures will not likely be visible from the highway because of their relatively low building height and their distance from the highway. This is best demonstrated by the rending of the anticipated view from the intersection of the new proposed Resort entrance, Kaihalulu Drive, with Kamehameha Highway west of Kuilima Drive (see Figure 5-2). However, with the creation of the new intersection, motorists on Kamehameha Highway will likely be able to briefly glimpse the existing hotel in the distance as they pass by in the west to east direction.

Figure 5-2: Proposed View: Entry

From the shoreline, voluntarily expanded setback areas from 150' to 300' between proposed ~~r~~Resort ~~r~~Residential developments and the coastline will likely be landscaped with turf and a mixture of native plants and ornamental plants, creating much more open views of the Resort property than presently exist. However, the presence of the sand berms along the shoreline and the slope of the beach (depending on the time of year) will likely limit interior views from the beach area to some degree.

Figure 5-3 depicts views of the SEIS Lands on the eastern side of the Resort property. The proposed hotel development site, H-2, will be the most visually prominent site in this region. However, its relatively low profile and distance from the shoreline will result in visual impacts considerably less than those of the existing Turtle Bay Hotel. Views from the remainder of the shoreline will be similar to those along the western side of the Resort. Figure 5-4 presents a rendering of a typical view of proposed ~~r~~Resort ~~r~~Residential development from the coastline.

Implementation of the No Action Alternative will result in no impacts to existing coastal views.

Figure 5-3: Proposed View: Kahuku

Figure 5-4: Proposed View: Typical Residential

The Koʻolau Loa Sustainable Communities Plan Open Space Map identifies lateral views from Kahuku Point and Kuilima Point to the east and west as important panoramic views of the coastline of Turtle Bay and Kuilima Bay. The 150-foot shoreline setbacks included in the Proposed Action will contribute to the preservation of these existing panoramic views. The existing views will be impacted to the extent that the thinning of coastal vegetation to remove some invasive ironwood trees and to encourage more robust native understory will expand the panorama to include some views of inland resort areas. New buildings including hotels and resort residential developments will be visible, but they will not detract from the panoramic coastal views identified in the Koʻolauloa SCP due to the setbacks and lowering of height limits from Kahuku Point to near the east side of the existing hotel from 90ft to 50ft.

The 1987 Coastal Views Study prepared for the City and County of Honolulu by Michael Chu and Robert Jones identifies two viewsheds relevant to Turtle Bay Resort: the Kawela Bay Viewshed and the Kuilima Viewshed.

According to the report,

> "The Kawela Bay Viewshed consist [sic] of a relatively small crescent shaped bay at the northern end of the Koolauloa district. The beach frontage is fully developed with residential lots and thick roadside vegetation prevents any views into the bay from Kamehameha Highway. DP land use maps indicate portions of the viewshed being developed for resort uses. This development may begin to open up public views of the bay which is currently limited to the pedestrian at the shoreline." (Coastal Views Study, page 18)

Since this report was written, the beach cottages fronting the eastern half of Kawela Bay were removed. The Proposed Action will greatly enhance the Kawela Bay Viewshed because it includes a 300-foot shoreline setback on the resort property which will preserve the resort land fronting the bay in open space. In addition, the addition of a new resort entry near Kawela Bay will provide views of Kawela Bay, Turtle Bay and Kuilima Point from Kamehameha Highway, as depicted in Figure 5-2.

The 1987 Coastal Views Study describes the Kuilima Viewshed as follows:

> "The Kuilima Viewshed is also a small bay, adjacent to Kawela Bay. The surrounding land uses include the existing Kuilima Resort development. Unlike Kawela, the distance between the shoreline and the coastal highway is over 2,000 feet making the views of the ocean, from the highway, too far to be of significance. Roadway views instead focus on the landscape footage of the project and include deep views into the golf course which fronts Kamehameha Highway. Buildings are set off in the distance and open space on both the *mauka* and *makai* sides of the highway are generous.

> The proposed expansion of the Kuilima Resort area incorporates several elements which address the protection and enhance of the shoreline scenic resources. A one hundred foot wide shoreline easement for use by the general public will be established. This easement will be clear of structures and linked to public parks and pedestrian way easements. Additionally, building setbacks from the shoreline, land coverage ratios and building height limits have been adopted to control development within 300 feet of the shoreline. The proposed expansion includes an internal roadway paralleling the ocean which will provide the opportunity for new coastal views. Another important aspect of the Kuilima Resort development program is the inclusion of a View Corridor Plan in the SMA permit. This plan can serve as the basis to maximize scenic resources within the project area." (Coastal Views Study, pages 18-19)

The Study identifies continuous views (*mauka* and *makai*) from Kamehameha Highway into the resort golf course and other agricultural lands as "Significant Roadway Views".

The Proposed Action is consistent with and supportive of the 1987 Study. However, it will further enhance the Kuilima Viewshed because it expands the shoreline easement an additional 50 feet inland, for a total of 150 feet. The Significant Roadway Views identified in the Study will also be enhanced through the provision of the new Kawela entrance as discussed above.

A.8. b. Recommended Mitigation Measures

The existing Unilateral Agreement, ~~as well as~~ the Kuilima Resort Urban D~~d~~esign ~~guidelines~~ Plan ~~for the Resort~~ (a copy of which is attached as Appendix __), ~~including~~ as well as voluntary reductions in height limits, provides prescriptive measures to mitigate visual impacts of the proposed Resort expansion project. As evidenced in the various artistic renderings, the Proposed Action preserves the low-density rural character of the property with smaller low-rise buildings, as opposed to taller towers typically associated with hotel structures, and by increasing open space and view corridors,

A. 9. Air Quality

The Air Quality ~~Impact~~ Study presented in Appendix J concludes that the Proposed Action will impact air quality during the short term as the result of construction activities and over the longer term due to increases in traffic resulting from the project and increased energy use.

The impacts of the Full Build-Out Alternative were discussed in the 1985 Revised Final EIS and are included here by reference. The impacts of the other development alternatives would be similar to the discussion below, but less than the Proposed Action because they involve lower densities and less construction activity.

Under the No Action Alternative, no new impacts to air quality would occur.

A.9. a. Short Term Impacts

Short-term direct and indirect impacts on air quality could potentially occur due to project construction. For a project of this nature, there are two potential types of air pollution emissions that could directly result in short-term air quality impacts during project construction: (1) fugitive dust from vehicle movement and soil excavation; and (2) exhaust emissions from on-site construction equipment. Indirectly, there also could be short-term impacts from slow-moving construction equipment traveling to and from the project site, from a temporary increase in local traffic caused by commuting construction workers, and from the disruption of normal traffic flow caused by lane closures of adjacent roadways.

A.9.a. [1] FUGITIVE DUST EMISSIONS

Fugitive dust emissions may arise from the grading and dirt-moving activities associated with site clearing and preparation work. The emission rate for fugitive dust emissions from construction activities is difficult to estimate accurately. This is because of its elusive nature of emission and because the potential for its generation varies greatly depending upon the type of soil at the construction site, the amount and type of dirt-disturbing activity taking place, the moisture content of exposed soil in work areas, and the wind speed. The EPA has provided a rough estimate for uncontrolled fugitive dust emissions from construction activity of 1.2 tons per acre per month under conditions of "medium" activity, moderate soil silt content (30%), and precipitation/evaporation (P/E) index of 50. (U.S. EPA: 1995) Uncontrolled fugitive dust emissions at the project site would likely be somewhere near that level, depending on the amount of rainfall that occurs. In any case, Air Pollution Control Regulations of the State of Hawai'i (Section 11-60, HAR) prohibit visible emissions of fugitive dust from construction activities at the property line. Thus, an effective dust control plan for the project construction phase is essential.

A.9.a. [2] CONSTRUCTION EQUIPMENT EXHAUST EMISSIONS

On-site mobile and stationary construction equipment also will emit air pollutants from engine exhausts. The largest of this equipment is usually diesel-powered. Nitrogen oxides emissions from diesel engines can be relatively high compared to gasoline-powered equipment, but the annual standard for nitrogen dioxide is not likely to be violated by short-term construction equipment emissions. Also, the new short-term (1-hour) standard for nitrogen dioxide is based on a three-year average; thus it is unlikely that relatively short-term construction emissions would exceed the standard. Carbon monoxide emissions from diesel engines are low and should be relatively insignificant compared to vehicular emissions on nearby roadways.

A.9.a. [3] SLOW-MOVING CONSTRUCTION EQUIPMENT

Project construction activities could occasionally obstruct the normal flow of traffic at times to such an extent that overall vehicular emissions in the project area will temporarily increase. Similarly, if construction equipment using public roadways is delayed due to traffic congestion, they will contribute to overall vehicular emissions along congested public roadways.

A.9. b. Longer Term Impacts

After construction is completed, use of the proposed facilities will result in increased motor vehicle traffic in the project area, potentially causing long-term impacts on ambient air quality. Motor vehicles with gasoline-powered engines are significant sources of carbon monoxide. They also emit nitrogen oxides and other contaminates.

Federal air pollution control regulations require that new motor vehicles be equipped with emission control devices that reduce emissions significantly compared to a few years ago. In 1990, the President signed into law the Clean Air Act Amendments. This legislation required further emission reductions, which have been phased in since 1994. Additional restrictions were signed into law during the Clinton administration, and these began to take effect during the past decade. The added restrictions on emissions from new motor vehicles will lower average emissions each year as more older vehicles leave the state's roadways. It is estimated that carbon monoxide emissions, for example, will go down by an average of about 20 percent per vehicle during the next 10 years due to the replacement of older vehicles with newer models.

A.9.b. [1] TRAFFIC: PREDICTED WORST-CASE 1-HOUR CONCENTRATIONS

Table 5-1 summarizes the final results of the modeling study in the form of the estimated worst-case 1-hour morning and afternoon ambient carbon monoxide concentrations. These results can be compared directly to the state and the national AAQS. Estimated worst-case carbon monoxide concentrations are presented in the table for six scenarios: year 2012 with existing traffic, year 2025 without the project, year 2025 with the Proposed Action, year 2025 with the project Full Build-Out Alternative, year 2025 with the project Conservation Partner Alternative and year 2025 with the project Resort Residential Alternative. The locations of these estimated worst-case 1-hour concentrations all occurred at or very near the indicated intersections.

Table 5-1: Estimated Worst-Case 1-Hour Carbon Monoxide Concentrations Along Roadways Near Turtle Bay Resort Expansion Project (parts per million)

Roadway Intersection	Year/Scenario								
	2012/Present			2025/Without Project			2025/Proposed Action		
	AM	PM	Sat.	AM	PM	Sat.	AM	PM	Sat.
Kamehameha Highway at Kuilima Drive	1.7	1.3	1.7	1.6	1.4	1.8	2.4	1.9	2.1
Kamehameha Highway at Marconi Road	1.3	1.0	1.0	1.3	1.0	1.1	2.1	1.6	2.2
Kamehameha Highway at Kaihalulu Drive	-	-	-	-	-	-	2.6	1.6	2.0

Roadway Intersection	Year/Scenario								
	2025/Full Build-Out			2025/Conservation Partner			2025/Resort Residential		
	AM	PM	Sat.	AM	PM	Sat.	AM	PM	Sat.
Kamehameha Highway at Kuilima Drive	2.9	2.1	2.2	2.2	1.7	2.0	2.2	1.6	2.0
Kamehameha Highway at Marconi Road	2.7	2.0	2.2	1.9	1.3	1.7	1.9	1.3	1.7
Kamehameha Highway at Kaihalulu Drive	3.1	2.6	2.4	2.4	1.5	2.0	2.0	1.4	1.8

As indicated in the above table, the highest estimated 1-hour concentration within the project vicinity for the present (2012) case was 1.7 ppm. This was projected to occur during both the weekday morning peak traffic hour and the Saturday peak traffic period near the intersection of Kamehameha Highway and Kuilima Drive. Concentrations at other locations and times studied were 1.3 ppm or lower. All predicted worst-case 1-hour concentrations for the 2012 scenario were well below both the national AAQS of 35 ppm and the state standard of 9 ppm.

In the year 2025 without the Proposed Action, the highest worst-case 1-hour concentration was predicted to occur during the Saturday peak traffic hour at the intersection of Kamehameha Highway and Kuilima Drive. A value of 1.8 ppm was predicted to occur at this location and time. Peak-hour worst-case values at the other locations and times studied for the 2025 without project scenario ranged between 1.0 and 1.6 ppm. Compared to the existing case, concentrations generally remained about the same, and all projected worst-case concentrations for this scenario remained well within the state and national standards.

In the year 2025, the Full Build-Out alternative was predicted to result in the highest worst-case 1-hour concentration. This was predicted to occur during the weekday morning at the intersection of Kamehameha Highway and Kuilima Drive with a value of 3.1 ppm. Other concentrations for this alternative ranged between 2.0 and 2.9 ppm. The Proposed Action and other project alternatives generally resulted in slightly lower concentrations, but the difference amongst them was relatively small. Although the predicted concentrations with any development increased compared to the without project scenario, the values remained well within the federal standard (35 ppm) and state standard (9 ppm).

A.9.b. [2] TRAFFIC: PREDICTED WORST-CASE 8-HOUR CONCENTRATIONS

Worst-case 8-hour carbon monoxide concentrations were estimated by multiplying the worst-case 1-hour values by a persistence factor of 0.5. This accounts for two factors: (1) traffic volumes averaged over eight hours are lower than peak 1-hour values, and (2) meteorological conditions are more variable (and hence more favorable for dispersion) over an 8-hour period than they are for a single hour.

The resulting estimated worst-case 8-hour concentrations are indicated in Table 5-2. For the 2012 scenario, the estimated worst-case 8-hour carbon monoxide concentrations for the two locations studied were 0.6 ppm at the Kamehameha Highway/Marconi Road intersection and 0.8 ppm at the Kamehameha Highway/Kuilima Drive intersection. The estimated worst-case concentrations for the existing case were within both the state standard of 4.4 ppm and the national limit of 9 ppm.

For the year 2025 without project scenario, worst-case concentrations ranged between 0.6 and 0.9 ppm, with the highest concentration occurring at Kamehameha Highway and Kuilima Drive. All predicted concentrations were within the standards.

For the year 2025 with the Proposed Action or the alternatives, worst-case concentrations were predicted to increase somewhat compared to the without project case. At the three intersections studied, predicted worst-case concentrations ranged from 1.0 to 1.6 ppm with the highest concentration occurring at the intersection of Kamehameha Highway and Kaihalulu Drive in the Full Build-Out Alternative. All predicted 8-hour concentrations for the Proposed Action and alternatives were within both the national and the state standards.

Table 5-2: Estimated Worst-Case 8-Hour Carbon Monoxide Concentrations Along Roadways Near Turtle Bay Resort Expansion Project (parts per million)

Roadway Intersection	Year/Scenario		
	2012/Present	2025/Without Project	2025/Proposed Action
Kamehameha Highway at Kuilima Drive	0.8	0.9	1.2
Kamehameha Highway at Marconi Road	0.6	0.6	1.1
Kamehameha Highway at Kaihalulu Drive	-	-	1.3

Roadway Intersection	Year/Scenario		
	2025/Full Build-Out	2025/Conservation Partner	2025/Resort Residential
Kamehameha Highway at Kuilima Drive	1.4	1.1	1.1
Kamehameha Highway at Marconi Road	1.4	1.0	1.0
Kamehameha Highway at Kaihalulu Drive	1.6	1.2	1.0

A.9.b. [3] POWER GENERATION: INDIRECT EMISSIONS

The Proposed Action will cause indirect air pollution emissions from power generating facilities as a consequence of electrical power usage. The estimated annual electrical demands of the Proposed Action and alternatives are shown in Table 5-3. The highest electrical demand, 107 million kilowatt-hours per year, would occur with the Full Build-Out Alternative, while the Resort Residential Alternative would have the least at 31 million kilowatt-hours per year. Electrical power for the development will most probably be provided mainly by oil-fired generating facilities located on O'ahu, but some of the power could also come from sources burning other fuels, such as H-Power and the AES coal-fired power plant at Campbell Industrial Park, or from renewable energy resources that are currently being developed. In order to meet the electrical power needs of the Proposed Action, power-generating facilities may be required to burn more fuel and hence more air pollution may be emitted at these facilities.

Table 5-3: Estimated Annual Electrical Demand for Turtle Bay Resort Expansion Project

Project	Estimated Annual Electrical Demand (million kilowatt-hours)
Proposed Action	70
Full Build-Out Alternative	107
Conservation Partner Alternative	46
Resort Residential Alternative	31

Source: Personal communication via email from Cheryl Palesh, Belt Collins Hawaii LLC, to Barry D. Neal, B.D. Neal & Associates, Turtle Bay Resort Monthly Electrical Demand Estimates, August 22, 2012.

Table 5-4 below presents estimates of the indirect air pollution emissions that would result from the Proposed Action's electrical demand assuming all power is provided by burning more fuel oil at Oʻahu's power plants. These values can be compared to the island-wide emission estimates for 1993 given in Table 2-27. The Full Build-Out Alternative would have the highest emissions, while the Resort Residential Alternative would have the least.

The Proposed Action or alternatives would result in relatively small indirect emissions from project electrical demand: they amount to less than 0.1 percent of the present air pollution emissions occurring on Oʻahu.

Table 5-4: Estimated Indirect Air Pollution Emissions from Turtle Bay Resort Expansion Project Electrical Demand[a]

Air Pollutant	Emission Rate (tons/year)			
	Proposed Action	Full Build-Out	Conservation Partner	Resort Residential
Particulate	2	3	1	1
Sulfur Dioxide	24	36	16	11
Carbon Monoxide	2	3	1	1
Volatile Organics	1	1	<1	<1
Nitrogen Oxides	10	16	7	4

[a] Based on U.S. EPA emission factors for utility boilers [3]. Assumes electrical demand indicated in Table 5.3 and low-sulfur oil used to generate power.

A.9.b. [4] SOLID WASTE DISPOSAL AT H-POWER FACILITY

Solid waste generated by the Proposed Action or alternatives is not expected to exceed the amounts indicated in Table 5-5 below. As indicated in the table, the estimated amounts assume 70 percent recycling/reuse diversion. Most project refuse will likely be hauled away and burned at the H-Power facility at Campbell Industrial Park to generate electricity. Burning of the

waste to generate electricity will result in emissions of particulate, carbon monoxide and other contaminants, but these will be offset to some extent by reducing the amount of fuel oil that may be required to generate electricity for the project.

Table 5-5: Estimated Annual Soild Waste Disposal Demand for Turtle Bay Resort Expansion Project[a]

Project	Estimated Annual Solid Waste Disposal Demand (tons)[a]
Proposed Action	2,626
Full Build-Out Alternative	3,686
Conservation Partner Alternative	1,173
Resort Residential Alternative	1,106

[a] Assumes 70 percent recycling/reuse diversion.
Source: Personal communication via email from Lee Sichter, Lee Sichter LLC, to Barry D. Neal, B.D. Neal & Associates, Turtle Bay Resort Annual Solid Waste Disposal Demand Estimates, August 14, 2012.

Table 5-6 below presents emission estimates assuming all project solid waste is burned at H-Power. These values can be compared to the island-wide emission estimates for 1993 presented in Table 2-28 in Chapter Two. The estimated potential indirect emissions from project solid waste disposal demand amount to less than 0.1 percent of the present air pollution emissions occurring on O'ahu. The emissions from the Proposed Action or alternatives are relatively small. The Full Build-Out Alternative would result in the most emissions and the Resort Residential Alternative the least.

Table 5-6: Estimated Indirect Air Pollution Emissions from Turtle Bay Resort Expansion Project Solid Waste Disposal[a]

Air Pollutant	Emission Rate (tons/year)			
	Proposed Action	Full Build-Out	Conservation Partner	Resort Residential
Particulate	0.2	0.2	0.1	0.1
Sulfur Dioxide	0.6	0.8	0.2	0.2
Carbon Monoxide	2.5	3.5	1.1	1.1
Nitrogen Oxides	6.6	9.2	2.9	2.8
Lead	0.3	0.4	0.1	0.1

[a] Assumes solid waste disposal demands indicated in Table 3-5 and that solid waste is burned in a refuse-derived fuel-fired power plant equipped with spray dryer and fabric filter. Emission rates based on U.S. EPA emission factors for refuse-derived fuel-fired combustors.

A.9. c. Recommended Mitigation Measures

With regard to short-term impacts, adequate fugitive dust control can usually be accomplished by the establishment of a frequent watering program to keep bare-dirt surfaces in construction areas from becoming significant sources of dust, and by the use of windscreens (dust fences).

In dust-prone or dust-sensitive areas, other control measures such as limiting the area that can be disturbed at any given time, applying chemical soil stabilizers, mulching and/or using windscreens may be necessary. Control regulations further stipulate that open-bodied trucks be covered at all times when in motion if they are transporting materials that could be blown away. Haul trucks tracking dirt onto paved streets from unpaved areas is often a significant source of dust in construction areas. Some means to alleviate this problem, such as road cleaning or tire washing, may be appropriate. Paving of parking areas and/or establishment of landscaping as early in the construction schedule as possible can also lower the potential for fugitive dust emissions. Monitoring dust at the project property line could be considered to quantify and document the effectiveness of dust control measures.

The only means to alleviate the problem of slow moving construction equipment on public roadways will be to attempt to keep roadways open during peak traffic hours and to move heavy construction equipment and workers to and from construction areas during periods of low traffic volume. Thus, most potential short-term air quality impacts from project construction can be mitigated.

Over the long term, because the air quality impacts resulting from traffic generated by the Proposed Action are predicted to fall within the standards established at the federal and state levels of government, no significant adverse impacts on air quality are anticipated and no mitigation measures are warranted.

With regard to the indirect air quality impacts resulting from energy consumption, conservation resulting from the employment of energy-saving technology and protocols will help to reduce impacts (see discussion in Appendix A).

Concerning the indirect air quality impacts resulting from the disposal of solid waste created by the Proposed Action, recycling and reuse programs instituted by the Resort will help to reduce identified impacts (see discussion in Appendix A).

B. Impacts on the Human Environment

B. 1. Traffic

B.1. a. Analysis of Future Conditions

The following discussion summarizes the findings and conclusions of the Traffic Impact Analysis Report (TIAR) prepared for the SEIS and included as Appendix I. The TIAR focuses on the forecast of future traffic conditions on Kamehameha Highway with and without the Proposed Action and the three Alternatives in the year 2025. Although construction associated with the Full Build-Out Alternative would extend all the way to 2053, for purposes of comparison, it and the other alternatives were all assumed to conclude construction by 2025 so that their impacts can be compared to the Proposed Action, which is projected to complete construction in that year.

There are three principal issues that must be addressed in a traffic forecast: how might ambient traffic without the Proposed Action change over the fourteen year period from 2011 to 2025 (Future Without); what volumes of traffic will the Proposed Action and the Alternatives generate (Trip Generation); and what is the origin/destination of that traffic (Trip Distribution). Following is a brief discussion of these three issues.

Forecasting Future Traffic Conditions Without the Proposed Action: Fortunately, individual traffic engineers do not have to construct their own original computer models to forecast future conditions. The Oʻahu Metropolitan Planning Organization, a state agency, periodically publishes a long-range planning document that includes sophisticated computer modeling of future traffic conditions that is used by the State Department of Transportation and the County planning departments. The current iteration of that document is called the *Oʻahu Regional Transportation Plan 2035* (ORTP).

For the purposes of the SEIS traffic analysis, the Year 2025 traffic forecasts without the Proposed Action were derived by interpolating the Year 2035 ORTP model forecasts and the Base Year 2011 DOT data for weekday traffic, assuming a straight line growth pattern, in consultation and in coordination with the State DOT staff. (Weekend traffic was not analyzed in the ORTP.) Three locations on Kamehameha Highway were selected for the regional assessment: northeast of Joseph P. Leong Highway in Haleʻiwa; west of Kuilima Drive in Kahuku; and northwest of ~~Kaheliki~~ Kahekili Highway in Kahaluʻu.

It should be noted that the traffic forecasts take into account new development that has been approved for other areas of the study area from Haleʻiwa to Kahaluʻu and is anticipated for development in the period from 2011 to 2025. While discussions concerning the proposed Envision Lāʻie development suggest that the project could result in up to 1,200 new residential units in the Lāʻie area, the project has not yet applied for or been granted any land use approvals. Thus, it is unknown if the project will move forward, how many units may eventually be constructed, and when they would begin contributing to regional traffic. For these reasons, the Envision Lāʻie project was *not* included in regional traffic forecasts for the Resort. If the Envision Lāʻie project does move forward, it will be obligated to prepare a traffic impact analysis report to address the potential impacts it may have upon regional traffic conditions.

Between the Years 2011 and 2035, the ORTP forecasts indicate little growth (7%) in Haleʻiwa traffic volume and more moderate growth (30-35%) in the Kahuku and Kahaluʻu areas. *It is important to note, however, that the ORTP forecasts assumed a total of 1,184 units at the Resort, about 300 more units than currently exist.* Therefore, use of the ORTP forecasts to establish future traffic conditions without the Proposed Action can be considered to be *conservative* in that the forecast *over-estimates* the future traffic on the North Shore and in Windward Oʻahu without the Proposed Action. The ORTP forecasts an average annual growth rate in traffic of 0.29% at Haleʻiwa, 1.23% at Kahuku, and 1.45% at Kahaluʻu.

Traffic Generated by the Proposed Action and the Alternatives: With regard to estimates of the traffic that the Proposed Action and the Alternatives may generate (called Trip Generation in traffic engineering terms), the traffic consultant worked closely with staff of the State DOT to arrive at a methodology what was acceptable for planning purposes.

Trip Generation estimates were developed using two guides: standardized trip generation rates for various land uses developed by the Institute of Transportation Engineers (ITE); and real-world trip generation rates derived from a week-long survey of motorists conducted at the Resort in early November 2011.

The TIAR in Appendix I presents the detailed explanation of the trip generation survey and the ITE trip generation rates that were addressed together by the project's traffic consultant and the staff of the State DOT to determine a mutually agreeable set of trip generation rates that would be applied to the various land uses included in the Proposed Action and the Alternatives, including resort hotel, time-share hotel, resort residential development, shopping center, multi-family housing, farmers market, and recreational uses. Highlights of key assumptions agreed to in collaboration with the State DOT include an increase in estimated hotel occupancy rates to an average of 90% for weekday and 95% for weekend rates when average rates are more near 80% and 90% respectively; and with respect to assumptions for resort residential units, an increase to base assumptions developed from week-long survey and ITE rates by 10% to be conservative.

Trip Distribution: In addition to taking traffic counts of all turning movements for vehicles entering and leaving the Resort, SMS Research conducted a complimentary week-long traffic survey during the same period of personal interviews of about 4,800 motorists as they entered and exited the Resort and the Kuilima Estates. The purpose of this portion of the survey was to determine the origins and destinations of the vehicles arriving at and departing the Resort. The survey report, including its methodology and results, is presented as Appendix M to the SEIS.

The survey determined that about 43% of the traffic entering and exiting the Resort during the study period had origins or destinations outside the study area (Haleʻiwa to Kahaluʻu), meaning that these vehicles either came from or were destined for Honolulu, Central Oʻahu, or Leeward Oʻahu. About 39% of the Resort traffic remained within the limits of the study area. The remaining 18% originated from or were destined for the fringes of the study area (Haleʻiwa/Waialua and Kaneʻohe/Kailua/Waimānalo). This trip distribution data was then aggregated by time to determine the trip distribution relationship to the peak hours of traffic. Trip distribution data for the Turtle Bay Hotel was applied to the hotels proposed in the Proposed Action and the Alternatives. Trip distribution data for the Kuilima Estates was applied to the ~~r~~Resort ~~r~~Residential and Community Housing Units ~~development~~ included in the Proposed Action and the Alternatives plus 10% to be conservative. The trip distribution of traffic generated by other land uses in the Proposed Action and the Alternatives were based upon existing peak hour traffic patterns.

Following is a discussion of the TIAR findings concerning the future without the Proposed Action. It will be followed by a discussion of forecasts for the Proposed Action and the Alternatives.

B.1.a. [1] YEAR 2025 AM PEAK HOUR TRAFFIC WITHOUT THE PROPOSED ACTION

Traffic projections for the Year 2025 without the Proposed Action consistute the No Action Alternative. In 2025, without the Proposed Action, t~~T~~he Kuilima Drive and Marconi Road intersections with Kamehameha Highway are forecast to operate at satisfactory levels of service. In the vicinity of the Resort, Kamehameha Highway is forecast to operate at LOS (Level of Service) "C", with a v/c (volume to capacity) ratio of 0.22, or about 0.04 points (about 22%) higher than the existing conditions in 2011 discussed in Chapter Two of the SEIS.

The intersection of Kamehameha Highway and Joseph P. Leong Highway in Haleʻiwa also is forecast to operate at satisfactory levels of service during the 2025 AM peak hour of traffic without the Proposed Action. Kamehameha Highway is forecast to operate at LOS "D", with a v/c ratio of ~~0.38~~ 0.36, which is ~~0.08~~ 0.03 points higher (about ~~27%~~ 9%) than existing conditions in 2011 (a 14 year period).

In Kahaluʻu, the westbound approach to Kamehameha Highway/Kahekili Highway is forecast to operate at LOS "F" during the 2025 AM peak hour of traffic without the Proposed Action. Kamehameha Highway is forecast to operate at LOS "~~D~~E", with a v/c ratio of ~~0.5~~1 0.66, or about ~~24%~~ 15% higher than existing conditions in 2011.

Collectively, Kamehameha Highway will continue to operate during the AM peak hour at the same level of service that exists in 2011, but traffic volumes will increase between 22-27%.

B.1.a. [2] YEAR 2025 PM PEAK HOUR TRAFFIC WITHOUT THE PROPOSED ACTION

The intersection of Kuilima Drive and Kamehameha Highway is forecast to operate at LOS "E" during the Year 2025 peak hour without the Proposed Action. The Marconi Road intersection with Kamehameha Highway is forecast to operate at satisfactory levels of service. In the vicinity of the Resort, Kamehameha Highway is forecast to operate at LOS "~~D~~C", with a v/c ratio of ~~0.33~~ 0.30, or about ~~0.07~~ 0.05 points (about ~~27%~~ 20%) higher than the existing conditions in 2011 discussed in Chapter Two of the SEIS.

The intersection of Kamehameha Highway and Joseph P. Leong Highway in Haleʻiwa also is forecast to operate at satisfactory levels of service during the 2025 ~~AM~~ PM peak hour of traffic without the Proposed Action. Kamehameha Highway is forecast to operate at LOS "D", with a v/c ratio of ~~0.52~~ 0.51, which is ~~0.04~~ 0.03 points higher (about ~~8%~~ 6%) than existing conditions in 2011.

In Kahaluʻu, the westbound approach to Kamehameha Highway/Kahekili Highway is forecast to operate at LOS "F" during the 2025 AM peak hour of traffic without the Proposed Action. Kamehameha Highway is forecast to operate at LOS "E", with a v/c ratio of ~~0.60~~ 0.63, or about ~~25%~~ 24% higher than existing conditions in 2011.

In Kahuku, the level of service on Kamehameha Highway will downgrade from LOS "C" to LOS "D" during the PM peak hour of traffic without the Proposed Action. Similarly in Kahalu'u, the level of service on Kamehameha Highway will downgrade from LOS "D" to LOS "E". In Hale'wa, Kamehameha Highway will continue to operate during the PM peak hour at the same level of service that exists in 2011, but traffic volumes will increase between 8-27%.

B.1.a. [3] YEAR 2025 WEEKEND PEAK HOUR TRAFFIC WITHOUT THE PROPOSED ACTION

During the Year 2025 weekend peak hour of traffic without the Proposed Action, the left-turn movement from Kuilima Drive onto Kamehameha Highway is forecast to operate at LOS "F". The Marconi Road intersection will operate at a satisfactory level of service, even if the Kahuku Mauka subdivision is implemented by others. Kamehameha Highway is forecast to operate at LOS "D" with a v/c ratio of ~~0.35~~ 0.30, which is ~~0.6~~ 0.03 points (or about ~~21%~~ 11%) higher than existing conditions in 2011.

The left-turn movement from northbound Joseph P. Leong Highway to westbound Kamehameha Highway in Hale'iwa is forecast to operate at LOS "D". The other traffic movements at the intersection are expected to operate at satisfactory levels of service. Kamehameha Highway is forecast to operate at LOS "D", with a v/c ratio of ~~0.57~~ 0.54, about 0.03 points (about 6%) higher than existing conditions in 2011.

The westbound approach of Kamehameha Highway is forecast to operate at LOS "F" at the Kahekili intersection in Kahalu'u. Kamehameha Highway is forecast to operate at LOS "E", with a v/c ratio of ~~0.61~~ 0.60, about 0.11 points (22%) higher than existing conditions in 2011. This has much to do with the fact that there is not an exclusive eastbound center left-hand turn lane at the intersection of Kahekili and Kamehameha Highway that should have previously been completed by the State DOT.

In Kahuku, the level of service on Kamehameha Highway will downgrade from LOS "C" to LOS "D" during the weekend peak hour of traffic without the Proposed Action. In Kahalu'u the level of service on Kamehameha Highway will downgrade from LOS "D" to LOS "E". In Hale'wa, Kamehameha Highway will continue to operate at LOS "D" during the 2025 weekend peak hour, the same LOS as in 2011, but with traffic volumes from 6-22% higher.

B.1.a. [4] TRAFFIC FACILITY IMPACTS WITH THE PROPOSED ACTION AND THE ALTERNATIVES

The Proposed Action and the Alternatives include the construction of a new primary access road within the Resort (generally parallel to the coast) that intersects with Kamehameha Highway near Kawela Bay, creating a new main entrance for the Resort and the main driveway through the Resort. Kuilima Drive will continue to serve the existing hotel and the Kuilima Estates. In the future, it is contemplated that certain lands in the area commonly referred to as Marconi Road will be conveyed to TBR, improved as part of the Proposed Action, constructed to City standards, and dedicated to the City.

In accordance with Condition No. 7 of the Unilateral Agreement (see Appendix ~~J~~ B), the following traffic improvements are required at each of the proposed access intersections on Kamehameha Highway, for either the Proposed Action or the Alternatives:

- Widen westbound Kamehameha Highway to provide an exclusive right-turn lane;
- Widen eastbound Kamehameha Highway to provide an exclusive left-turn lane;
- Widen westbound Kamehameha Highway to provide a right-turn acceleration lane;
- Construct separate left-turn and right-turn lanes on side street approaches to Kamehameha Highway;
- Construct a shared left-turn/through lane and an exclusive right-turn lane on Marconi Road at Kamehameha Highway, if and when the future Kahuku Mauka Agricultural Lots road is constructed by others at the time of improvement;
- Construct bus turnouts in both directions on Kamehameha Highway at each intersection; and
- Signalize the intersections of Kamehameha Highway; when warranted, with protected left-turn phases on Kamehameha Highway.

The traffic impact analysis for the Proposed Action focused on five-year phases to coordinate traffic improvements with the proposed development schedule. In consultation with the staff of the State DOT, it was agreed that the Alternatives would *not* require phased traffic impact analysis unless one of the Alternatives becomes the preferred plan. At that time, the traffic impact analysis would be updated to reflect the phasing of the new preferred plan.

B.1.a. [5] YEAR 2025 AM PEAK HOUR TRAFFIC WITH THE PROPOSED ACTION

As will be addressed below under the mitigation section, the construction of Kaihalulu Drive and new properly designed intersections at Kawela Bay and Marconi Road are intended to mitigate the impacts of Resort development on Kamehameha Highway traffic conditions in the vicinity of the Resort by pulling a significant amount of vehicles off of Kamehameha Highway before Kuilima Drive, and thus relieving any anticipated traffic congestion on Kuilima Drive. The Kaihalulu Drive, Kuilima Drive, and Marconi Road intersections at Kamehameha Highway are expected to operate at LOS "B". The individual traffic movements at all three intersections are forecast to operate at LOS "C" or better. Kamehameha Highway is forecasted to operate at LOS "D", with a v/c ratio of ~~0.41~~ 0.44 at Kahuku, a v/c ratio of ~~0.48~~ 0.44 at Haleʻiwa, and a v/c ratio of ~~0.57~~ 0.71 at Kahaluʻu.

B.1.a. [6] YEAR 2025 PM PEAK HOUR TRAFFIC WITH THE PROPOSED ACTION

During the Year 2025 PM peak hour with the Proposed Action, the intersection of Kaihalulu Drive and Kamehameha Highway is forecast to operate at LOS "C". The left-turn movement from eastbound Kamehameha Highway is expected to operate at LOS "D". The other traffic movements at the intersection are expected to operate at satisfactory levels.

Kuilima Drive and Marconi Road intersections are forecast to operate at an overall LOS "B" at Kamehameha Highway. The individual traffic movements at these intersections are expected to operate at satisfactory levels. Kamehameha Highway is forecast to operate at LOS "D", with a v/c ratio of 0.50 at Kahuku, LOS "E" with a v/c ratio of 0.63 at Haleʻiwa, and an LOS "E" with a v/c ratio of ~~0.66~~ 0.71 at Kahaluʻu.

B.1.a. [7] YEAR 2025 WEEKEND PEAK HOUR TRAFFIC WITH THE PROPOSED ACTION

During the Year 2025 weekend peak hour with the Proposed Action, Kaihalulu Drive and Kamehameha Highway are forecast to operate at overall LOS "C". The left-turn movement from eastbound Kamehameha Highway, westbound through movement, and the southbound left-turn movement are all expected to operate at LOS "D". Kuilima Drive and Marconi Road intersections are forecast to operate at an overall LOS "C" at Kamehameha Highway. The left-turn traffic movements from Kamehameha Highway are expected to operate at LOS "D". The other traffic movements at these intersections are expected to operate at satisfactory levels.

Kamehameha Highway is forecast to operate at LOS "E", with a v/c ratio of ~~0.63~~ 0.61 at Kahuku, a v/c ratio of ~~0.72~~ 0.68 at Haleʻiwa, and a v/c ratio of 0.71 at Kahaluʻu.

B.1.a. [8] YEAR 2025 WITH THE FULL BUILD-OUT ALTERNATIVE

The Full Build-Out Alternative will require the construction of double left-turn lanes on eastbound Kamehameha Highway at Kaihalulu Drive and Kuilima Drive. Within the Resort, Kaihalulu Drive will require four lanes; two lanes in each direction. The Kaihalulu Drive, Kuilima Drive, and Marconi Road intersections on Kamehameha Highway will operate at an overall LOS "~~C~~E" or better, during the peak hours.

B.1.a. [9] YEAR 2025 WITH THE RESORT RESIDENTIAL ALTERNATIVE

The Kaihalulu Drive, Kuilima Drive, and Marconi Road intersections on Kamehameha Highway will operate at an overall LOS "~~C~~D", during the peak hours.

B.1.a. [10] YEAR 2025 WITH THE CONSERVATION PARTNER ALTERNATIVE

The Kaihalulu Drive, Kuilima Drive, and Marconi Road intersections on Kamehameha Highway will operate at an overall LOS "C" or better, during the peak hours.

B.1.a. [11] REGIONAL TRAFFIC IMPACTS

The TIAR forecasts that traffic conditions at the Haleʻiwa and Kahaluʻu intersections that establish the limits of the study area will continue to operate at LOS "E" in 2025 due to current

traffic volume growth trends regardless of whether the Proposed Action or one of the three Alternatives is implemented. Table 5-7 (next page) summarizes the data that leads to this finding.

In viewing the data in the above table, it is important to keep the following fact in mind: the Year 2025 traffic forecasts for the Proposed Action *include* the ambient increase in traffic that would be present even without the Proposed Action or an Alternative. But even more importantly, because the Proposed Action is being constructed over a 14-year period the average annual rate of traffic growth relatively modest. For example, the average traffic volume along Kamehameha Highway during the morning peak hour will only increase by approximately 4.5% on an average annual basis. At the Joseph P. Leong intersection, the volume of morning peak hour traffic will increase by only about 1.7% on an annual average basis as the result of the Proposed Action. And at the Kahalu'u intersection, the morning peak hour increase in traffic volume will be even less; about 0.8%.

In comparing total growth, traffic generated by the Proposed Action is forecast to range from one third to half of the traffic that would have been generated by Full Build-Out of the Resort as permitted by existing entitlements.

B.1. b. Recommended Mitigation Measures

In addition to the construction of Kaihalulu Drive as a new internal Resort roadway and its intersection with Kamehameha Highway to create a new Resort entrance that will relieve forecast traffic congestion at the Kuilima Drive intersection, the roadway improvements discussed in Section B.1.a(4) above were specifically identified when the Resort property was rezoned to allow for expansion to mitigate the impacts of new development as the Full Build-Out Alternative. However, at that time, it was assumed that the Resort expansion would include 3,500 new units. Under the Proposed Action, that number has been reduced to 1,375 new units, but the same improvements are anticipated to be implemented. The provision of traffic signals and dedicated turning lanes will have positive impacts and improve traffic flow in the vicinity of the Resort. But will have ~~less~~ fewer positive impacts and less effect on the larger regional traffic conditions.

The Proposed Action will contribute to a significant increase of traffic volumes on Kamehameha Highway over time as built out over approximately 15 years. The current vehicle capacity of Kamehameha Highway is sufficient to handle the ambient and future development vehicle trip contributions as long as mitigation measures are planned and put in place at key intersections along the route. In addition, TBR will employ best traffic management practices to further mitigate the Proposed Action's impact on Kamehameha Highway.

To that end, TBR commissioned Fehr & Peers, a traffic management consulting firm, to prepare a Transportation Demand Management (TDM) analysis that explores methods to make vehicular traffic associated with the Resort more efficient. The findings of that study are summarized below.

Fehr & Peers reviewed the findings of the transportation survey conducted by SMS Research Inc. and the vehicle trip generation methodology prepared by TMC to understand existing conditions at the Resort and to gauge the potential success of new TDM measures.

Table 5-7: Summary of 2012 TIAR Volume / Capacity Analysis

Table 5-7 Traffic Impact Analysis Report - Key Findings Recap
Volume/Capacity Analysis - (Measures Traffic in Terms of Highway Capacity at 1.00 Max)

	Organic Growth w/ out TBR Expansion					Proposed Action Impacts vs Organic				Full Build Out vs Organic			Resort Res. vs Organic			Conservation Part. vs Organic		
	2011 Existing	Level of Service	2025 No Project	Level of Service	2025 Existing vs No Project	2025 No Project	**2025 Proposed Action**	Level of Service	**2025 PA vs No Project**	2025 Full Build Out	Level of Service	2025 FBO vs No Project	2025 Resort Residential	Level of Service	2025 Resort Resd. vs No Project	2025 Conservation Partner	Level of Service	2025 Conservation Part. vs No Project
WEEKDAY AM PEAK																		
Haleiwa 10:45 AM-11:45 AM	0.35	D	0.38	D	8.6%	0.38	0.48	D	26.3%	0.62	E	63.2%	0.43	D	13.2%	0.46	D	21.1%
Kahuku 11:00AM-12:00PM	0.18	C	0.22	C	22.2%	0.22	0.41	D	86.4%	0.59	D	168.2%	0.34	D	54.5%	0.37	D	68.2%
Kahalulu 6:45AM-7:45AM	0.41	D	0.51	D	24.4%	0.51	0.57	D	11.8%	0.61	E	19.6%	0.55	D	7.8%	0.56	D	9.8%
WEEKDAY PM PEAK																		
Haleiwa 2:45 PM-3:45 PM	0.48	D	0.52	D	8.3%	0.52	0.63	E	21.2%	0.78	E	50.0%	0.57	D	9.6%	0.60	E	15.4%
Kahuku 2:00 PM-3:00 PM	0.26	C	0.33	D	26.9%	0.33	0.5	D	51.5%	0.73	E	121.2%	0.40	D	21.2%	0.44	D	33.3%
Kahaluu 3:30 PM-4:30 PM	0.48	D	0.60	E	25.0%	0.6	0.66	E	10.0%	0.72	E	20.0%	0.64	E	6.7%	0.65	E	8.3%
WEEKEND PEAK																		
Haleiwa 11:45 AM-12:45 PM	0.53	D	0.57	D	7.5%	0.57	0.72	E	26.3%	0.90	E	57.9%	0.67	E	17.5%	0.70	E	22.8%
Kahuku 2:00 PM-3:00 PM	0.29	C	0.35	D	20.7%	0.35	0.63	E	80.0%	0.79	E	125.7%	0.54	D	54.3%	0.57	D	62.9%
Kahaluu 2:15 PM-3:15 PM	0.50	D	0.61	E	22.0%	0.61	0.71	E	16.4%	0.79	E	29.5%	0.69	E	13.1%	0.70	E	14.8%

T.I.A.R. Trip Generation forecasted traffic volumes based on expressed in terms of vehicles per hour (vph).

	Organic Growth w/ out TBR Expansion					Proposed Action Impacts vs Organic				Full Build Out vs Organic			Resort Res. vs Organic			Conservation Part. vs Organic		
	2011 Existing	Level of Service	2025 No Project	Level of Service	2025 Existing vs No Project	2025 No Project	**2025 Proposed Action**	Level of Service	**2025 PA vs No Project**	2025 Full Build Out	Level of Service	2025 FBO vs No Project	2025 Resort Residential	Level of Service	2025 Resort Resd. vs No Project	2025 Conservation Partner	Level of Service	2025 Conservation Part. vs No Project
WEEKDAY AM PEAK																		
Haleiwa 10:45 AM-11:45 AM	1,059	D	1,142	D	7.8%	1,142	1,444	D	26.4%	1,865	E	63.3%	1,306	D	14.4%	1,384	D	21.2%
Kahuku 11:00AM-12:00PM	517	C	640	C	23.8%	640	1,199	D	87.3%	1,717	D	168.3%	979	D	53.0%	1,084	D	69.4%
Kahalulu 6:45AM-7:45AM	1,178	D	1,455	D	23.5%	1,455	1,613	D	10.9%	1,735	E	19.2%	1,569	D	7.8%	1,597	D	9.8%
WEEKDAY PM PEAK																		
Haleiwa 2:45 PM-3:45 PM	1,443	D	1,548	D	7.3%	1,548	1,919	E	24.0%	2,479	E	60.1%	1,722	D	11.2%	1,842	E	19.0%
Kahuku 2:00 PM-3:00 PM	712	C	896	D	25.8%	896	1,473	D	64.4%	2,164	E	141.5%	1,166	D	30.1%	1,297	D	44.8%
Kahaluu 3:30 PM-4:30 PM	1,519	D	1,877	E	23.6%	1,877	2,072	E	10.4%	2,258	E	20.3%	2,005	E	6.8%	2,040	E	8.7%
WEEKEND PEAK																		
Haleiwa 11:45 AM-12:45 PM	1,571	D	1,667	D	6.1%	1,667	2,132	E	27.9%	2,605	E	56.3%	1,990	E	19.4%	2,067	E	24.0%
Kahuku 2:00 PM-3:00 PM	871	C	1,046	D	20.1%	1,046	1,842	E	76.1%	2,304	E	120.3%	1,591	D	52.1%	1,679	D	60.5%
Kahaluu 2:15 PM-3:15 PM	1,489	D	1,826	E	22.6%	1,826	2,139	E	17.1%	2,406	E	31.8%	2,056	E	12.6%	2,114	E	15.8%

Of the approximately 509 total employees working at the Resort at the time of the traffic surveys in 2011, the majority of the Resort employees live on the north side of Oʻahu and are distributed as follows: Kahuku (117), Haleʻiwa (100), Waialua (92), Wahiawā (50), Lāʻie (49), and Hauʻula (43). The remaining employees live in locations throughout central and southern Oʻahu.

The existing ~~uses at the~~ Resort ~~include~~ includes 500 hotel rooms ~~and~~ ,and Kuilima Drive is shared with the privately-owned 368 condominium units at Kuilima Estates (including two managers units). As discussed above, these combined uses generate a total of 298 vehicle trips during the weekday morning peak hour, 341 trips during the weekday afternoon peak hour and 390 trips during the Saturday midday peak hour based on October 2011 traffic counts at the Resort driveway conducted by TMC.

A significant portion of the trips generated by the hotel is pass-by trips and not primary trips to the Resort as evidenced by the interview survey of Resort patrons conducted by SMS Research. Pass-by trips are made by vehicles that are already traveling on Kamehameha Highway and are destined for another North Shore or Windward location; however, these vehicles make an impromptu stop at the Resort to shop, eat at a restaurant, use the restroom facilities, or to access the beach. While these trips are part of the total driveway volume, *they are not new trips to the adjacent highway* and would travel by the site even if the Resort did not exist.

The Traffic Study indicates proposed new development will increase proportionate to development and the average total number of vehicle trips to the site at the following levels assuming no substantive change in Resort vehicle trip rates:

Weekday AM peak hour:	852 *new* trips
Weekday PM peak hour;	867 *new* trips
Saturday midday peak hour:	992 *new* trips.

These volumes will approach and depart the site in both directions on Kamehameha Highway and represent a substantial increase in volume over existing conditions.

To minimize the number of existing and new trips generated by the Resort, TDM measures are planned to be implemented as each program is deemed feasible and effective. These programs described below would provide Resort users (employees, residents, part-time residents and guests) with options for mobility both within the Resort and to nearby attractions in North Shore, residential neighborhoods, commercial centers and Windward communities.

The following strategies and incentives are intended to encourage guests, employees, and community members of the Resort to walk, bicycle, use public transportation, carpool, or use other alternatives to driving alone when traveling to and from the Resort. In general, travel demand management supports enhanced mobility by using existing transportation systems, boosts economic efficiency of the current transportation infrastructure, improves air quality, saves energy, and reduces traffic congestion.

Convenience and cost are the primary factors that affect a person's choice of transportation mode. Measures that work well for some people do not work as well for others. Therefore, an effective TDM Program needs to provide multiple options and incentives that are flexible enough to allow customization to meet the varied needs of individuals. The proposed program presents an array of strategies and measures that can meet the needs of the future Resort guests, residents, and employees.

One of the most effective ways to reduce vehicle trips for Resort guests is to encourage alternatives to renting a car from the first day they arrive in Honolulu and combining trips with other guests, employees and/or residents. Several modes of transportation from Honolulu to Turtle Bay were evaluated to understand the cost implications of each travel mode choice. There is currently a perception that taking a shuttle or a taxi to the Resort is much more expensive than renting a car. However, research shows that shuttle and taxi service are currently competitive in price but may still be viewed as less convenient.

In addition to evaluating available travel alternatives, Fehr & Peers evaluated provision of additional transit or shuttle service between the airport and Turtle Bay. The two main options evaluated were service buy-ups from TheBus and contracted shuttle service. Service buy-ups would involve the Resort paying TheBus to increase and improve route (minimize stops) service to Turtle Bay. Service hours added to increase service frequency would be paid for by the Resort, but all service would be provided by TheBus. Contracted shuttle service was also considered with varying levels of service frequency including 15 minute, 30 minute, hourly, and on-demand. The following table estimates the cost to the Resort of providing transit service.

Table 5-8: Summary of Shuttle Van / Bus Alternatives

Shuttle Service Frequency	Number of vehicles Needed	Max Daily Passengers (6 per van)	Comments
15 minute	8	336	No scheduling needed / avg 7.5 minute wait
30 minute	4	168	No scheduling needed / avg 15 min wait
60 minute	2	84	No scheduling needed / infrequent service
On Demand	4	168	Scheduling needed / quick service
TheBus service buy up to double frequency	10		Frequent slow service with multiple stops

An additional option for shuttle service is to contract with an existing shuttle service provider using a voucher system to pay for the shuttle service that is already being provided.

The Resort's trip generation is largely influenced by numbers and types of guests that arrive via Honolulu International Airport. The ability to provide high-amenity feasible shuttle service to and from the airport to Turtle Bay and back will be a key TDM strategy moving forward.

Once guests arrive at the Resort without their private vehicle, several options are available for exploring the North Shore. As described in Chapter Two of the SEIS, bike rentals, moped rentals, and Segway tours provide great options for short trips within or near the Resort. However, provision of a Resort shuttle to bring people to popular destinations such as restaurants and shopping in Haleʻiwa, North Shore Beaches, Waimea Valley and the Polynesian Cultural Center in Lāʻie will ease concerns that not renting a car would result in limited activity outside the Resort. While many guests will enjoy all of the amenities at the Resort (e.g. golf, tennis, swimming, surfing, etc.) guests will make periodic trips to off-site destinations during the course of their Resort stay. Another support feature to make the shuttle initiative effective is to have on-site rental or flex car options available. Currently, Enterprise Rental Car provides rental services by the day, but TDM strategies contemplate expanded service to allow for hourly rental car options for users who need less than a day worth of rental.

All of the TDM strategies can be marketed as the best way to travel to the Resort from the first visit to the Resort website. The website currently lists driving directions to the Resort. This can be improved by listing the options currently available for travel between the airport and the Resort, as well and from the Resort to popular destinations.

In addition to revamping the travel section of the website, combined lodging and transportation packages will be created. Packages that include transportation options such as shuttle vouchers, bus passes for the duration of the trip, and Segway, bike, or moped rentals allow people to customize and plan their transportation in a one-stop-shopping manner.

While encouraging Resort guests to travel without a private vehicle for their entire trip is important, to reduce vehicle trips to the Resort, employee-focused TDM will also be implemented as part of the overall TDM strategy. Several of the strategies discussed may encourage employees to switch from a private automobile to a different mode. For example, the concept of service buy-ups with TheBus could be applied to routes through areas where employees live. Buy-ups could coincide with typical shift change times. In addition, ~~the Resort~~ TBR will consider providing complimentary or reduced rate bus passes to employees. Bus pass programs are often paired with a guaranteed ride home program to ease concerns about emergency trips or last minute schedule changes. The guaranteed ride home program does exactly what it says and ensures that if employees get in a bind, they will be able to call a cab or other form of costs effective transportation service and be reimbursed for the expense if there was not transit service available to fulfill their travel need.

To help address questions and concerns about any of the transportation options available to Turtle Bay, a transportation coordinator position is planned to be created and staffed or contracted. This person would be in charge of the TDM marketing, shuttle or transit service coordination, transportation and lodging packages, and any other transportation-related questions Resort guests and employees might have. Including organization of a Transportation Management Association on the north shore to better coordinate regional traffic management issues and concerns.

For any of the transit alternatives, encouragement through marketing and other information distribution will be critical to successfully transitioning the "norm" from using a private automobile to using shuttles and other alternatives to private vehicle trips.

In summary, the following steps planned to be taken by the Resort to implement a successful TDM strategy that will encourage employees and guests to get out of their cars and generally enhance the experience for all Turtle Bay residents, neighbors, visitors, and employees.

- **Airport Shuttle or Transit Service:** Build a relationship with a transit or shuttle service provider to provide quality transit service for guests.
- **Resort Shuttle Service:** Contract with a service provider to provide shuttle service from the Resort to popular destinations on the island once a certain level of new development is in place creating the necessary economy of scale to make this strategy feasible.
- **Transportation Marketing Online:** Update the transportation section of the Resort website to include all options available for transportation to and from the Resort.
- **Lodging and Transportation Packages:** Create lodging and transportation packages that make using alternatives to the private automobile easy and convenient.
- **Employee Focused Service Buy-Ups:** Engage in conversations with TheBus service to improve service during strategic employee shift change times to encourage employees to travel using transit.
- **Employee Transit Pass Program:** Develop an employee transit pass program that provides reduced rate or complementary transit passes to Resort employees.
- **Guaranteed Ride Home Program:** Set up some form of feasible guaranteed ride home program in conjunction with the employee transit pass program.
- **Transportation Coordinator:** Staff or hire a Transportation Coordinator to manage the TDM programs listed here, facilitate the relationships with shuttle and transit service providers, create lodging and transportation packages, and be available for Resort guest and employee questions about transportation to and from the Resort.

Based on the trip generation estimates for new development presented in the SEIS, implementation of the TDM program described above is expected to reduce traffic volumes by at least 125 to 150 trips during the peak hours. An additional reduction of approximately 40 trips

could be achieved from existing volumes. The combination of these reductions would help to minimize impacts to Kamehameha Highway and the rest of the affected roadway system.

To prove the effectiveness of the TDM strategies, TBR recognizes the importance of a traffic count monitoring program and surveys that will be conducted at logical intervals to measure vehicle trips and travel behavior. The results of the monitoring program could be used to identify reduced or increased traffic improvements over time and would be helpful in modifying the TDM measures to maximize effectiveness.

In addition to these TDM measures, TBR will continue to work with the staff of the State DOT to and City DTS to address regional traffic improvements and strategies. The TIAR prepared for the SEIS provides a mechanism for TBR and the State DOT to determine collaboratively the fair and reasonable contribution that TBR should make towards regional traffic improvements. These "fair share" improvements could include, but are not limited to, the provision of turning lanes or traffic signals elsewhere in the traffic study area.

No fair share contributions for regional transportation improvements would occur under the No Action Alternative. No TDM measures would be employed. Traffic congestion on Kamehameha Highway would continue to increase relative to the increase in traffic demand generated by other development projects and to any increases in the number of visitors staying on O'ahu and visiting the North Shore.

The decision to proceed with the Proposed Action despite its unavoidable effects on regional traffic is based in large part upon this conclusion: in the face of shrinking fiscal resources at the local, state and federal levels of government, public-private partnerships offer the best opportunity for achieving community-wide goals. If the North Shore and Ko'olau Loa communities are sincere in their desire to improve traffic conditions, then the participation of the Turtle Bay Resort in the form of privately funded highway improvements fronting the resort, implementation of TDM strategies, and direct fair-share contributions to regional improvements, represents a meaningful opportunity for all affected parties to address a growing problem that will continue to exist with or without implementation of the Proposed Action.

B. 2. Acoustic Environment

The acoustic impacts of the Proposed Action are related to two principle areas of concern; noise created by vehicular traffic and noise created by construction activities.

B.2. a. Impacts of Future Traffic Noise

The future traffic noise levels and potential traffic noise impacts associated with the Proposed Action were examined by calculating future traffic noise levels in 2025 along Kamehameha Highway, Kuilima Drive, Marconi Road, and the proposed Kaihalulu Drive with and without the Proposed Action. Future traffic noise levels were also compared to existing noise conditions discussed in Chapter Two of the SEIS.

Table 5-9: Calculations of Project and Non-Project Traffic Noise Contributions (CY 2025) (PM Peak Hour LEQ or DNL)

STREET SECTION	NOISE LEVEL INCREASE DUE TO: NON-PROJECT TRAFFIC	PROJECT TRAFFIC
Kamehameha Hwy. West of Kaihalulu Dr. (Posted 35 mph)	1.0	2.6
Kamehameha Hwy. West of Kaihalulu Dr. (Posted 45 mph)	1.0	3.3
Kaihalulu Dr. At Kamehameha Hwy.	N/A	16.2
Kamehameha Hwy. from Kaihalulu to Kuilima (With Median)	1.0	1.8
Kamehameha Hwy. from Kaihalulu to Kuilima (W/O Median)	1.0	0.2
Kamehameha Hwy. East of Kuilima Dr. (Posted 35 mph)	1.1	2.4
Kamehameha Hwy. East of Kuilima Dr. (Posted 45 mph)	1.1	3.1
Kuilima Dr. At Kamehameha Hwy.	0.8	2.4
Kamehameha Hwy. West of Marconi Dr. (Posted 35 mph)	1.1	2.4
Kamehameha Hwy. West of Marconi Dr. (Posted 45 mph)	1.1	3.1
Kamehameha Hwy. East of Marconi Dr. (Posted 35 mph)	1.2	2.3
Kamehameha Hwy. East of Marconi Dr. (Posted 45 mph)	1.2	3.0
Marconi Rd. At Kamehameha Hwy.	0.0	8.4

Notes:

1. With medians and 35 mph posted within 600' of intersections on Kamehameha Highway.
2. Without medians and 45 mph posted beyond 600' of intersections on Kamehameha Highway, except 35 mph posted between Kuilima Dr. and Kaihalulu Dr.
3. At 50' from centerline of Kaihalulu Dr., future traffic noise levels predicted to be 16.2 DNL above existing background noise levels.

As indicated in Table 5-9, by 2025, if the Proposed Action were not implemented, traffic noise levels on Kamehameha Highway are projected to increase by 1.0 DNL. If the Proposed Action is implemented as described in Chapter Three of the SEIS, traffic noise levels on Kamehameha Highway in the areas fronting the project are predicted to increase by 0.2 to 3.3 DNL over and above the ambient traffic noise levels. The result will be a total increase of 1.2 to 4.3 DNL. These increases in traffic noise levels are considered to be moderate to high, and reflect the growth in forecasted project and non-project traffic in the project environs by 2025.

Table 2-29 summarizes the predicted increases in the future setback distances to the 65, 70, and 75 DNL traffic noise contour lines along the roadways in the project environs and attributable to both project plus non-project traffic in 2025 under the Proposed Action. The setback distances in Table 2-29 do not include the beneficial effects of noise shielding from terrain features and buildings, or the detrimental effects of additive contributions of noise from intersecting streets.

As indicated in Table 2-29, the setback distances to the 65 DNL contour are predicted to range from 81 to 173 FT from the centerline of Kamehameha Highway following project build-out in CY 2025 under the Proposed Action. The setback distances to the 65 DNL contour are predicted to increase from 23 to 33 feet from the centerline of Kuilima Drive following project build-out in

Table 5-10: Predicted Traffic Noise Levels at Various Receptor Locations (4.92 ft. High Receptor, 2025 DNL, with Proposed Action)

RECEPTOR LOCATION	SETBACK DIST. FROM EXIST. C.L.	2025 DNL W/O MITIGATION	2025 DNL WITH MITIGATION
Receiver #W1 (RR-1)	110 FT	66.9	61.0
Receiver #W2 (RR-1)	120 FT	66.4	60.2
Receiver #W3 (RR-1)	120 FT	65.9	60.2
Receiver #W4 (RR-2b)	135 FT	63.8	N/A
Receiver #W5 (RR-2b)	115 FT	65.1	60.4
Receiver #W6 (RR-2b)	310 FT	58.2	N/A
Receiver #E1 (TMK: 5-6-003:036)	48 FT	72.1	64.9
Receiver #E2 (TMK: 5-6-003:036)	106 FT	65.7	60.9
Receiver #E3 (RES-2)	110 FT	64.9	N/A
Receiver #E4 (RES-2))	120 FT	64.1	N/A
Receiver #E5 (RES-2)	454 FT	53.1	N/A

Notes:

1. Traffic noise levels include contributions from intersecting roadways.
2. "Loose Soil" ground attenuation assumed.
3. Minimum 6 foot high sound attenuation walls assumed for noise mitigation.

CY 2025. Along the proposed Kaihalulu Drive access road through the project site, the setback distance to the 65 DNL contour is predicted to be approximately 29 feet from the centerline of that roadway.

Table 5-10 presents the predicted traffic noise levels resulting from both non-project and project traffic on Kamehameha Highway, Kuilima Drive, and Kaihalulu Drive by CY 2025 at various noise sensitive receptor locations in the project environs. The applicable locations of the noise sensitive receptors in the project environs are shown in Figure 5-5. As indicated in Table 3-10, future traffic noise levels at existing and planned noise sensitive locations along Kamehameha Highway in the project environs are expected to exceed 65 DNL without noise mitigation measures. Existing residences west of Kawela Bay and two existing residences located approximately 0.7 miles east of Kuilima Drive are predicted to experience future traffic noise levels greater than 65 DNL.

Primarily as a result of forecasted traffic along Kamehameha Highway, future traffic noise levels at the Resort Residential (RR-1 and RR-2b) lots at locations W1, W2, W3, and W5 which front

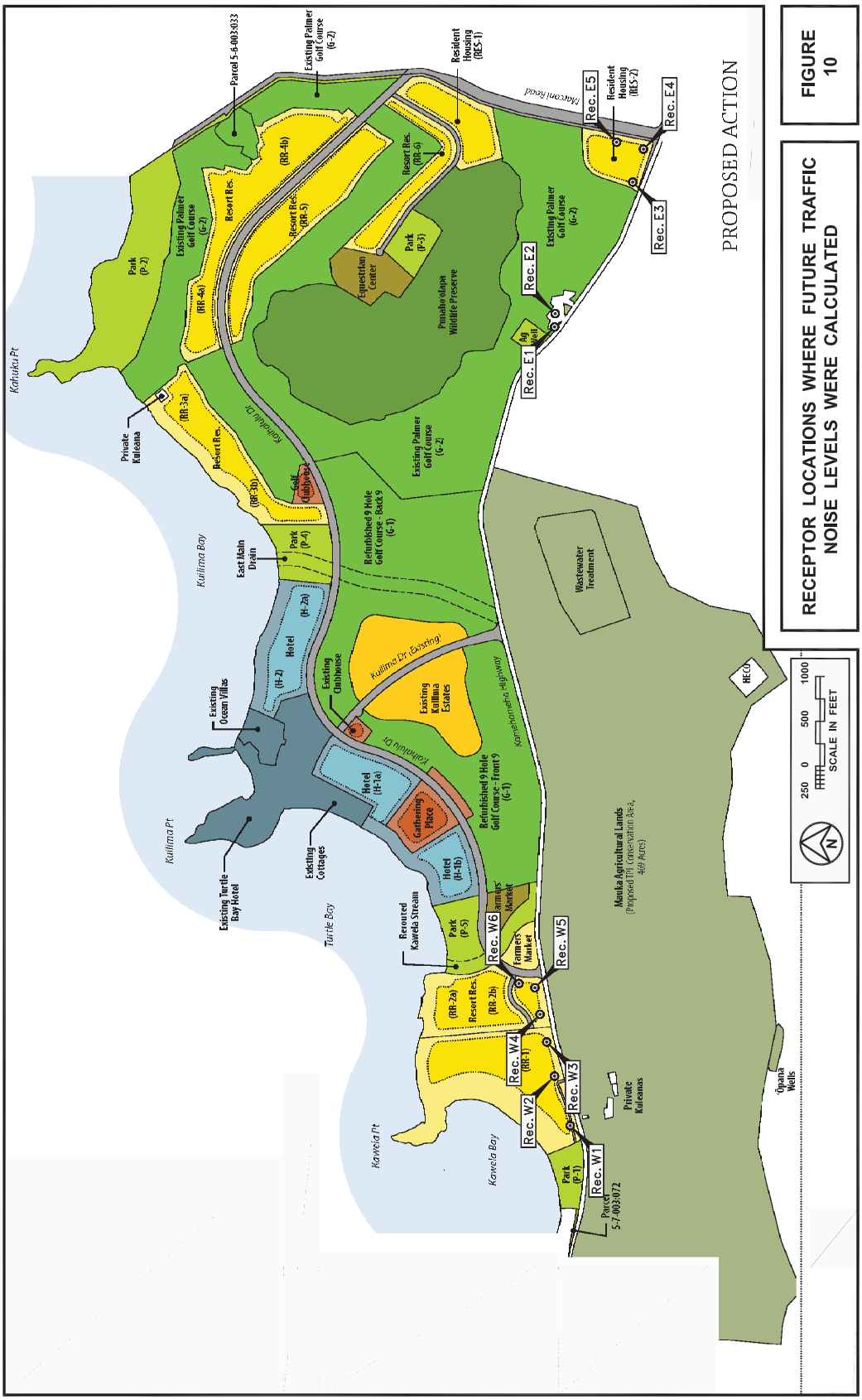
the highway are predicted to exceed the 65 DNL FHA/HUD noise standard. Due to even smaller setback distances from the highway, the Park (P-1) west of the Resort Residential (RR-1) lots will also experience traffic noise levels greater than 65 DNL.

The proposed Resident Housing (RES-2) lots at locations E3, E4, and E5 west of the Marconi Road intersection should experience traffic noise levels which do not exceed the FHA/HUD standard of 65 DNL. Noise levels above the 65 DNL FHA/HUD noise standard are also expected at the two existing residences (E1 and E2) 0.7 miles east of the Kuilima Drive intersection. At one of the residences (E1), existing traffic noise levels currently exceed 65 DNL.

Along Kamehameha Highway west of the project to Pahipahi'ālua Beach Park, the number of existing residences which experience traffic noise levels greater than 65 DNL will increase from thirteen to eighteen by 2025 under the Proposed Action. As presented in Table 2-29, the setback distance to the 65 DNL contour in this residential area west of the project is predicted to increase from 75 to 122 foot setback distance to the highway centerline.

Along Kuilima Drive, and probably along the new Kaihalulu Drive, existing and future residences are predicted to experience traffic noise levels below 65 DNL.

Figure 5-5: Receptor Locations Where Future Traffic Noise Levels Were Calculated



Page 29

B.2. b. Recommended Mitigation Measures

Increases in traffic noise levels along Kamehameha Highway that are attributable to the Proposed Action are considered to be in the moderate to high category, and are greater than the traffic noise level increases of approximately 1.0 DNL expected as a result of non-project traffic. Except for the two existing residences east of Kuilima Drive, the lands along the highway Rights-of-Way are generally vacant between Kawela Bay and Marconi Road. The closest noise sensitive residences beyond the project area are located west of Kawela Bay.

Along public roadways, where traffic noise levels result from both project and non-project traffic, traffic noise mitigation measures are typically implemented by private land owners. Government agencies (such as the Hawaii State Department of Transportation, Highways Division) typically address traffic noise impacts within the limits of construction during public roadway improvement projects, and include traffic noise mitigation measures if they are considered to be "reasonable and feasible."

At noise sensitive receptor locations W1, W2, W3, W5, E1, and E2 (see Figure 5-5), future traffic noise levels with the Proposed Action are predicted to exceed the 65 DNL FHA/HUD noise standard. At locations W1, W2, W3, E1, and E2, a possible reduction in the posted speed limit from 45 miles per hour to 35 miles per hour would reduce predicted traffic noise levels by approximately 2 DNL and to levels below the 65 DNL FHA/HUD noise standard at locations W3, W5, and E2. Predicted future traffic noise levels at receptor locations W1, W3, and E1 would still remain above 65 DNL with or without a 10 mile per hour reduction in the posted speed limit.

Other possible traffic noise mitigation measures are:

- increasing the setback distances of the receptors from the highway;
- constructing sound attenuating walls or berms between the highway and the receptors; or
- closure and air conditioning of the affected dwellings.

Increasing the setback distances of future Resort residences to 122 FT from the centerline of Kamehameha Highway should be considered as a possible noise mitigation measure. Alternately, the addition of approximately 6 FT high sound attenuating walls (or berms) would reduce future traffic noise levels below 65 DNL at single story structures in the Resort Residential area and at the two existing residences at locations E1 and E2. For two story (or higher) structures, the wall/berm height requirements increase due to the higher elevations of receptors on the upper floors. Whenever mitigation of traffic noise at the upper floors are required, the use of closure and air conditioning, or the use of sound attenuating windows are the more appropriate sound attenuation measures.

At existing receptor locations W1, W2, W3, W5, E1, and E2, the effectiveness of sound attenuating walls was examined. These results are shown in Table 3-10. Driveways to each

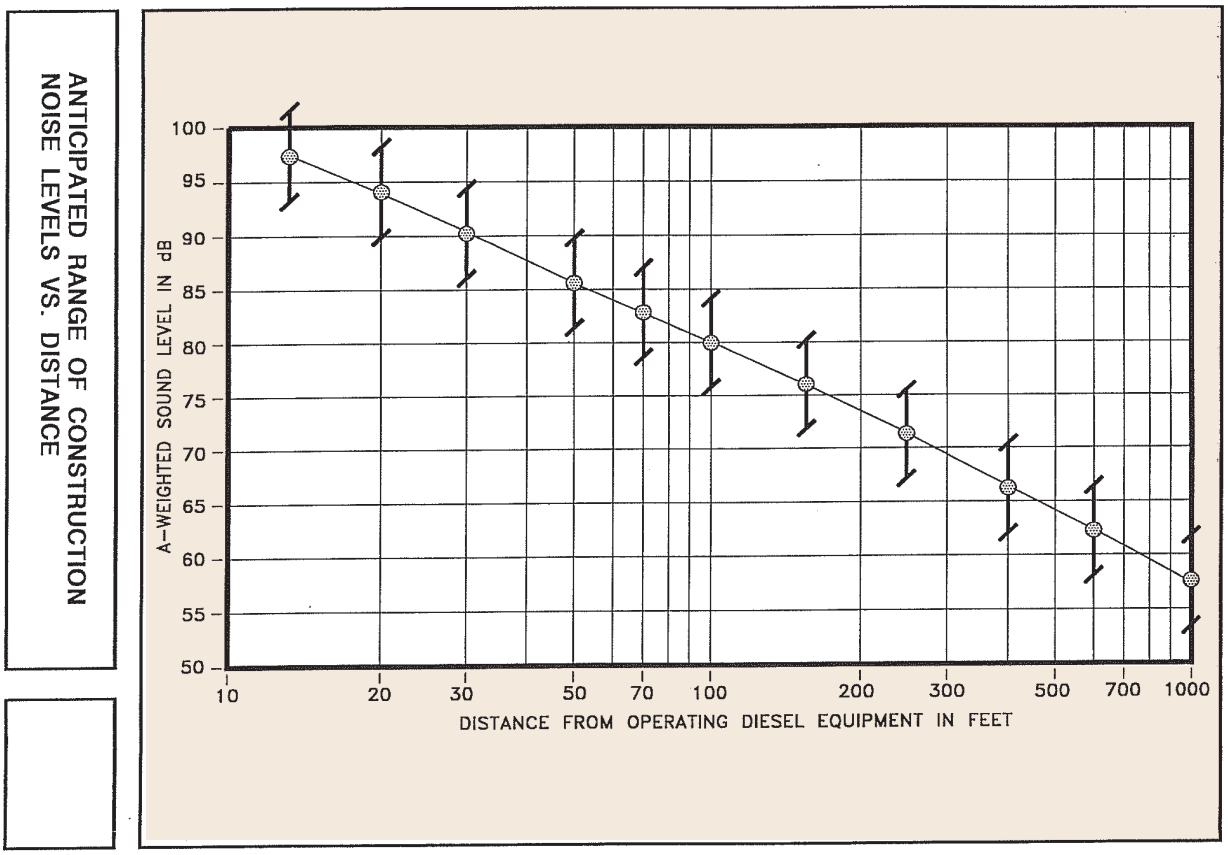
residence will limit the sound attenuation performance of 6 FT high walls to approximately 4 to 7 dB, but these levels of attenuation should be sufficient to reduce future traffic noise to levels below 65 DNL at the affected dwellings.

B.2. c. Impacts of Future Construction Noise

Audible construction noise will probably be unavoidable during the entire project construction period. The total time period for construction is approximately 11 years under the Proposed Action, but it is anticipated that the actual work will be moving from one location on the project site to another during that period. Actual length of exposure to construction noise at any receptor location will probably be less than the total construction period for the entire project.

Typical levels of noise from construction activity (excluding pile driving activity) are shown in Figure 5-6. Risks of adverse noise impacts during construction are highest at the existing hotel Cottages and Ocean Villas, and the existing residences at Kuilima Estates. Adverse impacts from construction noise are not expected to be in the "public health and welfare" category due to the temporary nature of the work and due to the administrative controls available for its regulation. Instead, these impacts will probably be limited to the temporary degradation of the quality of the acoustic environment in the immediate vicinity of the project site.

Figure 5-6: Anticipated Range of Construction Noise Levels vs. Distance



The noise from construction vehicles is considered to be a temporary condition. As construction vehicles, especially concrete trucks, do not travel at night, their impact is typically limited to day time hours, and for this reason is not anticipated to constitute a significant adverse impact.

B.2. d. Recommended Mitigation Measures

Elimination of construction noise to inaudible levels will not be practical in all cases due to the intensity of construction noise sources (80 to 90+ dB at 50 FT distance), and due to the exterior nature of the work (grading and earth moving, trenching, concrete pouring, hammering, etc.). The use of properly muffled construction equipment should be required on the job site. The incorporation of State Department of Health construction noise limits and curfew times, which are applicable on the island of O'ahu, is another noise mitigation measure that can be applied to this project. Figure 5-7 on the next page presents the normally permitted hours of construction for construction noise as well as the curfew periods for construction noise. Noisy construction activities are not allowed on Sundays and holidays under the DOH permit procedures.

B. 3. Archaeological Resources

B.3. a. Impacts

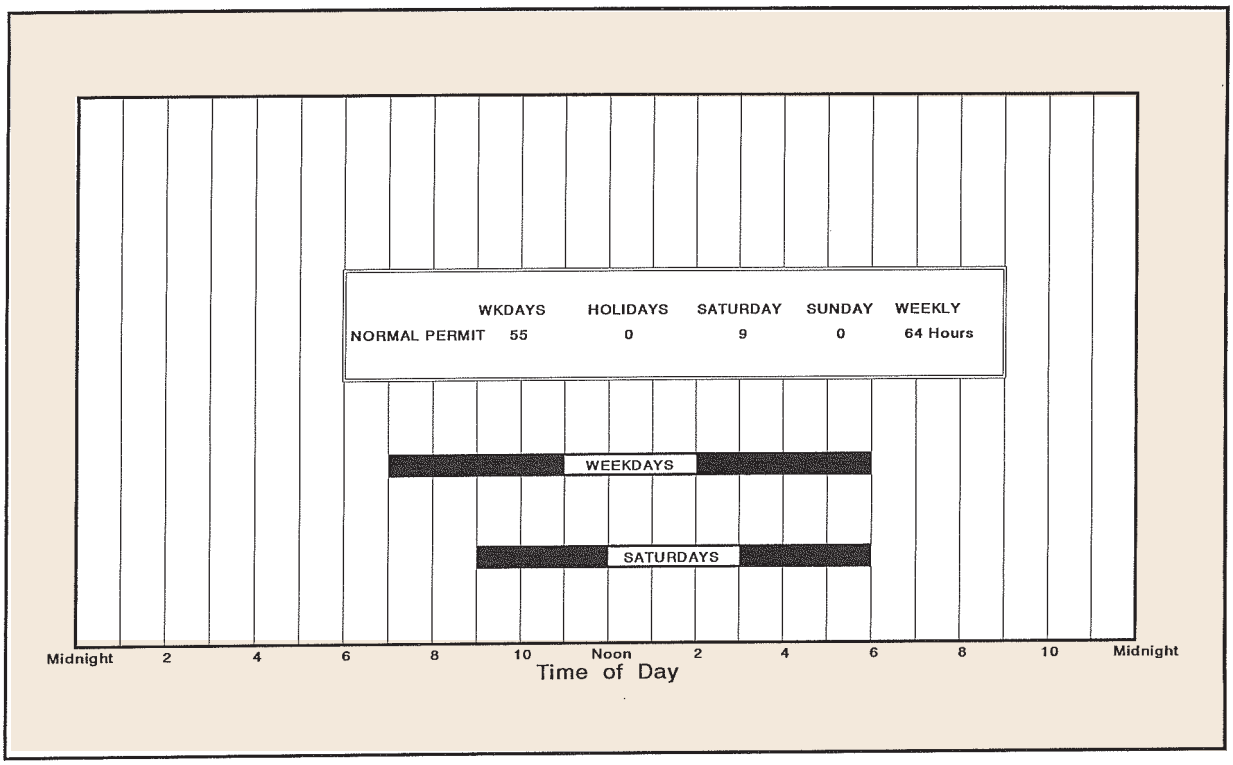
The archaeological resources have been identified through the comprehensive archaeological studies that have been conducted over the last 30 years on the Resort lands. The Draft Supplemental Archaeological Inventory Survey (see Appendix C) ~~supplements~~ ,and ~~updates~~ the Final Supplemental Archaeological Inventory Survey (see Appendix G) (collectively, the "SAIS"), supplement and update the extensive archaeological work completed to date. Although the original archaeological inventory survey technically did not need to be supplemented for the SEIS, TBR determined that it was the most prudent course of action to supplement and update it because of the sensitive nature of historic resources, in particular *iwi kūpuna*. The SAIS incorporated the extensive data from previously conducted archaeological studies, complied with relevant historic preservations laws and regulations, and consultation with various stakeholders. The intention of the SAIS was to take a proactive approach to ensure the protection of cultural resources within the proposed development. The SAIS employed a program of extensive systematic and discretionary archaeological test excavations, both mechanical and manual, for undeveloped areas of the property where substantial construction related excavations are planned.

For the purposes of the SEIS, it is assumed that all identified sites that are deemed to be significant by SHPD will be preserved to the extent required by the agency in conformance with the requisite treatment plans.

B.3. b. Recommended Mitigation Measures

The SAIS was not only an attempt to identify potential archaeological resources, including *iwi kūpuna*, but it was also an attempt to avoid adversely impacting archaeological and cultural resources during the implementation of the proposed action. In the case of *iwi kūpuna*, the better course of action is avoidance rather than mitigation.

Figure 5-7: Available Work Hours Under DOH Permit Procedures for Construction Noise



AVAILABLE WORK HOURS UNDER DOH PERMIT PROCEDURES FOR CONSTRUCTION NOISE

The mitigation of impacts to archaeological sites includes three procedural steps: consultation, significance assessment, and recommended treatment. It is an ongoing process that ultimately requires approval by the State Historic Preservation Division of the DLNR. All three of these steps have now been completed and the draft SAIS has been submitted to the SHPD for review and approval.

B.3.b. [1] ARCHAEOLOGICAL CONSULTATION

An initial step in developing a program to mitigate potential impacts to archaeological resources is to ensure that all parties with a direct interest are properly consulted.

The SAIS Plan was prepared in consultation with DLNR-SHPD and the Office of Hawaiian Affairs (OHA). Consultation ensures that the work complies with applicable laws, regulations and rules; and that the Plan reflects a mutually acceptable scope of work for the SAIS fieldwork prior to implementation.

Consultation with the Oʻahu Island Burial Council (OIBC) included an informational briefing regarding the SAIS work to solicit input regarding the study, and to identify any additional interested parties. DLNR-SHPD approved the SAIS report plan submitted.

Public notices seeking to identify interested parties, including lineal and cultural descendants, were published in Honolulu Star-Advertiser (May 5, 2011 and July 2, 2012) and the monthly OHA newsletter Ka Wai Ola (June 2011 and July 5, 2012). Two responses to the notices were received, including one individual who owns a *kuleana* parcel within the Resort property.

The consultation process sought input from interested organizations and individuals, including the local community, Hawaiian cultural organizations, recognized lineal and cultural descendants and individuals knowledgeable about the Resort property cultural resources and land use history. Most of this consultation is part of the Cultural Impact Assessment (CIA) prepared by Pacific Legacy, Inc. for the Resort property and was conducted in accordance with HAR §13-13-284-(c)-(3) and §13-13-276-5-(g).

The CIA study (which is discussed in the following Section) concluded:

> ***In summary, the Turtle Bay Resort property contains an array of cultural resources that are currently being used for traditional cultural practices, including marine food sources, medicinal plants, plants used in crafts, wood for woodcarving, and salt for various uses. The presence of human burials on the property has also been established. Furthermore, supernatural and/or divine phenomenon in the project area experienced by a few informants and acknowledged by others, suggests that there is still cultural significance and spiritual connection for those who have ancestral ties to the land (Mooney and Cleghorn 2012:75).***

SAIS consultation included TBR management meetings with the Kahuku Burial Committee (KBC), composed of families who have a connection to Resort lands and who have expressed a desire to take an active role in caring for ancestral remains on the property. Consultation also included TBR management meetings with OHA and with the Koʻolau Loa and Koʻolau Poko Hawaiian Civic Clubs. TBR management has invited cultural practitioners, *kūpuna* and knowledgeable individuals to be part of a cultural advisory council to share their *manaʻo* on the cultural issues associated with TBR.

The KBC was consulted concerning SAIS identification of all human remains. KBC members provided appropriate cultural protocols for the isolated human remain discovered at Site 4488 in Test Area C and the burials in Test Area B (Site 7288) and Test Area D (Site 7289).

B.3.b. [2] SIGNIFICANCE ASSESSMENTS

Pursuant to the DLNR Rules (2003) (Chapter 13-275-6 (d), HAR, the initial significance assessments provided in the SAIS are not final until concurrence from the DLNR has been obtained. The report has been submitted and is under review by DLNR-SHPD.

The sites documented during the survey are assessed for significance based on the criteria outlined in the Rules Governing Procedures for Historic Preservation Review (DLNR 2003: Chapter 13-275-6(b), HAR). According to these rules, a site must possess integrity of 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, information important for research on prehistory or history; and
- 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 or due to associations with traditional beliefs, events or oral accounts--these associations being important to the group's history and cultural identity.

Table 5-11 lists the significance assessments and recommended treatments for the 39 sites documented by the SAIS. Two other sites the Kahuku Point Archaeological Preserve (Site 6411) and Punahoʻolapa Marsh (Site 6412) are also included in the table for a comprehensive list of extant sites on Resort property. These two sites were previously assessed as significant for their research value and approved for data recovery (Walker et al. 1987); however, the landowner subsequently elected to preserve both sites. The remaining 39 sites are all assessed as significant under Criterion "d". The sites have yielded information important for understanding prehistoric and historic land use in project area. Two sites (7261 and Features A, C and D of 7284) are assessed as significant under Criterion "c" as good site type examples because they are the most intact remaining structures on Resort property that are associated with Kahuku Army Airfield. Three sites are additionally assessed as significant under Criterion "e" because human burials of probable Hawaiian ancestry are present (Sites 4488, 7288 and 7289).

B.3.b. [3] RECOMMENDED TREATMENTS

The mapping, written descriptions and photography at 16 sites adequately document them and no further work or preservation is recommended (see Table 3-11). These sites consist of World War II era features (Sites 7265, 7275- 7278, 7281 and 7284-7287), three sites that date to the early 1930s used in conjunction with Marconi Station (Sites 7279, 7280 and 7282), a stone wall (Site 7299), a stone mound (7283) and an abandoned 1950s era bus (Site 7267).

Treatment of the human remains identified at Sites 4488, 7288 and 7289 will be determined by the Oʻahu Island Burial Council (OIBC) in consultation with the Kahuku Burial Committee, other SHPD-recognized lineal or cultural descendants, and TBR. The determination process will require preparation of a Burial Treatment Plan, which is in process.

Table 5-11: Site Significance Assessments and Recommended Treatments

SIHP Site No.	Formal type	Function	Area	Significance Criteria	Recommended Treatment
4488	Human remains	Burial	C	D, E	OIBC*
5791	Railroad grade	Transportation	Punaho'olapa Marsh	D	PR
6411	Cultural deposit with burials	Habitation/Burial	Kahuku Point	D, E	PR
6412	Punaho'olapa Marsh	Agriculture/Resource Area	Punaho'olapa Marsh	D	PR
7261	Concrete structure	Gun position	Kawela Bay	C, D	PR
7262	Concrete slab	Indeterminate	Kahuku Point	D	PR**
7263	Concrete pier block	Antenna support?	Kahuku Point	D	PR**
7264	Revetment	Storage	Kahuku Point	D	PR**
7265	Concrete slab	Foundation	F	D	NFW
7266	Concrete pier blocks	Antenna support?	Kahuku Point	D	PR**
7267	Transit bus	Transportation	A	D	NFW
7268	Concrete structure	Indeterminate	Kahuku Point	D	PR**
7269	Concrete structure remnant	Indeterminate	Kahuku Point	D	PR**
7270	Metal tank	Storage	Kahuku Point	D	PR**
7271	Asphalt area	Transportation	Kahuku Point	D	PR**
7272	Concrete structure	Gun position?	Kahuku Point	D	PR**
7273	Concrete block	Indeterminate	Kahuku Point	D	PR**
7274	Concrete cylinder	Possible light fixture base	Kahuku Point	D	PR**
7275	Asphalt area	Runway remnant	E	D	NFW
7276	Concrete block	Anchor base	E	D	NFW
7277	Concrete slab	Foundation	E	D	NFW
7278	Concrete structure	Gun position?	E	D	NFW
7279	Concrete block	Antenna support?	E	D	NFW
7280	Concrete structure	Antenna support?	E	D	NFW
7281	Concrete structure	Gun position?	E	D	NFW
7282	Concrete block	Antenna support?	E	D	NFW
7283	Stone mound	Possible agricultural	F	D	NFW
7284	Foundation Complex	Military Support	F	D	NFW
7285	Metal posts	Gate	F	D	NFW
7286	Asphalt area	Pavement	F	D	NFW
7287	Concrete structures	Gun position?	F	D	NFW
7288	Human remains	Burial	B	D, E	OIBC*
7289	Cultural deposit with burial	Habitation/Burial	D	D, E	DR/OIBC*
7290	Cultural deposit	Habitation	D	D	DR
7291	Cultural deposit	Habitation	D	D	DR
7292	Cultural deposit	Habitation	E	D	DR
7293	Cultural deposit	Habitation	E	D	DR
7294	Cultural deposit	Habitation	E	D	DR
7295	Cultural deposit	Habitation	E	D	DR
7296	Cultural deposit	Habitation	E	D	DR
7299	Wall	Livestock control	Punaho'olapa Marsh	D	NFW

Signficance Criteria - C = Good site type example, D = Important for information content, E = Cultural Value

Treatments - DR = Data Recovery, PR = Preservation, NFW = No further Work

OIBC = Treatment of human remains to be determined by O'ahu Island Burial Council*

*PR** = Sites within the Kahuku Point Archaeological Preserve*

Fourteen sites and two features of an additional site are recommended for preservation. These sites consist of the Kahuku Point Archaeological Preserve (Site 6411) and Punahoʻolapa Marsh (Site 6412), the extant section of the Site 5791 railroad grade across the marsh, the Site 7261 military pillbox, and 11 WWII-era sites situated within the boundaries of the Kahuku Point Archaeological Preserve (Sites 7262-7264, 7266 and 7268-7274).

The eight remaining sites (Sites 7283 and 7290-7296) and the non-burial portion of Site 7289 retain the potential to yield information important for understanding prehistoric and early historic land use. These sites are recommended for data recovery, which would entail excavation to obtain a larger sample of portable remains and dating samples. The plans for data recovery would be detailed in a Data Recovery Plan prepared for DLNR-SHPD review and approval.

Specific plans for treatment of the burial features would be detailed in a Burial Treatment Plan prepared for DLNR- SHPD and the Oʻahu Island Burial Council (OIBC) review and approval. Measures to protect the non-burial sites recommended for preservation would be described in an Archaeological Site Preservation Plan prepared for DLNR- SHPD review and approval.

It is also recommended that all ground disturbing activities within the project area be monitored by an archaeologist. The extent and nature of this monitoring activity would be described in an Archaeological Monitoring Plan prepared for DLNR-SHPD review and approval. The monitoring plan should have provisions for variable intensity monitoring. The highest intensity would be for areas determined to have an increased potential for encountering cultural deposits (see Figure 2-40). At a minimum, construction excavation work in these areas should be done in a manner that maximizes archaeological monitoring effectiveness. The excavation of sand should be done by excavators and not with bulldozers or graders. Each excavating machine should have at least two monitors; one observing the excavation equipment as it digs and the other scanning the excavated material. TBR has proactively developed its own internal Cultural Management Plan that incorporates the above protocols for monitoring and protection of these resources.

B. 4. Cultural Resources

Based upon the ethnographic interviews conducted for the CIA, (presented in Appendix D) a total of 41 individual cultural resources were identified as currently being gathered from within the Resort property and adjacent coastal waters, including 32 marine species of fish, shellfish, and seaweed as well as sea salt, six plant species, and two tree species. These resources are currently being gathered by an array of Hawaiian cultural practitioners for a variety of traditional activities, including *lāʻau lapaʻau* (herbal healing), *kālai kiʻi* (wood carving), *lei* making, cordage making, and consumption. However, the majority of those interviewed shared that these resources have drastically declined in their lifetimes and are now found in diminutive numbers. Further, many fear the over-harvesting of these resources to the point of extinction and keep the locations of these resources guarded secrets. Several informants fear that any expansion of the Resort will impact the already resource deficient marine and terrestrial gathering areas.

There are three potential development alternatives to the Proposed Action, consisting of: the Full Build-Out Alternative, a Resort Residential Only Alternative, and a Conservation Partner Alternative. The fourth alternative, the No Action Alternative, would constitute the perpetuation of existing conditions.

Figure 5-8: Marine and Terrestrial Resources in Turtle Bay Resort – Proposed Action

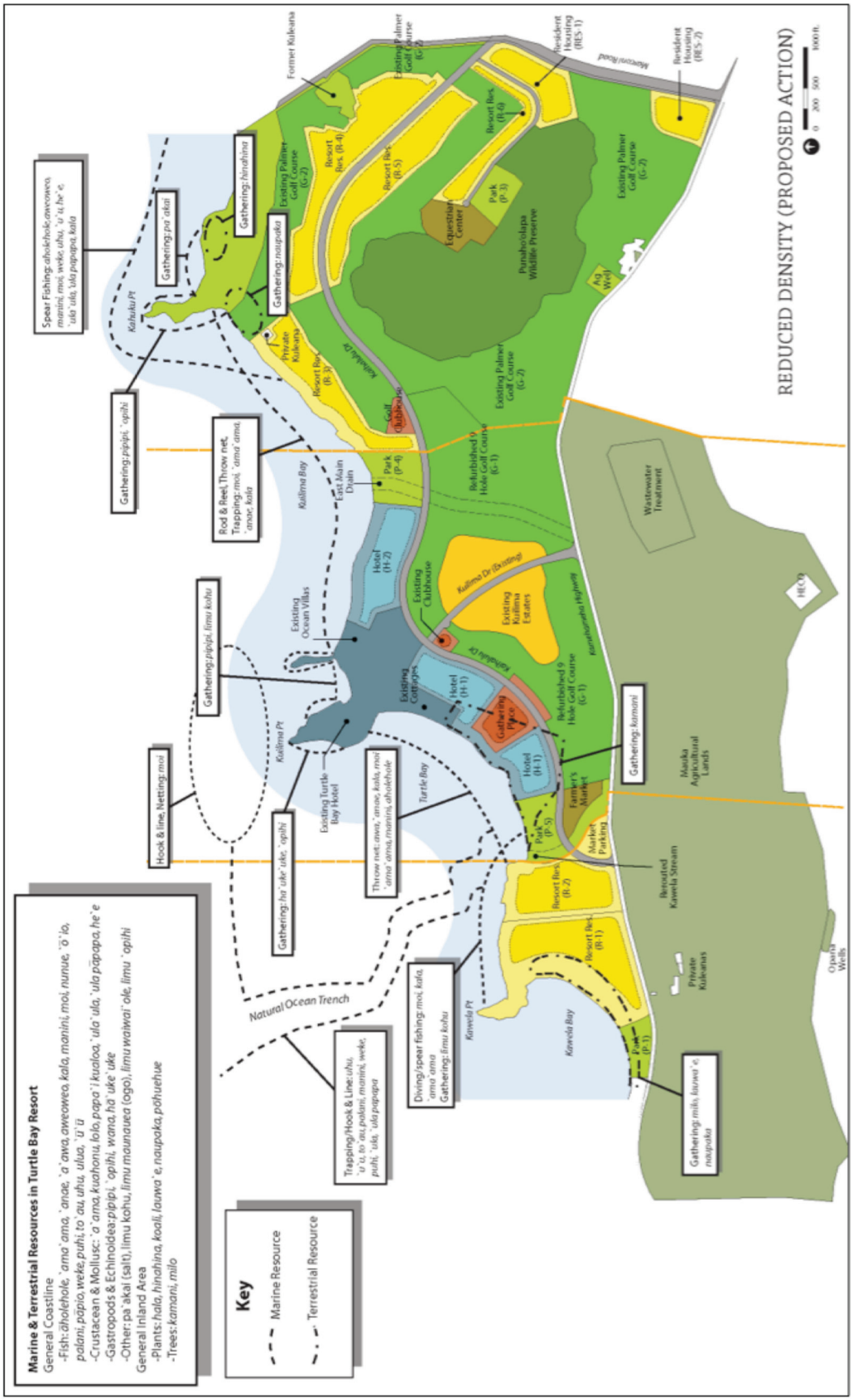


Figure 5-9: Marine and Terrestrial Resources in Turtle Bay Resort – Full Build-Out

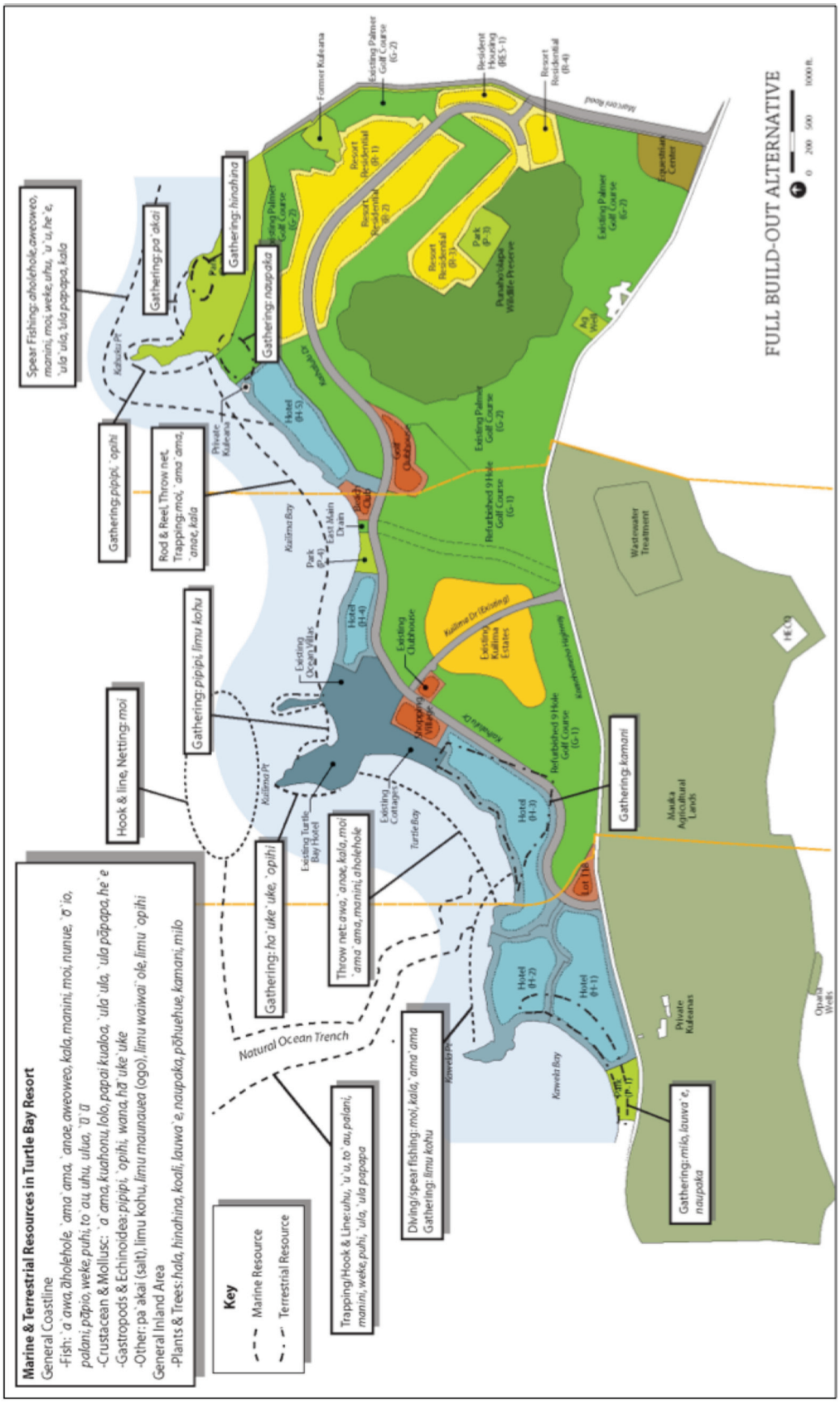


Figure 5-10: Marine and Terrestrial Resources in Turtle Bay Resort – Resort Residential

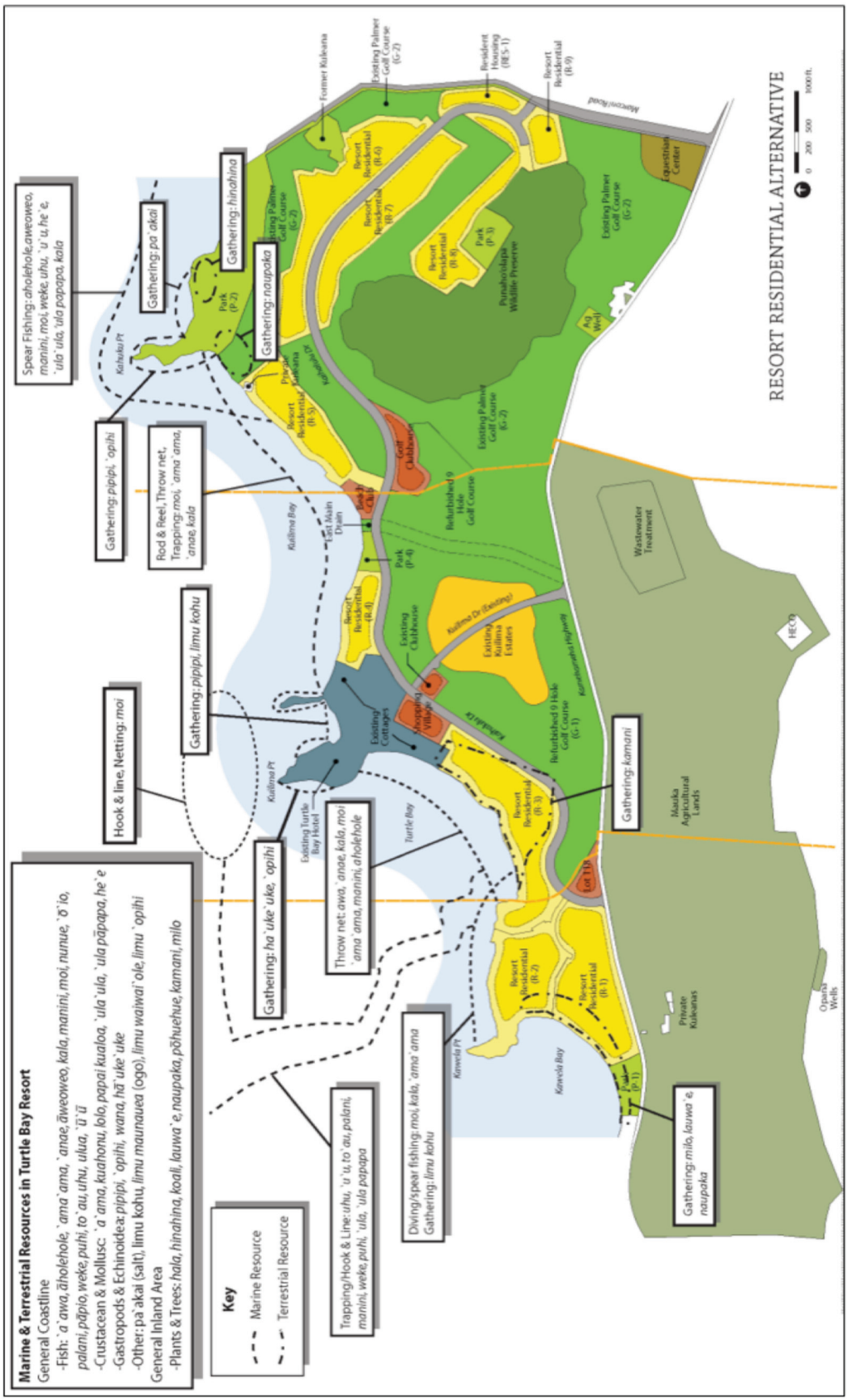
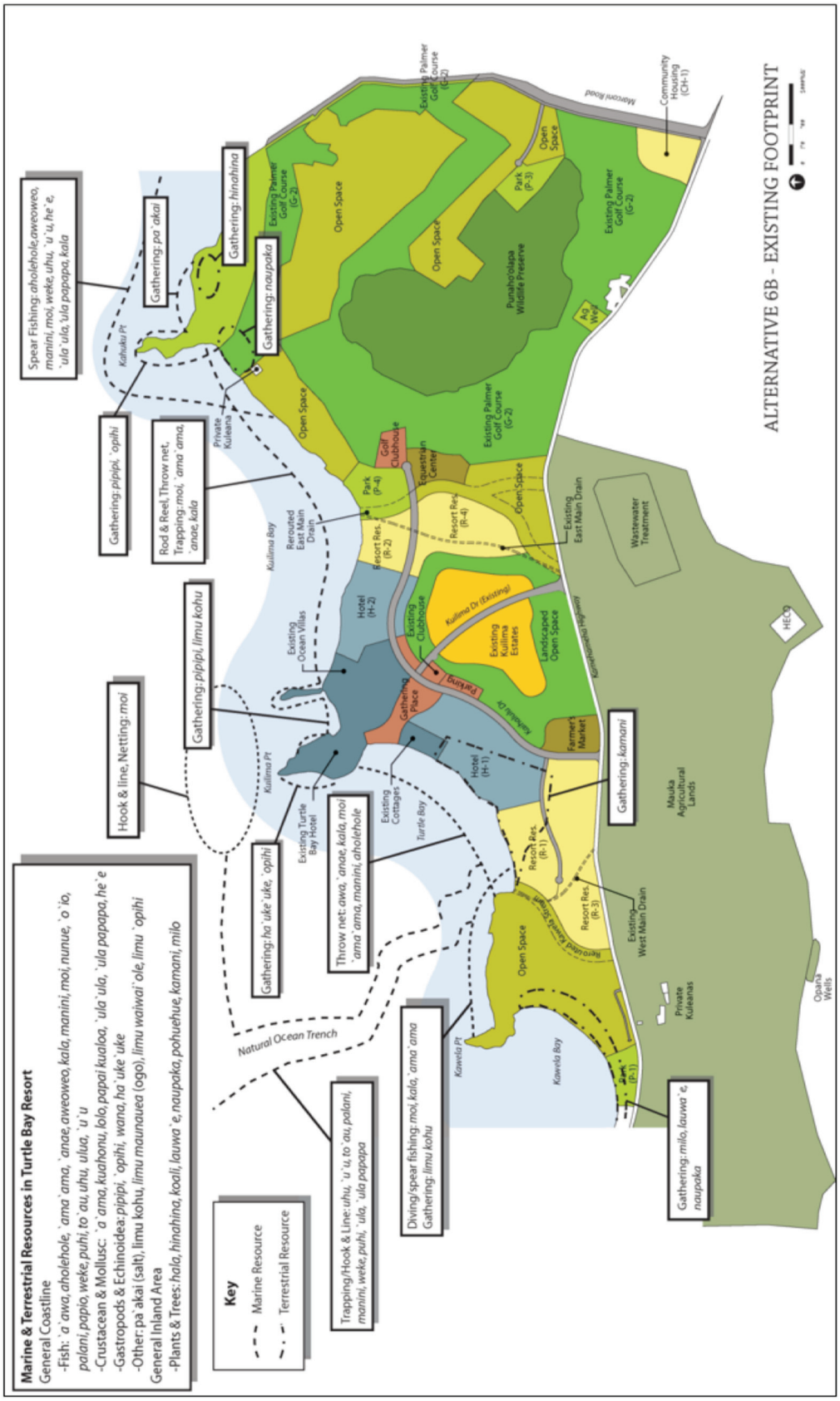


Figure 5-11: Marine and Terrestrial Resources in Turtle Bay Resort – Existing Footprint



B.4. a. Impacts

To address potential impacts to identified cultural resources in the Resort's SEIS Lands, surrounding lands, and coastal waters, the locations of identified cultural resources have been overlain on plan maps for the Proposed Action (Reduced Density), Full Build-Out, Resort Residential Only, and Conservation Partner alternatives (see Figures 5-8 through 5-11). The Proposed Action and the alternatives under consideration will have unique impacts to these cultural resources.

For the purposes of the SEIS, impacts to cultural resources for each development scenario were determined by the following three criteria:

1) Destruction of the resource (defined as the complete destruction of the area or eradication of identified cultural resource(s) caused by project related activities).
2) Limits access to the resource (defined as any project related environmental change that permanently limits the access to a cultural resource or activity area).
3) Compromises the health of a cultural resource, area, and/or practitioner and/or cultural practitioners caused by the proposed actions (defined as any threat to the physical condition of identified cultural resources, cultural resource area).

Identification of impacts was only possible for cultural resources that informants had assigned provenience to during community consultations.

Following is a discussion of each of the resource categories that were identified as being impacted

B.4.a. [1] MARINE RESOURCES

As previously mentioned, at this time 32 marine species were identified through community consultations as being caught or collected from the coastline and coastal waters off of the Resort. In addition, there are six plant and two tree species that are currently being gathered on the premises (see Tables 6 & 7; Figure 22 of the CIA). The Proposed Action and each alternative were examined individually to identify impacts to marine resources. Figures 5-8 through 5-11 overlay the general locations of cultural resources onto the individual set of plans for the Proposed Action and alternatives. In addition, Table 5-12 summarizes the impacts.

In examining the Resort's proposed development options, all will have some impact to cultural resources identified on the property. The identified impacts for each development scenario are as follow:

Proposed Action: The Proposed Action will likely impact a variety of marine resources, including *ʻaʻawa, ʻamaʻama, ʻanae, kala, moi, manini, āholehole,* and *limu kohu,* found in the near shore waters of Turtle and Kuilima Bays, which under this option will be flanked by up to three (3) hotels, resort residences, and public parks. In addition, terrestrial resources such as

Table 5-12: Impact Summary for Marine and Terrestrial Resources

Species		Proposed Action	Full Build Out	Residential Only	Conservation Partner
Marine Species	*ʻAʻawa*	3	2,3	2,3	2,3
	Āholehole	3	2,3	2,3	2,3
	ʻAmaʻama	3	2,3	2,3	2,3
	ʻAnae	3	2,3	2,3	2,3
	ʻĀweoweo				
	Kala	3	2,3	2,3	2,3
	Manini	3	2,3	2,3	2,3
	Moi	3	2,3	2,3	2,3
	Nunue				
	ʻŌʻio				
	Palani				
	Weke				
	Puhi				
	Toʻau				
	Uhu				
	Ulua (juv. *Pāpio*)				
	ʻŪʻū				
	ʻAʻama				
	Kuahonu				
	Lolo				
	Pāpaʻi kualoa				
	ʻUlaʻula (also *ʻula*)				
	ʻUla pāpapa				
	Heʻe				
	Pipipi		3		
	ʻOpihi		3		
	Wana				
	Hāʻukeʻuke		3		
	Limu kohu	3	2,3		
	Limu maunawea				
	Limu wāwaeʼiole				
	Limu ʻopihi				
Terrestrial Species	*Hala*				
	Hinahina				
	Koali				
	Lauwaʻe	1	1,3	1,3	
	Naupaka	1	1,3	1,3	
	Pōhuehue				
	Kamani	1	1,3	1,3	1,3
	Milo	1	1,3	1,3	

Key: 1 = Destruction of the resource; 2 = Limits access to the resource; 3 = Compromises health of the resource, area, and/or practitioner
Source: Cultural Impact Assessment (Appendix D)

lauwaʻe, naupaka, kamani, and *milo* found within the horse stable area and Kawela Bay area will be impacted by the planned hotels and resort residences. (see Figure 5-8).

- Construction Impacts:
  - limited to terrestrial resources, such as *lauwaʻe, naupaka, kamani*, and *milo in the path of construction* will be likely be destroyed during construction activities (Criterion 1)

- Long Term/Operational Impacts:
  - near shore marine resources, such as *ʻaʻawa, ʻamaʻama, ʻanae, kala, moi, manini, āholehole,* and *limu kohu* may be impacted by increased beach and water users invading sensitive habitats (Criterion 3)
  - terrestrial resources, such as *lauwaʻe, naupaka, kamani*, and *milo,* not destroyed during the construction phase, the health of the remaining plants and may be compromised by increase in population density (e.g. trampling) Resort landscaping (Criterion 3)

Full Build-Out Alternative: The Full Build-Out option will impact the greatest spectrum of marine resources. The effected marine species, include *ʻaʻawa, ʻamaʻama, ʻanae, kala, moi, manini, āholehole,* as well as *pipipi, ʻopihi, hāʻukeʻuke,* and *limu kohu,* which are typically found in or on coral reefs and near-shore waters (see Figure 5-9). The effected terrestrial species include *lauwaʻe, naupaka, kamani*, and *milo,* which are located in the horse stable, eastern Kuilima Bay, and Kawela Bay areas where several hotels are proposed.

- Construction Impacts:
  - Limited to terrestrial resources, such as *lauwaʻe, naupaka, kamani*, and *milo in the path of construction* will likely be destroyed during the construction of the hotels (Criterion 1)

- Long Term/ Operational Impacts:
  - Coastal resources such as *ʻaʻawa, ʻamaʻama, ʻanae, kala, manini,* and *moi*, as well as *pipipi, ʻopihi, hāʻukeʻuke* will have limited access to them due to the buildup of hotels on the coastline (Criterion 2)
  - Near shore marine resources, such as *ʻaʻawa, ʻamaʻama, ʻanae, kala, manini,* and *moi*, as well as *pipipi, ʻopihi, hāʻukeʻuke,* and *limu kohu* may be impacted by increased beach and water users (Criterion 3)
  - Terrestrial resources, such as *lauwaʻe, naupaka, kamani*, and *milo,* not destroyed during the construction phase, the health of the remaining plants and may be compromised by increase in population density (e.g. trampling) Resort landscaping (Criterion 3)

Resort Residential Only Alternative: The Resort Residential Only option will impact numerous marine species, including *ʻaʻawa, ʻamaʻama, ʻanae, kala, moi, manini,* and *āholehole* along most of the coastline. Terrestrial resources, including *lauwaʻe, naupaka, kamani*, and *milo*

located in the horse stable, eastern Kuilima Bay, and Kawela Bay areas where will be impacted by the planned residential units and Beach Club (see Figure 5-10).

- Construction Impacts:
  - Limited to terrestrial resources, such as *lauwa'e, naupaka, kamani*, and *milo in the path of construction* will probably be destroyed during the construction of the residential and commercial areas (Criterion 1)

- Long Term/Operational Impacts:
  - Marine resources such as *'a'awa, 'ama'ama, 'anae, kala, manini,* and *moi*, as well as *pipipi, 'opihi, hā'uke'uke* will have limited access to them due to the buildup of residences and commercial areas on the coastline (Criterion 2)
  - Near shore marine species such as *'a'awa, 'ama'ama, 'anae, kala, moi, manini,* and *āholehole* may be impacted by increased beach and water users (Criterion 3)
  - Terrestrial resources, such as *lauwa'e, naupaka, kamani*, and *milo,* not destroyed during the construction phase, the health of the remaining plants and may be compromised by increase in population density (e.g. trampling) resort landscaping (Criterion 3)

Conservation Partner Alternative: The Conservation Partner alternative will impact numerous marine species, such as *'a'awa, 'ama'ama, 'anae, kala, manini,* and *moi*. Yet, the impacts appear to be less extensive than the other alternatives as much less of the coastal areas will be developed with fewer units (see Figure 5-11). Only *kamani* found in and around the horse stables appears to be potentially impacted by proposed developments on this alternative.

- Construction Impacts:
  - Limited to *kamani*, if in the path of construction, will probably be destroyed during the construction of the residential and commercial areas (Criterion 1)

- Long Term/Operational Impacts:
  - On a much smaller scale, marine resources such as *'a'awa, 'ama'ama, 'anae, kala, manini,* and *moi* will have limited access to them due to the buildup of residences and hotels on the coastlines of Turtle Bay and west Kuilima Bay (Criterion 2)
  - Near shore marine species such as *'a'awa, 'ama'ama, 'anae, kala, moi, manini,* and *āholehole* may be impacted by increased beach and water users, though on a smaller scale than the previously mentioned plans (Criterion 3)
  - The *kamani* trees not destroyed during the construction phase, the health of the remaining plants and may be compromised by increase in population density (e.g. trampling) Resort landscaping (Criterion 3)

In summation, the most affected marine species are those that thrive on or near reefs as well as shallow sandy waters. The foreseen impacts are trampling or crowding of habitat by an increased number of beach-going vacationers and/or residents. As the high density hotels of the Full Build-Out option are proposed to front Kuilima Bay, Turtle Bay, and Kawela Bay, these marine resources may be impacted with increased direct human contact including: trampling, dragging gear, picking up/ molesting marine life, (Kerr et al. n.d.) and increase in sunscreen introduced into water, which has a negative effect on coral reef ecosystems (European Commission 2008; Danovaro et al. 2008; Kerr et al. n.d.). Thus, the health of the cultural resource habitat will likely be compromised (Criteria 3), which will decrease the health and subsequently the population of these resources. As for the terrestrial resources, the clearing of land and construction of structures of any size will likely result in the destruction of these plants and trees.

While these increased impacts would not occur under the No Action Alternative, it is likely that cultural resources will continue to decline based upon the historical experience noted by the cultural informants at the outset of this discussion. These declines are likely attributable to the uncontrolled practices that occur now and will continue for the foreseeable future.

B.4.a. [2] ARCHAEOLOGICAL RESOURCES

Please refer to the discussion in Section B.3 above.

B.4.a. [3] IWI KŪPUNA

The presence of *iwi kūpuna* in SEIS Lands and surrounding areas is already well established. Burials have been discovered in each *ahupuaʻa*, predominantly near to the coastline (Haun et al. 2011:68-71). In any ground-disturbing activity nearer to the coast, *iwi kūpuna* could potentially be impacted. As the inland portions of SEIS Lands are documented as former cane fields, the chance of encountering *iwi kūpuna* in these lands is less likely.

Currently, the Kahuku Burial Committee (KBC) has accepted the *kuleana* to *mālama i na iwi kūpuna* in compliance with the burial laws.

Implementation of the Proposed Action or the development alternatives will result in similar potential impacts because they each involve ground disturbance. The No Action Alternative will not likely impact *iwi kūpuna* because no physical disturbance to that land would occur.

B.4.a. [4] SPIRITUAL CONNECTIONS TO THE LAND

The fact that the general area has been the associated with many mythical legends and *moʻolelo,* gives it a significant station in Hawaiian pre-history and in the Hawaiian psyche. Thus, it is critical that native Hawaiians and, or cultural practitioners continue to be involved in the protection and preservation of these valued cultural resources to ensure their spiritual connection to the land.

B.4.a. [5] CONTEMPORARY USES OF LAND AND SEA

A wide variety of contemporary and ancient versions of traditional activities as well as non-traditional activities have been identified as occurring on SEIS Lands and surrounding areas, many of which are not mutually exclusive. Under the No Action Alternative, these activities are likely to continue. It is possible that marine and terrestrial activities will be impacted, to varying degrees, by the Proposed Action, Full Build-Out, Resort Residential Only, and Conservation Partner alternatives in terms of access during and after construction (Criterion 2).

B.4. b. Recommended Mitigation Measures

In the opinion of Pacific Legacy, the consulting ethnographer, while none of the cultural resources that may potentially be impacted by the Proposed Action are unique or restricted to the SEIS Lands or surrounding areas, it is clear from the ethnographic interviews, the archival research, and community consultations that this area and its resources are important to the consulted parties, the greater native Hawaiian community, and the community as a whole. A number of the consulted parties do not wish to stop development or go back to a pre-contact lifestyle, but do share a genuine concern for the land and sea, as well as resources for present and future generations. Many want to hold on to their cultural heritage by continuing the practices of their ancestors and make sure that *iwi kūpuna* are treated with respect.

The Proposed Action proposes to reduce density by over 60% from the density proposed in the original expansion project as formalized under the1985 Unilateral Agreement. The Proposed Action concentrates higher density development in *makai* Hanakaʻoe Ahupuaʻa, the Resort's existing core, by constructing two new hotel sites and a new community Gathering Place near to the existing Turtle Bay Hotel. The originally proposed hotel sites in the *ahupuaʻa* of ʻŌpana-Kawela (to the west) and Kahuku (to the east) will be developed instead with lower density ~~r~~Resort-~~r~~Residential Units. Density at ʻŌpana-Kawela Ahupuaʻa will be reduced by over 75% of what is allowable under the existing zoning. Similarly, Kahuku Ahupuaʻa is planned for affordable ~~c~~Community ~~h~~Housing Units and ~~r~~Resort-~~r~~Residential ~~u~~Units with sixty-five percent less density than is allowed under existing entitlements. The result is the concentration of development in the central core of the SEIS Lands and the general preservation of a rural character to the east and west. Further, the Proposed Action provides for two hotel sites, rather than the five approved in the current land use entitlements and the number of ~~h~~Hotel ~~u~~Units is reduced from 2,500 to ~~a range of~~ 625, of which up to 375 may have a lock-off feature ~~to 1,000~~. By implementing generous shoreline setbacks, education, monitoring, and Resort wide stewardship coordination programs, this development concept achieves public access to the entire shoreline intended in the Unilateral Agreement and further enhances the pedestrian experience, affording unencumbered coastal access (Sichter 2012b).

As presented in Appendix A, TBR has elected to incorporate traditional Hawaiian values and the framework of the *ahupuaʻa* system into the proposed expansion, with the *Tomorrow's Ahupuaʻa* framework. Consistent with the recommendations of the CIA, representatives of TBR will also consult with the ʻAha Kiole Advisory Committee (AKAC), consisting solely of Native

Hawaiian traditions experts and cultural practitioners, which was formed in 2007 by the Hawaii State Legislature through Act 212 to create natural and cultural resource management system recommendations that are based on Native Hawaiian traditional land and resource management systems to be integrated into the state's existing governmental organization. The AKAC (2010) describes the *ahupuaʻa* as a sub-unit of land under the *moku* (regional) land management system, termed as the ʻAha Moku System. The AKAC would be instrumental in ensuring that the proposed *Tomorrow's* ~~*Ahapuaʻa*~~ *Ahupuaʻa* ~~concept~~ philosophy is harmonious with traditional values.

The role of *konohiki* also includes maintaining the balance of resources and prosperity throughout the *ahupuaʻa*, keeping harmony with neighboring *ahupuaʻa*, and *mālama* those who depend on the Resort and its leadership. In addition, maintaining respect for the land and its *mana* is crucial in developing responsibly.. It is, perhaps, the best way to show respect to the host culture and to set a good example for others. TBR will be proactive in embracing the role of *konohiki*, by consulting with local cultural practitioners and *kūpuna* to identify the needs of the *kaiāulu* (local community) and present them with possible solutions to help balance resources and prosperity within ~~*Tomorrow's Ahupuaʻa*~~ the SEIS Lands. Consistent with the philosophy of *Tomorrow's Ahupuaʻa,* TBR proposes to implement a *mauka-makai* (upland to ocean) and inter-*ahupuaʻa* resource distribution system ~~to make TBR's *Tomorrow's Ahupuaʻa* concept a leader in cultural and natural resource management~~. TBR will prioritize commerce for Resort operations between themselves and local agriculturists, horticulturalist, aqua-culturists, craftsmen, tradesmen and other goods or service providers over providers of goods and services from outside areas.

Regarding the marine and terrestrial resources that will inevitably be impacted by the proposed development, TBR will embrace the role of *konohiki* by initiating a Cultural and Natural Resources Management Plan (CNRMP) as well as a multi-media and multi-faceted Education Program. The CNRMP is presented as Appendix L to the SEIS.

To help implement a balanced and integrated CNRMP, TBR will assemble a committee comprised of local *kūpuna* with expertise in marine resources as well as officials from the appropriate government agencies and environmental/wildlife organizations. This plan provides a starting point for TBR to act as *konohiki* by facilitating meetings for the committee and between the committee and the *kaiāulu*. The Resort will also provide a venue to hold Education Program workshops to help preserve cultural practices and natural resources as well as allow non-Hawaiian peoples the opportunity to learn from their host culture. Tourists and visitors could be informed about the sensitive nature of natural resources and their importance in the traditional lifestyle. These concepts will be instrumental in enforcing a CNRMP. Additionally, designing an ethno-botanical garden within the Resort will be a good way to provide a space to continue traditional agricultural and horticultural practices in a way that allows local cultural practitioners to share the merits and importance of *lāʻau lapaʻau*, traditional Hawaiian diet, and traditional crafts to visitors as well as locals.

In regards to concerns about the potential disturbance of archaeological sites, an Archaeological Monitoring Plan (AMP) will be prepared prior to the commencement of construction. The Resort's current Cultural Management Program will continue to be implemented. Further, if archaeological sites are encountered during ground disturbing activities of any alternative chosen by TBR, a cultural interpretive display using artifacts (to the extent possible), archival photos, artistic renderings, and traditional accounts from ʻŌpana, Hanakaʻoe, and Kahuku *Ahupuaʻa* descendants and Native cultural practitioners will be prepared to educate its patrons of the Resort's colorful past.

TBR will treat *iwi kūpuna* with the utmost respect. To those who have roots in the area, *iwi kūpuna* are the remains of their ancestors and any disturbance to them should be avoided. The AMP will address concerns of encountering inadvertent discoveries during project related construction. TBR will continue to regularly consult with the Kahuku Burial Committee (KBC), which represents individuals and families who have a lineal and cultural connection to the area as well as the *iwi kūpuna*.

A concern has been expressed by community consultations that unsettled or displaced spirits may plague the new development and/or surrounding localities. Further, several localities in the subject area are known as *wahi pana* (legendary places), where *nā kūpuna* ~~*kāpuna*~~ (ancestors) lived and worshiped, and is the final resting place for the ancestors of many local people. Thus, portions of this land are considered to be imbued with *mana* (divine power). Therefore, prior to any major event or construction related activity be preceded with a pule (blessing) ceremony performed by a *kahuna* or *kahu pule*.

A plethora of activities perceived as contemporary and ancient versions of traditional activities as well as non-traditional activities have been identified as occurring on SEIS Lands and surrounding areas. To ensure that cultural resources are not impacted, TBR will provide alternate access routes to these activity areas to the extent practicable should current routes be obstructed by project or Resort related activities.

Finally, in the development areas that presently contain milo, TBR will ensure that Hawaiian practitioners can harvest the wood where appropriate before vegetation clearing and site development begins.

While the process of conducting a Cultural Impact Assessment for the purposes of this SEIS will contribute to increased cultural awareness at the resort, it is likely that some of the cultural programs discussed above may not be implemented under to No Action Alternative due to the limited availability of fiscal resources.

B. 5. Agricultural Resources

B.5. a. Impacts

Neither the Proposed Action nor the development alternatives will have a significant adverse impact upon agricultural resources. No agricultural activity is conducted on the SEIS Lands.

The Proposed Action will have a beneficial impact upon the ~~agricultural activities associated with agricultural lands the Resort owns *mauka* of Kamehameha Highway that are not part of the SEIS Lands. To ensure their long-term preservation for agricultural use, the Resort owners are working with the Trust for Public Lands to establish a conservation easement over the agricultural lands.~~ utilization of nearby agricultural lands. The provision for a Farmers' Market within the SEIS Lands as part of the Proposed Action will directly benefit the farmers by providing them with a new market for their products in close proximity to their fields.

The Resort owners are also exploring ways to strengthen a relationship between the farms and the existing and proposed restaurants at the Resort. By establishing a farm-to-~~plate~~ table relationship, farmers will benefit by having stable long-term market for their produce and the restaurants will benefit by being able to offer fresh locally grown agricultural products.

B.5. b. Recommended Mitigation Measures

Because the Proposed Action results in no significant adverse impacts to agricultural resources, no mitigation measures are warranted. The No Action Alternative will result in no increased benefits to the agricultural lands that might otherwise arise as the result of an expanded farm-to-table program and the creation of a Farmers Market on the resort property.

Table 5-13: Population at Turtle Bay Resort, with Proposed Action

	Existing Resort	Proposed Action, 2025	Combined
Staying at the Resort			
Visitors and Part time Residents	1,044	2,206	3,251
Full-time Resort Residents	223	55	278
Community Residents	-	638	638
Total	1,267	2,900	4,167
On-Site Daytime Population			
Visitors and Part time Residents	783	1,655	2,438
Full-time Residents	167	520	688
Operations Workers	439	561	1,000
Day Visitors	96	180	276
Daytime Total	1,485	2,916	4,401

NOTE: From Tables 4-5, 4-6 in the Socio-Economic Impact Analysis in Appendix F. All tables in this summary bring together estimates and calculations from the body of the socio-econ report. Methodology and references are shown in Chapters 4 and 5 and Appendix B of the socio-econ report. The numbers in the table are rounded, so totals may differ slightly from the sum of the numbers shown.

B. 6. Socio-Economic Characteristics

Following is a discussion of how the Proposed Action will impact the socio-economic characteristics of the region based on the findings of the Socio-Economic Impact Analysis presented in Appendix H. This discussion includes the anticipated impacts of the Proposed Action and the development alternatives. Impacts of the No Action Alternative would equate to conditions in 2025 without the Proposed Action.

B.6. a. Population Growth

Population growth at the Resort has already been anticipated in government projections for slow increases in the region's resident population. The population growth anticipated for the Proposed Action is far lower than that which would result if Full Build-Out pursuant to existing land use approvals occurred.

When the new development is built and occupied – by 2025 according to the anticipated project phasing -- the Proposed Action would substantially increase the on-site population at the Resort, bringing not only visitors, but also new part-time and full-time Resort residents to the Resort. The population on-site during the daytime would include visitors and residents staying at Turtle Bay, Resort employees, and day visitors. Based on the socio-economic impact analysis presented in Appendix F, as of 2025, the daytime population of the existing Resort (including visitors, residents, and workers on-site) would amount to 34% of the total Resort population with the Proposed Action (see Table 5-13).

For purposes of comparison, as of 2025, the existing Resort population would amount to 35% of the future Resort population the Full Build-Out Alternative. However, when the Full Build-Out Alternative is completely absorbed - as of approximately 2053 - the existing Resort would account for only 14% of the total Resort daytime population. Said another way, if the Full Build-Out alternative allowable under existing land use approvals were implemented, in 2025 the population effects would be similar to the Proposed Action. But, while the Proposed Action would be completed, development of the Full Build-Out Alternative would continue another 28 years, rendering the existing population at the Resort to be but one-seventh of the future Resort population.

Nearly all of the Resort's workers and community residents could come from the KNS region. For the purposes of impact assessment, a share of the workforce and on-site community resident population was assumed to come from other locations on O'ahu. The new population associated with the Proposed Action would account for about 3 percent of the regional resident population, or 37 percent of the projected growth in regional population by 2025.

B.6. b. Recommended Mitigation Measures

Implementation of the Proposed Action is intended to mitigate the impacts of developing the Resort to Full Build-Out as envisioned in the 1985 EIS and allowed under existing entitlements.

B.6. c. Employment and Wages

The Proposed Action will bring both construction jobs and continuing operations jobs, and will significantly increase payrolls in the Ko'olau Loa / North Shore (KNS) region.

B.6.c. [1] CONSTRUCTION

Project construction would begin as soon as building permits are granted. Assuming that construction begins in 2014, implementation of the Proposed Action is anticipated to take about 10 years. Construction-related jobs would last until build-out. All construction jobs are estimated as full-time jobs for a given year. These fall into the following categories:

1. On-site construction jobs: workers at the Resort. Their number is estimated on the basis of annual construction spending. The actual number of workers on a given day would vary according to the jobs to be done.
2. Other direct construction jobs: Firms responsible for construction have workers at their offices and base yards as well as on-site. As a rule of thumb, on-site workers account for 80% and off-site workers account for 20% of direct construction jobs.
3. Indirect jobs: These are jobs supported when construction firms buy materials and services locally.
4. Induced jobs: These jobs are supported by expenditure of wages of direct and indirect workers. These include, jobs in retail trade, or educational and health services.

Construction of the Proposed Action will involve an estimated 3,263 direct jobs over 11 years. Construction wage impacts resulting from these new jobs will total about $475 million. Construction workers on-site at the Resort during that period will number annually about 237 on average.

B.6.c. [2] OPERATIONS

Resort development demands staffing not just for accommodations, but also in food services, landscaping, building services, security and real estate. With an increased visitor population, demand for recreation would create additional jobs as well. Some retail jobs would be on-site at the Resort, in hotels, in the new Gathering Place or at the farmer's market. As presented in the socio-economic impact analysis in Table 5-14 ~~below~~ on the next page, the number of new continuing operations positions at the Resort will climb to about 753, an increase of 72 percent over current conditions.

Operations jobs are expected to continue so long as a Resort attracts visitors and residents. Spending at the Resort would generate approximately 785 indirect and induced jobs in turn. Resort visitors also spend money off-site, for transportation, services, food and goods. The number of jobs involved can be estimated on the basis of statewide data on the jobs supported in the state economy by visitor spending. These jobs are calculated by DBEDT as direct and indirect jobs. For the socio-economic impact analysis, total spending by Resort visitors for items other

Table 5-14: Employment and Wages Associated with the Proposed Project

	Cumulative, through 2025	Annual Average
Construction		
Direct Jobs	3,263	297
On-Site Direct Jobs	2,611	237
Indirect and Induced Jobs	5,482	498
Total	8,746	795
Direct Wages	$225.3	$20.5
Indirect and Induced Wages	$247.7	$22.5
Total	$473.0	$43.0
		Annual, 2025 on
Continuing Operations		
Direct Jobs at Resort		753
Indirect and Induced Jobs		785
Jobs from Off-Site Visitor Spending (Direct and Indirect)		443
Total		1,981
Continuing Jobs in KNS Region		930
Wages from Direct Jobs		$23.8
Wages, Indirect and Induced Jobs		$35.5
Wages, Off-Site Visitor Spending		$18.4
Total		$77.6
Wages, Jobs in KNS Region		$31.1

NOTES: From socio-economic impact report Tables 4-2, 4-3, 4-4, 4-14 in Appendix H. All dollar figures are millions of 2011 dollars. The numbers shown are rounded, so totals may differ slightly from the sum of the individual numbers in the table. Regional wages are for direct jobs at the Resort plus a regional share of jobs from off-site visitor spending.

than lodging is estimated, and the associated jobs are counted. In addition, visitor spending will support jobs outside the Resort as well as on-site, so the attraction of additional visitors, part-time and full time residents to the Resort will support an estimated 443 additional jobs in Hawai'i by 2025. Of these, some 177 are estimated to be located in the KNS region.

Visitor spending will support at least 930 new continuing jobs in the KNS region when the project is fully occupied. The new jobs figure is approximately six percent of the current regional civilian labor force. Regional residents can be expected to absorb nearly all of these jobs. (Potential hires include resident workers who are now unemployed or underemployed and new graduates of local high schools or college programs.)

Wages from both construction and continuing jobs will support island households. After construction is completed, the regional increase in wages is expected to be at least $31 million (2011 dollars, based on $23.8 million in operations wages and $7.4 million in the KNS region for off-site tourism-related work).

As reported earlier, some Resort workers are concerned that new properties at the Resort would be non-union, and that expansion would result in increased workloads for both current and future staff. They ask whether the new hotel properties would be "full-service." At issue is how the new hotels may be operated (traditional full service vs. timeshare). Several factors bear on this concern

- Because the Proposed Action consists of a resort expansion over several years, not a whole new resort created all at once (as the Waikoloa Hilton was), workforce growth would occur regularly over about ten years.
- Timeshare properties are sometimes thought to demand fewer staff per room for housekeeping and other departments. This may have been true of timeshare properties in areas such as Waikīkī in the past. Timeshares at the Resort will be staffed to support a relaxing full-service resort experience for guests. Also, timeshares would support an early marketing staff as well as staff on-site attending to guests.[1]
- Turtle Bay Resort is an isolated resort, so the operator and on-site subcontractors provide a wide range of services and amenities for guests. With more hotel units and housing on-site, demand for resort services would increase.
- Successful expansion would depend on maintaining and enhancing the Resort's reputation. New hotel properties would likely be more upscale than the existing hotel, and stand-alone resort residential units could be comparable to the Ocean Villas and other properties in Kapalua and Wailea on Maui. The operators would need to maintain or improve customer service throughout the Resort.

[1] Time share marketing staff may be on-site, off-site or even out of state. Consequently, this employment effect is not included in the analysis.

- TBR is considering fair employment rules that could bind future hotel operators to provide jobs with wage scales commensurate with similar jobs in the area.

In light of these factors, it seems likely that the expansion would bring significant job growth and moderately high staffing levels. In 2010, Maui Island had 0.89 accommodations jobs per visitor unit.[2] For the Proposed Action, the accommodations staffing for the new properties is estimated as 0.82 accommodations jobs per hotel unit.[3] This is higher than the current ratio for the Turtle Bay Hotel and Ocean Villas (about 0.70 to 0.75 accommodations jobs per unit).

Both timeshare and condominium hotel properties are likely to achieve high occupancy levels, much like those currently experienced at Turtle Bay. Timeshare properties are especially likely to have continuously high occupancy. Timeshare buyers have already invested in their units, and operators can rent out unsold weeks. With high occupancies would come consistent employment – more full-time jobs, fewer on-call and perhaps fewer part-time jobs.

Regional effects follow largely from changes in employment at the Resort, in off-site employment supported by visitor spending, and in the Resort's contribution to regional traffic congestion (which is analyzed in a separate study for the SEIS). Employment-related issues must be considered in light of (a) the quantity and quality of new jobs, (b) whether the regional population is able to take new jobs on-site and nearby, and (c) implications for housing, public facilities and community life. The first two issues are discussed here, while the last is discussed in relation to particular facilities and communities.

The new jobs created as the result of the Proposed Action would likely be in a range of industries supporting Resort facilities and activities. Similar jobs at the Resort have been described in interviews as the best available in the KNS area, since few employers offer salaries, benefits, and job security found at a unionized resort. Island-wide, the average annual wage for the combined industries is approximately $22,850[4]. Resort workers at Turtle Bay gain union wages and substantial benefits, and many receive tips, over and above their wages.

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[2] Data available from series maintained on DLIR and DBEDT websites: (*http://www.hiwi.org/gsipub/index.asp?docid=421; http://hawaii.gov/dbedt/info/visitor-stats/visitor-plant/2010VPI.pdf*). Unit count includes visitor condominiums as well as hotels. Job count is for accommodations only, i.e., only part of the workforce at hotels.

[3] This estimate was based on occupancy and staffing at other hotels viewed as offering comparable experiences, not on the global comparison mentioned here. See Appendix B for further discussion.

[4] Wages from "hotel" and "food and beverage" jobs combined, based on 2009 data adjusted to 2011 dollars. Source is State Department of Labor and Industrial Relations, *Employment and Payrolls in Hawaii, 2009*.

B.6. d. Recommended Mitigation Measures

The region's workforce can supply workers for both on- and off-site jobs. In addition to the 1,120 persons estimated as unemployed, the local high schools average more than 300 students in their senior class. The local school-leaving population would be far larger than the number of new jobs created annually. Many of these young adults would seek further education and jobs elsewhere. Still, an increase in jobs in the region would offer them the opportunity to stay near their homes – to choose among nearby jobs, long-distance commuting, and relocation to urban areas. In effect, by increasing local demand for workers, Resort expansion would benefit the region as a whole.

The anticipated development schedule for the Resort involves building and opening increments over time. This gradual approach would help to support local access to jobs. Sudden creation of a large number of jobs would be more likely to result in hires from outside the region and off-island.

Establishment of a farmers' market on-site and new demand for local foods in Resort restaurants and kitchens would help support regional agriculture. It is not clear how large an effect is involved, and any growth in local production would also be due to landowners' efforts to support local farms and to the overall growth of the island market for fresh foods.

The new visitors and employees brought by the Proposed Action will contribute to regional traffic. See the Traffic Impact Assessment Report in the SEIS for further detail on the project's contribution to regional congestion and on traffic management strategies.

The contribution of the Proposed Action to the resident housing stock will be of immediate benefit, and will likely be larger than the new demand generated over time by households supported by project-related jobs.

B.6. e. Fiscal ~~Effects~~ Impacts

Fiscal impacts consist of revenues generated by new development offset by new costs to local government incurred in order to support the new development and associated populations. New revenues can be estimated from new capital brought to Hawai'i by project development and through visitor spending. New costs can be estimated as the share of the government spending needed to support Hawai'i's visitor and resident populations.

The Proposed Action will result in a cumulative net benefit – i.e., total benefits minus total costs – for the period 2014 to 2025, estimated as $163.4 million for the State of Hawai'i and as $45.6 million for the City and County of Honolulu (in 2011 dollars). After full occupancy has been reached, the annual net benefit for the State will amount to $14.6 million, while the net benefit for the City and County will be about $6.6 million yearly.

B.6.e. [1] REVENUES

New revenues for the State of Hawai'i come from construction spending and construction-related workers' incomes and spending; cash flows with purchase or rental of real estate; and other visitor spending. Annual state construction-related revenues amount to nearly $10 million by 2020 at the peak of construction under the Proposed Action. Operations-related revenues for the state already exceed $10 million as of that year, and grow as spending by Resort visitors increases.

Property tax revenue increases occur as land is redeveloped and new improvements are built. Property tax revenues on new resort and residential units would amount to some $4.7 million in 2020, and would continue to increase until, after full absorption, they stabilize at approximately $8.3 million per year (see Figure 5-15). The cumulative collections through 2025 would amount to $50.3 million and are presented in ~~the~~ Table 4-14 ~~below~~ of the socio-economic impact analysis in Appendix H.

Currently, the City and County of Honolulu collects about $12.4 million in real property taxes annually from residential and Resort properties in the KNS region.[5] As of 2025, real property taxes on ~~residential and~~ Resort ~~u~~Units within the Proposed Action would amount to about $8.3 million of additional revenue annually, or about two-thirds of all real property revenue in the KNS region; a major increase in funds available to support municipal services. The detailed fiscal analysis is presented in Tables 4-8, 4-9, and 4-10 of the socio-economic impact analysis in Appendix H.

B.6.~~c~~ e. [2] GOVERNMENT COSTS AND NET BENEFITS

New development may increase costs to government by increasing demand for services, by relocating demand to areas where service delivery is difficult, or by creating demand for new facilities. For a resort, many of these costs can be estimated using average cost analysis. This analysis identifies on a per-person basis the amount that government agencies actually spend.

Based on the socio-economic impact analysis presented in Appendix H, revenues from the Proposed Action would exceed project-related costs for both the state and county. Visitor-related and new resident-related costs to the State of Hawai'i associated with the Proposed Action are estimated as totaling about $28 million through build-out – but revenues for the state would be more than $190 million over that time. Revenues would continue to exceed costs by a large margin in later years.

Similarly, the City and County of Honolulu would see revenues greater than costs throughout the project development period and afterwards. At build-out, the net new revenues would

[5] Estimated taxes compiled by Belt Collins Hawaii from Hawaii Information Service data (derived from City and County of Honolulu Real Property data), June 2012.

Table 5-15: Increased Real Property Revenues with Proposed Action (revised - enlarged for clarity)

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Acres Redeveloped											
Annual	40	23	22	22	21	20	19	13	14	17	11
Cumulative	40	62	84	106	127	147	166	179	193	210	221
Value of Redevelopment ($ millions)											
Residential Construction	$84.2	$130.8	$176.3	$210.7	$243.0	$275.0	$320.1	$357.6	$392.3	$422.9	$441.0
Residential Land	$118.8	$182.0	$245.9	$309.5	$369.3	$429.9	$481.2	$516.7	$549.1	$577.6	$586.8
Hotel Construction	$11.6	$23.1	$34.7	$59.3	$84.3	$107.4	$120.9	$134.4	$148.2	$163.3	$175.9
Hotel Land	$9.3	$18.7	$28.0	$41.8	$55.7	$68.1	$84.6	$101.2	$124.0	$165.9	$202.7
Property Taxes ($ millions) Annual Collections (new development built to date)											
Residential	$0.7	$1.1	$1.5	$1.8	$2.1	$2.5	$2.8	$3.1	$3.3	$3.5	$3.6
Hotel, Resort	$0.3	$0/5	$0.8	$1.3	$1.7	$2.2	$2.5	$2.9	$3.4	$4.1	$4.7
Cumulative Collections	$1.0	$2.6	$4.8	$7.9	$11.8	$16.4	$21.8	$27.8	$34.4	$42.0	$50.3

exceed $45 million. The Proposed Action would continue to generate additional revenues from property taxes.

After 2025, the State would continue to collect an estimated $19.7 million (2011 dollars) in taxes annually due to visitor spending at the Resort, while the City and County would collect about $8.3 million annually from property taxes. (City and County excise tax revenues are dedicated to the mass transit project and are to be eliminated when the transit project costs are covered.)

B.6. f. Recommended Mitigation Measures

Because implementation of the Proposed Action would result in a significant beneficial impact to the region, county, and state in terms of employment and tax revenue, no mitigation measures are warranted.

B.6. g. Housing Impacts

The Proposed Action would address the regional housing problem discussed in Chapter Two in four ways:

- Affordable housing will be built for members of the ~~local community~~ KNS region to buy or lease;
- With more stable jobs in the region, more residents will want to, and be able to, set up their own households nearby; and
- ~~r~~Resort ~~r~~Residential ~~housing~~ Units will supply mostly luxury market-price homes and condominiums that may appeal to upper income residents as well as visitors.
- ~~r~~Resort ~~r~~Residential ~~housing~~ Units at the Resort could attract some of the visitors who would otherwise stay in illegal transient vacation rental units. By reducing demand from that group, the Proposed Action would tend to discourage illegal rentals, and hence encourage some of the KNS region's landlords to make housing available for residents.

While ~~c~~Community ~~h~~Housing Units (and, to a lesser extent, ~~r~~Resort ~~r~~Residential ~~housing~~ Units) would respond to resident housing demand, new workforce incomes will tend to increase demand. Additional wages for operations-related workers would help them establishfamilies and households of their own. Household formation occurs over time, as workers gain families and savings. It can be affected by economic conditions such as housing prices and mortgage rates.

Table 5-16 ~~below~~ estimates the first two potential housing effects for the KNS region, as of 2025 when the project's new units are fully absorbed by market demand. The regional estimate includes both on-site workers and a share of off-site workers whose jobs are supported by visitor spending. Based on surveys of resort workers in West Hawai'i conducted in the 1980s, new

incomes appear sufficient, over time, to support new household formation for 15% to 30% of the regional resort workforce.[6]

Table 5-16: Major Housing Effects Associated with Proposed Action KNS Region

As of 2025	Proposed Action
New Operations-Related Jobs	
On-site	753
Other direct jobs, KNS region (1)	177
	930
Dependents supported by new KNS workforce (2)	965
Households supported by workforce	556
New household formation over time (3)	
Low estimate (15%)	83
High estimate (30%)	167
New community housing at TBR	160
Housing Impact (Demand for Units):	
Low Estimate	77
High Estimate	(7)

Notes: On-site jobs estimated in Table 4-3 of the socio-economic impact analysis presented in Appendix H; off-site jobs derived from Table 4-4 of the report.

(1) Other direct jobs estimated as 40% of direct and indirect workforce supported by off-resort spending.

(2) Dependency ratios from 2006-2010 Five-year estimates for KNS region:
   a. Population in households = 31,111
   b. Workforce = 15,275
   c. Average household size = 3.41

(3) New housing demand estimated as 15% to 30% of workforce households, based on studies of West Hawaii resorts.

SOURCE: American Community Survey. (www.census.gov)

The table suggests that the regional effect of the Proposed Action is limited and could be positive: new workforce/affordable community housing creation within the project could be greater than new household formation. Also, the new Community Housing Units are ~~is~~ expected to be built

[6] Research on population and housing effects of resort development has dealt mainly with the introduction of resorts in rural areas. The present case involves expansion, in an area where skilled resort workers are already present. There is no reason to expect resort expansion to draw a large body of workers from other areas, and to have large effects on housing when the new facilities open. (Also, the market study for the project calls for gradual development of facilities from year to year, not a one-time opening event.) The high estimates based on earlier research may consequently overestimate the extent to which resort expansion affects demand for housing.

from the beginning of the construction period, while housing demand due to new operations jobs would grow over time, as working families save for new homes.

~~The effect of increases in resort residential housing supply on regional housing demand and prices depends on many factors, and is not estimated here. It is expected to be positive, i.e., to increase local supply available to meet resident demand.~~

Increases in housing supply could possibly offset the long-term trend towards higher housing prices, especially if combined with enforcement of existing transient vacation rental laws, which would reduce the amount of illegal transient overnight accommodation units on the North Shore providing much needed long term rental housing at more affordable prices. As a result, the overall impact of the Proposed Action on housing markets and real property taxes could be positive. However, the Proposed Action involves only a small fraction of the total Oʻahu housing market so any impact would be small. No impact is expected on the property taxes of adjacent or nearby communities, because assessors typically separate new developments from existing ones as separate "neighborhoods," and value them separately.

Table 5-17: Potential New Public School Enrollment, Proposed Action, to 2025

	Proposed Action
New Community Housing	160
New Households Formed by Workers	
Low Estimate	83
High Estimate	167
Potential New K-12 Enrollment	
Low Estimate	49
High Estimate	123

NOTES: Enrollment estimate based on the 2010 ratio of households to Department of Education K through 12 students on Oʻahu (37.6 students per 100 households). The low enrollment estimate counts, as generating student enrollment, only 30% of the new ~~c~~Community ~~h~~Housing Units plus the low estimate of new households formed by workers as a new source of students. The high enrollment estimate counts all the new ~~c~~Community ~~h~~Housing Units plus workers' household formation as sources of new students, and assumes that no double counting is involved in combining the two. In both cases, Resort Residential Units are ~~housing is~~ not treated as source of DOE students. Readers should note that all or nearly all the occupants of ~~c~~Community ~~h~~Housing Units are expected to be KNS residents; this estimate follows standard practice for school impact studies but not the full set of assumptions used in other tables in the socio-economic impact analysis.
SOURCES: US Census; Hawaiʻi State Department of Education enrollment data posted in 2010.

B.6. h. Recommended Mitigation Measures

The inclusion of the Community Housing element in the Proposed Action is intended to mitigate the impacts that Resort expansion may have upon housing in the region. As demonstrated above, the regional effect of the Proposed Action is limited and may be beneficial. The Proposed Action includes 160 affordable Community Housing ~~u~~Units, which is 101 units more than the 59 required by the UA and closely matches the forecasted new household formations. The Community Housing Units offered for sale will be made available to buyers earning less than 80% of the current median household income, adjusted for family size, for Honolulu.

B.6. i. Impacts to Education Facilities

The State Department of Education is expected to provide its own projections of demand for school services and facilities associated with the Proposed Action. The estimates in this section offer projections for the Proposed Action based on Census data.

The regional population is expected to grow slowly, so demand for schools would likely increase slightly over the next decades.

The Proposed Action would affect several groups with school-age dependents. Some, but not all, would have an effect on schools:

- **Resort Residents:** New ~~r~~Resort ~~r~~Residential ~~u~~Units generate very little or no new public school student enrollment. Most ~~r~~Resort Residential Units will be ~~housing is~~ occupied only part-time. Full-time ~~r~~Resort Residential Units resort ~~housing~~ occupants tend not to have school-age children. They are unlikely to enroll in public schools the few children who live in resort homes.

- **Community Housing Residents:** Community ~~h~~Housing Units at Turtle Bay ~~is~~ are intended to serve the needs of existing regional residents, not to attract a new population. Some of those residents would vacate existing housing that then could house other families. Many would move from multi-generational homes, where they would not be so quickly replaced. The total number of households in the region would accordingly increase due to the development of community housing, but the increase would likely be a small fraction of the number of new homes built. The increase in the number of new public school students would similarly be small.

- **Workers in New Resort Jobs:** As discussed earlier, operations jobs and visitor spending could increase the regional resident population. Dependents of such new resident workers could attend local schools.

Table 5-17 provides estimates of total regional new enrollment, based on the analysis of regional housing growth over time. The socio-economic impact analysis presented in Appendix F suggests that the likely effect could fall near the midpoint between the low and high estimates.

The effect estimated here is regional, not confined to the immediately adjacent schools. It would occur over many years, not immediately. An increase of about 100 students (as compared to the

Table 5-18: Potential New Preschool Enrollment, Proposed Action, to 2025

	Proposed Action
New Community Housing	160
New Households Formed by Workers	
Low Estimate	83
High Estimate	167
Potential New Preschool Enrollment	
Low Estimate	8
High Estimate	20

current regional DOE enrollment of 4,826) would amount to about 2% of total enrollment, an amount that would likely not raise problems of capacity for regional schools. Consequently, even the high estimate does not indicate a significant effect on DOE schools.

With regard to preschools, a recent American Community Survey for 2006 to 2010 counted 561 children enrolled in preschool among KNS residents, or 6.14 per 100 households.

The regional population is expected to grow slowly, so demand for preschools would likely increase slightly over the next decades. As noted earlier, demand for preschools has decreased in recent years due to reduced state funding and tight family budgets. Access to preschool education is a theme of the education initiatives supported by the current state administration, so state funding could increase.

With more resort jobs available, some local workers can avoid long commutes. Some young parents may rejoin the labor force, seeking part- or full-time work near home if they can combine work with child-care that meets their needs and standards.

The same analysis used for school enrollments can be made for preschools. Table 5-18 shows the new preschool enrollment associated with the Proposed Action to be modest. This analysis does not address the question of whether new Resort employees would seek child-care facilities near the Resort; the existing Unilateral Agreement for the Resort specifies establishment of such a center on or near the Resort.

B.6. j. Recommended Mitigation Measures

Due to the modest impact that the Proposed Action will have upon education facilities, no specific mitigation measures are proposed. Development of a new child-care facility in accordance with the Unilateral Agreement is intended to mitigate the impacts of the Proposed Action upon working families. What sort of center is needed, what age children need to be

served, and how the center can collaborate with existing preschools and programs in the region remain to be seen. (These questions were examined in discussions with the Kuilima North Shore Strategy Planning group and research done for that group by Community Resources, Inc., but the research is now dated.) ~~The developer,~~ TBR employees who may need support from a child-care center, and local providers can all contribute to developing an effective mitigation strategy, not just fulfilling a legal condition.

B.6. k. Impact to Health Care Facilities

A study published in 2003 reviewed both long-term demand trends and changes in technology and operations affecting usage of hospital beds. While increased demand was expected by 2010 and 2025, the report was "cautiously optimistic" about Hawai'i's ability to meet the population's need for acute and long-term care beds.[7] From 2001 through 2007, O'ahu had approximately 2,513 civilian acute care hospital beds, which were occupied about 67% of the time.[8] That number of beds corresponds to 2.7 beds per thousand persons (in the de facto population). However, the recent closure of a two-hospital corporation serving Honolulu and Leeward O'ahu has aroused new concerns.[9]

The City and County of Honolulu Emergency Medical Service staff currently includes 283.75 positions, or about 0.30 per thousand persons on O'ahu.[10]

B.6. l. Recommended Mitigation Measures

The regional population increase associated with the Proposed Action by 2025 – 951 regional residents and 2,206 visitors – might justify the addition of nine more beds (at historic occupancy levels) to the island's acute care inventory. The population increase associated with the Proposed Action might create demand for an EMS staff position by 2025.[11]

B.6. m. Impact to Recreational Amenities

If no further development occurs at Turtle Bay, both golf courses might remain open as 18-hole courses. Tennis and equestrian activities could be unchanged. Following is discussion of the Proposed Action's impacts on local and regional recreational facilities.

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[7] Hawaii Health Information Corporation. "Forecasting Long-Term Care and Acute Care Bed Days in Hawaii: Projections to 2025." Posted at *http://hawaii.gov/shpda/resources-publications/shtrend.pdf*

[8] DBEDT, *State of Hawai'i Data Book 2010,* Table 2.26.

[9] A bill to authorize revenue bonds (HB2345) to cover the debts of Hawaii Medical Center was considered in the 2012 State Legislature but was not passed by both chambers. Both island and Mainland corporations have expressed some interest in re-opening one or both of these hospitals.

[10] The estimate is based on the budget passed by the City Council for the current fiscal year.

[11] As noted before for public safety services, the cost of service to new populations due to the Proposed Action was estimated in the average cost analysis.

B.6.m. [1] GOLF

With the Proposed Action, a new clubhouse and a new equestrian center would be built. The Fazio golf course would be redeveloped as part of an integrated 27-hole facility, meaning that it would be reduced to a nine whole course but then combined with the Palmer Course to create a 27-hole golf facility. With the onsite visitor and resort resident population increased by about 195%, demand for golf is likely to increase, and usage would increase. The increased demand could affect other courses in the region as well. The Kahuku public course could attract a few more resort residents and visitors. With higher usage, and perhaps higher fees at Turtle Bay, golf tour operators serving the island as a whole might tend to send fewer golfers to Turtle Bay.

B.6.m. [2] BEACH AND OCEAN ACTIVITIES

With no further action, demand for beach and ocean access at the Resort would likely not increase greatly. However, beach, ocean education and beach park maintenance would not be improved. An increase in usage of Kawela Bay is likely, however, since the bay is gaining a reputation as a "secluded" beach where turtles can be seen. Access to Kawela Bay would not be improved, so most visitors would park along the edges of Kamehameha Highway and walk to the beach around the gate.

As part of the sea turtle surveys discussed in Chapter Two, Section H-1-d of the SEIS, observers were asked to note beach and ocean activities in Kawela Bay. This process was initially instituted to merely keep the observer "observant" by decreasing the monotony of the long observation periods, but has over the years proven to provide a unique view to the change in beach and ocean recreational activities over time. Log sheets from individual observations taken from 1989-1993 were re-analyzed in 2011 and data regarding human activities were distributed into two either Beach Activities (playing/walking, shore- fishing) or Water Activities (swimming, boating/surfing). This information was compared to similar data accumulated during the surveys conducted in 2011.

Human activity within the bay has seen marked changes as compared to activities observed in the early 1990's. Table 3.4 in Appendix E displays the average total number of people during a single day observed in 1990 engaging in a variety of activities in the water or on the beach at Kawela Bay. Because of the way the observations are made, these estimates are likely slightly high. For instance, one person walking on the beach for one hour will be counted twice, once in each consecutive 25-minute observation period. This yields a high estimate of total population although it may be balanced somewhat by those people who accessed the beach during the day sometime between the three 2.5-hour sample periods.

During the early 1990's the total average daily number of people either in the water or on the beach was about 22, whereas in 2011 there were about 60 people per day at the bay.

The highest number of people observed during any single 25 minute observation period was 21 on the beach and 5 in the water, during a Saturday afternoon in September of 2011 (see Table 3-5

in Appendix E.) All categories of beach and water use except for boating and scuba diving have seen increases. The most significant increase, kayak use, appeared to be related to the regular daily kayak guided tour that is sponsored through the Resort.

In addition to a new inland park, the Proposed Action calls for establishment of oceanfront parks at Kawela Bay, Turtle Bay, Kuilima Bay, and Kahuku Point, with a total of 12 public shoreline access points. These improvements would help residents and visitors spread along the coastline, rather than congregating near the hotels because parking stalls at the new parks will reduce the need for beachgoers to park at the existing hotel parking lot. While beach usage would increase significantly with more hotel guests and resort residents, the easily accessible area for beachgoers would also increase. Higher and more consistent usage of these sites would occur. Because they would be operated by the City and County of Honolulu, the beach parks at Kawela and Kuilima ~~Point~~ Bay might be staffed by lifeguards, when City and County budgets permit. The Resort's operators can be expected to help maintain these sites and the surrounding area through security, owner associations and partnerships with community and environmental groups, assuring they are kept clean and secure, and helping to lower risks of ocean safety incidents.[12]

B.6.m. [3] OTHER ON-SITE ELEMENTS

The Proposed Action increases the population on-site and hence demand for recreational resources. It would refurbish those resources and greatly improve access to beachfront areas. As discussed above, the number of golf holes would actually decrease from 36 to 27. New restaurants and other amenities may attract new day visitors, but this group is not anticipated to increase greatly.

The Gathering Place, combining retail, food and cultural amenities, could draw new day visitors to the Resort. Some would spend a short time at the Resort; others could combine a visit to the Gathering Place with a half- or full-day trip to the Resort beaches. Day visitors' numbers and time on the property could climb during special events. The Gathering Place has been conceived as serving Resort guests and residents of the region, not as a new draw attracting visitors from outside the KNS region.

Development of a park at Kawela Bay would affect usage of this resource. The bay is already well known to area residents. It is mentioned in Internet reviews as "secluded," so improved access would both allow more users to reach the beach easily and reduce its status as a mysterious find. However, the beauty of the site, calm waters, and wildlife would likely attract many more beachgoers and ocean users, so recreational use would increase significantly.

Effects on the existing properties, owners and residents at Turtle Bay depend first on the fact of new development and secondly on its extent.

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[12] No claim is made here that the Resort would staff the parks with lifeguards or other full-time staff, only that the presence of beachgoers, surf school staff and/or resort staff, would lower the risk of accidents and harm in ocean sports and that resort operators would be interested in supplementing City and County maintenance activities.

First of all, construction would likely bring some traffic, noise, and dust effects. These would be highly controlled. Contractors would be subject to State and City and County regulations limiting these effects. Moreover, the owners of the Resort would presumably seek to minimize construction effects on existing properties in the Resort, assuring operating income through the construction period. Also, the proposed construction schedule, involving incremental development over several years, points to a process that is planned to restrict construction to delimited areas at any one time.

Construction is expected to last over some 11 years for the Proposed Action, and much longer for the Full Build-Out Alternative. Hotel construction and ongoing operations (at Turtle Bay

Hotel and new hotels in the Resort) can be successfully combined. This has been evident at the Maui Marriott at Ka'anapali, where workers transformed the concrete and steel structure floor by floor over several years from a traditional hotel to a timeshare property. The hotel retained high occupancy levels despite construction impacts.

The Turtle Bay Hotel would become the central property of a larger destination Resort. The owner would likely maintain and upgrade it as part of the process of attracting upscale clients to the Resort as a whole (committed to approximately $30M in upgrades before the end of 2013). While new resort properties may be more exclusive in reputation and achieve higher returns, their success would depend on the entire Resort. Again, new amenities and activities would serve Turtle Bay Hotel guests as well as new visitors.

The Kuilima Estates condominiums would be affected by additional factors. The overall effect is not entirely clear:

- With development of new hotels near the shoreline, persons in the condominium units facing the ocean would see more buildings and more resort landscaping. In the case of the Proposed Action, the change is likely to involve an increase of visible landscaping (as opposed to ironwoods and brush at the far side of the Fazio golf course) as much as an increase in visible structures. Current plans call for structures to be spread out within the areas designated for hotel development, and for extensive landscaping. (Kuilima Estates units now have golf course or interior views, not unobstructed ocean views.)

- Pursuant to the Proposed Action, the Fazio golf course will be refurbished as a nine-hole course. The concept plan for the Proposed Action shows the entire Fazio Course area as continuing to be a golf course (rather than part being a golf course, and part being used simply as open space). A less cluttered course with appropriate landscaping would result in an improved view amenity for many units with views on and over the golf course.

- Increased activity nearby and the convenience of shopping at the Gathering Place and Farmer's Market would appeal to many residents, owners and renters.

- Reduced traffic on Kuilima Drive once the Kaihalulu and Marconi Road intersections are completed.

Some property owners are concerned that the Proposed Action could result in lower values for units in Kuilima Estates. However, the opposite is likely since much higher quality surrounding improvements historically increases values and as long as (a) TBR takes steps to ensure that visual effects of new development bring attention to the landscaping and open space in the Resort and (b) the condominium owners maintain their properties and common areas. ~~Implementation of the *Tomorrow's Ahupuaʻa* concept and acceptance of the role of steward for the Turtle Bay lands suggest that the redevelopment would enhance, rather than lower, the value of private property within the bounds of the Resort.~~

The Resort's neighbors, both in Kuilima Estates and outside the Resort lands, will benefit from improved access to beaches, paths and landscaping with redevelopment. Residents of homes along Kawela Bay would see increased recreational use of the bay, and hence a loss of the feeling of seclusion in their neighborhood.

B.6.m. [4] REGIONAL PARKS AND OTHER RECREATION SITES

In the future without the Proposed Action, resident and visitor usage of beach parks and other public recreation sites in the KNS region would probably increase slowly, in line with growth in the island resident and visitor populations. Park usage along the North Shore at certain times of day and the year already creates problems for traffic circulation, especially at times of high surf and during surf competitions.

With the development of new beach parks at Kawela Bay and Kahuku Point open to the public as the result of the Proposed Action, the Resort could draw off some of the visitor traffic now clogging the roadside near Laniākea Beach and North Shore surf sites. However, the reduction and how much it might affect the overall traffic and pedestrian congestion issue are difficult to forecast.

New parks and pathways, along with improved access to beach areas, will make walking, jogging and bicycling more appealing for Resort residents, visitors, and community neighbors. Much as the new bikeway between Lāʻie and Kahuku encourages walking and sociability for the residents of those towns, so new trails and resources at the Resort can encourage outdoor recreation and social interaction for resort-goers and area residents, especially since new trails are planned to extend the length of the Resort.

B.6. n. Recommended Mitigation Measures

As discussed above, the addition of new parks, public shoreline access ways, bike trails and pedestrian paths, comfort stations, and public parking are intended to mitigate the impacts of

the Proposed Action upon regional recreation facilities. The Proposed Action would increase the number of residents and visitors in the region, and especially along the shores from Kawela Bay to Kahuku Point. The Unilateral Agreement directs the developer to deal with this impact through park dedication. Since City and County park budgets are limited, this action may have the unintended consequence of deeding shore lands to the party least able to patrol, maintain and sustain them as a valued resource. The Resort operator, homeowners and residents are interested in assuring peace, quiet and clean enjoyment of the parks. (So, presumably, would their neighbors along the western shore of Kawela Bay.) And many of the parks require private maintenance that will be part of the Master Resort Association responsibilities. They would also need to establish working agreements with each other and the City and County Department of Parks and Recreation to share both enjoyment of and responsibility for the park areas.

B.6. o. Public Services and Facilities

For Fiscal Year 2011/2012, the City and County of Honolulu adopted budget allows for the following positions:

- Police: 1,484 patrol officers (about 1.56 per thousand persons in the island of O'ahu); and
- Fire Protection: 1,018 fire operations positions (about 1.07 per thousand).

The ratio of positions to population provides a basis for estimating need for additional staffing as local populations rise.

The Proposed Action would account for regional population growth of about 3,157 persons (including both residents and visitors). To provide for that increase, some 4.9 police patrol officers and 3.4 fire operations positions could be needed (extrapolating from recent ratios).[13] That increase is within the growth that can reasonably be foreca st given recent DPP expectations.

The population increase does not appear large enough to motivate construction of new public safety facilities.

B.6. p. Recommended Mitigation Measures

Redevelopment of the Resort would bring increased patrols by Resort security. New roadways, park facilities and landscaping would remove large areas of brush from the Resort lands. New construction would be to current fire codes, reducing the risk of fire and increasing access to the entire Resort. All of these factors would tend to reduce demand for public safety services due to new development.

[13] The cost of increased fire protection and police protection might be estimated from current expenditures for salaries, overhead and patrol equipment. It is not calculated here, because it has already been estimated using the average cost approach (in Table 4-13).

B. 7. Disaster Preparedness

B.7. a. Impacts of Coastal Inundation and Flooding

Occasional flooding will impact elements of the Proposed Action. Planning for the Proposed Action has taken FEMA's flood zone mapping into account. As discussed in the 1985 Revised Final EIS, "[u]nder both County flood hazard ordinances and requirements of the National Flood Insurance Program, proposed structures in regulatory flood plain areas must be elevated or flood proofed to or above the 100-year flood levels established by the Federal Insurance Administration Flood Insurance Rate Map. No habitable spaces will be built below the identified maximum 100-year tsunami/flood elevations and the lower parts of the structure will be designed to withstand bore attack."

Facilities constructed near the shoreline are susceptible to coastal inundation. These areas are designated as VE zones on Flood Insurance Rate Maps.

B.7. b. Recommended Mitigation Measures

The applicant will mitigate the impact of proposed development within the regulatory floodplain areas by observing both County flood hazard ordinances and requirements of the National Flood Insurance Program.

With regard to coastal inundation, the increased setback areas included in the Proposed Action will likely minimize exposure to storm surge. In the event of a tsunami warning, persons in the potential tsunami inundation area will be evacuated to the upper floors of the higher structures in the area as set forth in the Resort's existing emergency evacuation plan.

B.7. c. Impact From Tropical Cyclones

Although the island of O'ahu has never been directly impacted by a tropical cyclone, it has experienced the secondary impacts of tropical cyclones passing over or near Kauai. Given the location of the Resort on the extreme northern point of the island, it is less likely to experience storm surge associated with tropical cyclones that typically approach the Hawaiian Island from the south. However, its location on the northern side of the Ko'olau mountain range increases the likelihood of exposure to high speed downslope winds resulting from storms that may pass the island's southern coast. Heavy rains and flooding can also result even if the passing cyclone is a hundred or more miles away.

B.7. d. Recommended Mitigation Measures

All new structures at the Resort will be built in compliance with current building codes that require the use of hurricane clips and similar measures designed to withstand hurricane force winds.

Fortunately, current technology enables warnings several hours, if not days, in advance of a potential tropical cyclone threat. The warning system will allow sufficient time for Resort management to implement its emergency evacuation plans as needed. The Resort has been

designated as a private hurricane shelter, meaning that while the facilities are not open to the general public as an evacuation center, the Resort contains structures that are designed to accommodate the Resort's residents and guests during an emergency. While this designation does not directly benefit residents of surrounding communities, it indirectly benefits them by ensuring that at the time of an emergency the Resort's population may not need to evacuate the property, with the result being that the Resort will not have a significant adverse impact on regional traffic and emergency evacuation shelters.

B.7. e. Impact of Earthquakes

The SEIS Lands are susceptible to earthquakes to the same extent as the entire island of O'ahu. Earthquakes of large magnitude can cause catastrophic damage to buildings and infrastructure. Generally, in the United States, with its sophisticated building codes, earthquake damage is usually associated with events that have a magnitude greater than 6 on the Richter scale.

B.7. f. Recommended Mitigation Measures

To mitigate the effects of earthquakes, all construction will conform with the most current building codes and requirements.

B.7. g. Impact of Severe Winds

Due to its location on O'ahu's northern coast, the SEIS Lands have direct exposure to the trade winds. Although trade winds can reach speeds of 40mph or greater, they are not usually considered severe. As discussed in Chapter Two, severe winds are typically associated with tropical cyclones or steep gradients in air pressure.

From an historical perspective, the Resort's location on the north shore means that it is not typically exposed to the severe winds associated with these events. However, this location alone is no guarantee that a future event might not occur.

B.7. h. Recommended Mitigation Measures

To mitigate against the effects of severe winds, all structures proposed for construction in the Proposed Action or alternatives will comply with the most current building codes of the City and County of Honolulu.

B.7. i. Climate Change

As discussed in Chapter Two, climate change can manifest in several ways. However, the most likely potential impact upon the SEIS Lands may be the possible future increase in sea level and the corresponding coastal erosion that may result.

B.7. j. Recommended Mitigation Measures

The Proposed Action and each alternative includes coastal setbacks in excess of those required by law, to not only preserve the rural character of the shoreline, but to also ensure that new structures are setback from the shoreline at a sufficient distance to mitigate against the long-term effects of sea level rise and coastal erosion.

B. 8. Infrastructure

B.8. a. Impacts of Wastewater Collection and Treatment

The estimated number of existing and proposed hotel and residential units, commercial and park square footage, and the calculated wastewater demands are summarized in Table 5-19. (Please note that in accordance with CCH design standards of the Department of Wastewater Management, Volume 1, to determine the design average daily flow of the proposed collection system, an additional flow of 35 gallons per capita per day is added to the estimated daily flow to account for infiltration and inflow.) The estimated daily wastewater flow for the Proposed Action is 598,406 gallons per day and the design average daily flow is 873,690 gallons per day. Although the Proposed Action will result in an increase of approximately 92 percent in daily wastewater

Table 5-19: Summary of Projected Wastewater Demand

Area	Units	Land Area (acres)	Capita per Acre/Unit	Capita	Gallons per Captia	Gallons per Day
Existing TBR Hotel	500	34.5	2	1,000	80	80,000
Existing Kuilima Estates	368	33.1	2.8	1,024.8	80	82,432
Existing Golf Clubhouse		1.2	40	48	80	3,840
Other Existing Flows						61,984
Hotel H-1	375	25.9	2	750	80	60,000
Hotel H-2	250	19	2	500	80	40,000
Lockout Rooms	375		2	750	80	60,000
Resort Residential RR-1[14]	75	39.5	4	300	80	24,000
RR-2	150	21.0	2.8	420	80	33,600
RR-3	100	24.8	2.8	280	80	22,400
RR-4	120	32.8	2.8	336	80	26,880
RR-5	100	25.2	2.8	280	80	22,400
RR-6	45	11.2	2.8	126	80	10,080
Community Housing RES-1	112	12.4	2.8	134.4	80	25,088
RES-2	48	8.8	2.8	134.4	80	10,752
Gathering Place		9.6	40	384	25	9,600
New Golf Clubhouse		2.3	40	92	25	2,300
Equestrian Center		8.8	40	352	25	8,800
Farmers Market		3.4	40	136	25	3,400
Park P-1	50	4.8	3	150	10	1,500
Park P-2	50	38	3	150	10	1,500
Park P-3[15]	50	6	3	150	5	750
Park P-4	50	9.4	3	150	10	1,500
Park P-5	50	11.3	3	150	10	1,500
TOTAL		**383**		**7,976.8**		**598,406**

[14] Single-family units.

[15] Bird Sanctuary

flow, this increase does not constitute a significant impact because the design average daily flow (883,530 gpd) represents only 20 percent of the WWTP's design capacity. In addition, there is adequate capacity within the Palmer Golf Course for the storage of treated effluent. The eventual replacement of R2 effluent with effluent treated to an R1 level is not anticipated to result in a significant adverse impact. While nutrient levels in R1 effluent may increase slightly over R2 levels, their presence in the effluent will likely decrease the volume of fertilizers that would otherwise be used on the golf course. Viral and bacterial levels will be reduced in the R1 treated effluent.

Allowable areas for the use of R-1 water at Turtle Bay Resort include:

a. Any form of irrigation for food crops, including all edible root crops, where the recycled water comes into contact with the edible portion of the crop; and

b. Any form of irrigation served by a fixed irrigation system supplied by buried piping for turf and landscape irrigation of golf courses, parks, playgrounds, school yards, athletic fields, residential property where managed by an irrigation supervisor, and road sides and medians.

City and County of Honolulu (CCH) design standards were used to develop the projected flows. Where the CCH standards did not provide design guidance, the State DOH (Chapter 11-62, HAR). Wastewater Systems design guidelines were used. The proposed wastewater collection system pipe sizes were determined by using CCH standard hydraulic calculation criteria.

The existing Resort's gravity and force main system will remain in place. The existing Kuilima WWTP~~S~~ (also known as the Turtle Bay Wastewater Treatment Plant), which is owned by Turtle Bay Wastewater Treatment, LLC, and operated by Aqua Engineers, will continue to serve the Resort. The existing sewage lift station has an emergency diesel powered pump that automatically activates when the sewage in the lift station wetwell reaches a high level that would that indicate that the primary pumps are not working.

The Proposed Action will require new underground collection pipelines that augment the existing system. Five new sewage pump stations and force mains will also be constructed. The new force mains will be situated along the proposed Kaihalulu Drive and connect to the existing Kuilima WWTP~~S~~ as shown in Figure 3-5. Table 5-20 summarizes the service areas for the existing and proposed pump stations.

The Proposed Action includes the conveyance of wastewater from each ~~h~~Hotel or ~~r~~Resort ~~r~~Residential development site to an equalization basin located onsite. Equalization basins receive the wastewater from an area and dampen, or equalize, the discharge flows. Constant average daily flows will be delivered from the equalization basin to a new pump station while the remaining daily flows are stored. Flows are then conveyed from each new pump station and discharged into the existing Kuilima WWTP~~S~~. The existing Kuilima WWTP~~S~~ can serve the entire development and will be structurally renovated and outfitted with new equipment to extend its service life.

Due to the low wastewater flows anticipated for the proposed parks, the comfort station for the parks will be served by Low Pressure Sewer Systems to connect the wastewater collection systems that serve the individual areas of development.

Table 5-20: New Pump Station Service Areas

Pump Station	Areas Served	Pump Flow (gpm)
Existing Pump Station (Kuilima WWPS)	Existing Turtle Bay Hotel, Cottages, Ocean Villas, Kuilima Estates, and Golf Club House; Proposed H-2 and one half H-1;	241 278
New Pump Station 1	P-1, RR-2, RR-2	60
New Pump Station 2	P-5, Farmers Market, one half H-1, Gathering Place	75
New Pump Station 3	P-4, RR-3, Golf Clubhouse	35
New Pump Station 4	P-2, RR-4, RR-5	55
New Pump Station 5	Equestrian Center, P-1, RR-6, CH-1, CH-2	62

B.8. b. Recommended Mitigation Measures

As wastewater flows increase in the future with the phased implementation of the Proposed Action, the WWTP will be upgraded to treat wastewater to an R1 level of water quality so that the treated effluent can be used to irrigate common areas. (R1 is the highest quality effluent, with minimal restrictions on use.) However, the decision of when future improvements to the WWTP will be completed is unresolved at this time. At the time that sufficient volumes of effluent warrant the upgrade, the determination will be whether the upgrades will trigger the need for an environmental assessment pursuant to Chapter 343, HRS.

The installation of new underground wastewater collection and transmission lines and force mains will not result in a significant adverse impact. Transmission lines will typically be located within the rights-of-ways of proposed roadways. The construction of the collection lines, transmission lines, force mains, and pump stations will result in temporary soil disturbance. Anticipated impacts to soil and measures to mitigate those impacts are addressed in Section 2 above.

The use of increased volumes of treated effluent for irrigation purposes is not anticipated to have a significant adverse impact upon residents, visitors, and guests of the Resort. Treated effluent diluted with non-potable water has been used to irrigate the Palmer Golf Course for two decades with no known or identified adverse results. The State DOH has established standards for the quality of treated effluent and its use and the Resort has, and will continue to, comply with those standards.

The use of increased volumes of treated effluent for irrigation purposes is not anticipated to have a significant impact on near shore water quality, as discussed in Section 7a above.

As wastewater flows increase due to the Proposed Action, the accumulation of another 10 inches to 40 inches of sludge (0.5 inches to 2 inches a year) in 20-years is possible. The depth of sludge in the settling lagoons will be checked by sludge profiling. One foot of sludge in all four lagoons together is approximately 10,000 cubic yards, or 2,500 cubic yards per lagoon. In 20-years approximately 8,333 to 33,333 cubic yards of sludge could accumulate collectively in all 4 lagoons.

In 20 to 30 years, the lagoons would be cleaned one at a time. The operators would divert sewage flow from the lagoon to be cleaned to the other three lagoons. The lagoon to be cleaned would continue to be aerated for 28 to 30 days. Then the lagoon would be slowly drained until the sludge is exposed. Once exposed to air, the sludge will dry and then can be removed mechanically. After the sludge is removed a new lagoon liner and aeration system will be installed before the lagoon would be ready to receive sewage again. The drying process will reduce the volume of sludge by 50% or more.

While lagoon sludge is relatively inert, the sludge would be tested for pathogens, metals and vector attraction. If the State Department of Health determines that the sludge qualifies as exceptional quality sludge, it can be applied to the land around the WWTP. If not, it will have to be hauled to the landfill. At its maximum volume, the disposal of 33,333 cubic yards of sludge certified for use as a soil amendment by the DOH would require distribution over 20 acres at a depth of 1 foot. Given the acreage available within the Palmer and Fazio golf courses (300+ acres), as well as the *mauka* agricultural lands (470+ acres), there is sufficient property available to accommodate the soil amendment and no significant adverse impacts from its use are anticipated.

B.8. c. Solid Waste Collection and Disposal

Solid waste generation under the Proposed Action would increase approximately 618% over the current condition. Generation rates are based the projected rates identified in the City's Integrated Solid Waste Management Plan.[16] Rates were adjusted according to existing or proposed land use.[17] The base generation rate for the ~~h~~Hotel sites and Resort ~~r~~Residential ~~Resort~~ sites ~~areas~~ is reduced on the premise that occupants are not likely to generate green waste, wood waste, e-scrap, construction and demolition (C&D) debris, tires, auto batteries, auto fluff wastes, and chemicals-oils. Similar reductions are made for other land uses. Rates were also reduced to reflect the seasonal variability in hotel occupancy rates.[18] Rates for most commercial and service establishments rates are based on information from California's Department of Resources Recycling and Recovery.[19]

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[16] Table 2-3 Waste Generation Projections, Beck, R.W., *Integrated Solid Waste Management Plan Update*, October 2008.

[17] Table 2-10 Waste Generation Projections, Beck, R.W., *Integrated Solid Waste Management Plan Update*, October 2008.

[18] Table 23.41 Hotel Room Occupancy and Room Rates, by Geographic Areas: 2000 through 2010. *The State of Hawaii Data Book,* prepared State of Hawaii Department of Business, Economic Development, and Tourism, 2000 through 2010.

[19] *www.calrecycle.ca.gov/wastechar/WasteGenRates/Commericial.htm and .../Service.htm*. Published generation rates based on gross square footage for Honolulu are not available.

The City's reported 70% diversion rate is applied to estimate the total amount of solid waste sent to landfill.[20] On-site paper, metal, and plastic recycling programs along with on-site green waste processing and reuse are included in the diversion rate and not discounted separately.

Most estimated capita are based on either the City and County of Honolulu's *Design Standards of the Department of Wastewater Management* or those shown in the wastewater calculations. Employee numbers are based on the Socio-Economic Assessment.

Existing

Solid waste collection for the existing facilities is calculated to be approximately 507 tons/year. Existing facilities include the Hotel, two golf courses, golf clubhouse, and Equestrian Center.

Proposed Action

Under the Proposed Action, the net solid waste generation is approximately 3,133 tons/year, resulting in a 618% increase. The analysis considers ~~h~~Hotel ~~u~~Units, ~~r~~Resort ~~r~~Residential ~~u~~Units (multi-family), ~~c~~Community ~~h~~Housing Units, the Gathering Place, Farmer's Market, replacement golf clubhouse (existing clubhouse to be retained as a commercial building), larger equestrian center, and parks. The Proposed Action is anticipated to be fully developed as of 2025.

Full Build-Out Alternative

The Full Build-Out Alternative was found to have the greatest estimated increase in solid waste generated. This alternative is anticipated to be completed in 2052. The net generation rate is approximately 4,193 tons/year. This amounts to an 828% increase from the estimated amount for existing conditions. The analysis considers ~~h~~Hotel ~~u~~Units, ~~r~~Resort ~~r~~Residential ~~u~~Units, ~~c~~Community ~~h~~Housing Units, a shopping village, beach club, replacement golf clubhouse (existing clubhouse to be retained as a commercial building), larger equestrian center, and parks.

Resort Residential Alternative

The Resort Residential Alternative was found to have the least estimated increase in solid waste generated. This alternative is anticipated to be completed in 2025. A net generation rate of 1,613 tons/year in solid waste is anticipated as a result of the Resort Residential Alternative. This generation represents a 318% increase from the estimated amount for existing conditions. The analysis considers ~~r~~Resort ~~r~~Residential ~~u~~Units (single family), ~~c~~Community ~~h~~Housing Units, a shopping village, beach club, additional golf clubhouse, larger equestrian center, and parks.

Conservation Partner Alternative

A net generation rate of 1,680 tons/year, resulting in a 332% increase, in solid waste generation is expected as a result of the Conservation Partner Alternative. This alternative is anticipated to be completed in 2021. The analysis considers ~~h~~Hotel ~~u~~Units, ~~r~~Resort ~~r~~Residential ~~u~~Units (multi-family), ~~c~~Community ~~h~~Housing Units, the Gathering Place, Farmer's Market, replacement golf

[20] *www.opala.org/solid_waste/archive/Future_Plans.html* , website viewed April 18, 2012.

Table 5-21: Comparison of Solid Waste Generation - 1985 EIS Estimate and Proposed Action

	1985 EIS	Proposed Action
Population	4,783	6,000
Solid waste generation	3,468 tons/year	3,133 tons/year
Solid waste generation rate	9.5 tons/day	8.6 tons/day
Solid waste generation rate	0.72 tons/capita/year	0.52 tons/capita/year

clubhouse (existing clubhouse to be retained as a commercial building), larger equestrian center, and parks. With this alternative, no ~~lockoffs~~ lock-off features would be allowed and one golf course is converted to other uses, most of which would consist of open space.

The estimated solid waste generation under the ~~p~~Proposed ~~a~~Action is 10% less than the generation estimated in the 1985 EIS (see Table 5-21). This difference is largely contributed to recycling programs that have been developed over the years and the reduced density of the ~~p~~Proposed ~~a~~Action. A de-facto population of 4,783 capita is cited in the 1985 study. The Proposed Action reflects an adjusted population basis of 6,000 accounting for variable hotel occupancy rates, part time residential units, and staggered employee shifts.

As the total annual generation tonnage is less, the annual per capita generation rate is estimated to fall by 27%. Recent programs targeting recycling, reuse, and reduction of solid waste are likely causes of the change. The diversion rate between 1988 and 2006 is estimated at 35%. Estimates based on 2009/2010 data indicate the island wide diversion rate has increased to 70%.

B.8. d. Recommended Mitigation Measures

Implementation of the Proposed Action represents an effort to mitigate the impacts of the Full Build-Out of the Resort as allowable under present land use and zoning approvals. Generation of solid waste resulting from implementation of the Proposed Action can be mitigated by adherence to reuse and recycling programs as discussed in Appendix A.

B.8. e. Water Use and Conservation

Pipe sizing and water flow rates used in the analyses for pipe sizing criteria correlate to dwelling unit demands or per acre demands in accordance with BWS Standards or historical records as shown in Table 5-22. The primary water "source" defined in the computer modeling is the existing 2.0 MG water tank (the Kawela Reservoir). The proposed water system for each stage of development was analyzed using peak hour flow scenarios and fire flow scenarios at critical nodes in the system.

Water system demand for the Proposed Action is based upon the water demand criteria presented in Table ~~5-22~~ 5-23 on the next page.

Table 5-22: Potable Water Demand Criteria

Land Use	Gallons per Unit	Gallons per Acre
Residential		
Single Family or Duplex	500	2,500
Multi-Family Low Rise	400	4,000
Multi-Family High Rise	300	---
Commercial		
Commercial Only	---	3,000
Resort		
Resort	350	4,000
Other		
Parks	---	4,000

The estimated number of existing and proposed hotel and residential units and water demands for the Proposed Action are summarized in Table 5-23 ~~to the right~~. The existing water demand generated by the Turtle Bay Resort constitutes the No Action Alternative; in the absence of resort expansion, it will continue into the foreseeable future.

As summarized in Table ~~22~~ 5-23, the average daily potable water demand for the Proposed Action, including existing water demands, is 1,201,100 gallons per day. (Existing water daily water demand is approximately 345,000 gpd.) Of this amount, new development on the SEIS Lands will require approximately 856,100 gallons per day. The two existing ʻŌpana Wells are capable of providing a combined total of up to 890,000 gallons per day of average daily demand. Once development reaches approximately seventy-five (75) percent of the Proposed Action (equivalent to a demand of about 890,000 gallons per day), the third ʻŌpana Well can be brought on line. With its estimated capacity of 450,000 gallons per day of average daily demand, the combined capacity of the three ʻŌpana Wells (1,340,000 gallons per day) will be more than adequate to meet the anticipated demand created by the Proposed Action. The remaining 151,200 gallons per day generated by the three ʻŌpana Wells will be available to supplement the BWS regional system. The Koʻolau Loa Watershed Management Plan estimated the potential permitted amount of water from the ʻŌpana Wells to be 1.0 mgd. The combined capacity of the three ʻŌpana Wells exceeds this by approximately 340,000 gallons per day.

The 1985 EIS estimated that Full Build Out of the Resort would result in an average daily demand of 2,037,000 gallons. The Proposed Action's drinkable water demand is 848,150 gallons per day less than what would be required for Full Build Out. For this reason, drinkable water demand for the Proposed Action does not constitute a significant adverse impact upon regional

Table 5-23: Potable Water Demand for the Proposed Action

Area	Units	Land Area (acres)	Gallons per Unit	Gallons per Acre	Gallons per Day
Existing TBR Hotel	500	34.5	350		175,000
Existing Kuilima Estates	368	33.1	400		147,200
Existing Golf Clubhouse		1.2		3,000	3,600
Other	NA	NA	NA	NA	19,200
SEIS Lands					
Hotel H-1	375	25.9	350		131,250
Hotel H-2	250	19	350		87,500
Lock-off Features	375		350		131,250
Resort Residential RR-1[1]	75	39.5	500		37,500
RR-2	150	21.0	400		60,000
RR-3	100	24.8	400		40,000
RR-4	120	32.8	400		48,000
RR-5	100	25.2	400		40,000
RR-6	45	11.2	400		18,000
Community Housing RES-1	112	12.4	400		44,800
RES-2	48	8.8	400		19,200
Gathering Place		9.6		3,000	28,800
New Golf Clubhouse		2.3		3,000	6,900
Equestrian Center		8.8		3,000	26,400
Farmers Market (east)		3.4		3,000	10,200
Farmers Market (west)		4.1		3,000	12,300
Park P-1		4.8		4,000	19,200
Park P-2[2]		38		4,000	8,000
Park P-3[3]		6		4,000	4,000
Park P-4		9.4		4,000	37,600
Park P-5		11.3		4,000	45,200
TOTAL	**1,750**	**228.0**	**NA**	**NA**	**1,201,100**

[1] Single-family units.
[2] Passive Park – 2 acres active
[3] Bird Sanctuary

water systems. Rather, when all three of the existing Opana Wells are functioning, the Proposed Action will have a positive benefit for the regional water system serving Oʻahu from Pupukea to Kawela.

The Resort's water master plan presumes all future golf course irrigation demands will be met with non-potable water (from existing non-potable wells on ~~Resort~~ lands owned by TBR affiliate TBML, which are *mauka* of Kamehameha Highway and from treated effluent from the Kuilima Wastewater Treatment Plant) and that the proposed irrigation system will be independent of the potable water system. It is possible that circumstances could dictate the need to utilize this non-potable water for irrigation of the proposed parks and common areas of the Resort. If that were the case, the water system would not be adversely impacted. ~~However, further study would be necessary to determine the reduction in water source requirements.~~ It is likely that the phased development of the Porposed Action will result in sufficient amounts of treated effluent for irrigation purposes that will entirely offset the need to use non-potable well water for irrigation.

B.8. f. Recommended Mitigation Measures

The continued practice of using treated effluent at the Resort to irrigate the golf courses will mitigate the use of caprock sources. It is recommended that the Kuilima WWTP will be improved to provide for the treatment of effluent to R-1 water quality when feasibly justified, which would enable the treated effluent to be used to irrigate the Fazio Golf Course and possibly some of the common areas.

Under the No Action Alternative, existing water demand at the resort will continue. No new water will be available to the Board of Water Supply because ʻŌpana Well #3 will not be utilized.

B.8. g. Utilities

In general, the improvements necessary to serve the Proposed Action are ongoing activities for the respective utility companies; Hawaiian Electric Company, Hawaiian Telcom, and Oceanic Time Warner Cable. The utility companies are mandated by their respective tariff rules and licenses to exercise reasonable diligence and care in providing continuous service to their customers when the development is constructed and maintained according to standard utility and subdivision provisions.

The off-site and on-site facilities should have minimal impact on the environment if noise, aesthetic considerations, safety hazards and loading impact are held to normally applied guidelines.

Forecasts of the anticipated electrical usage for the Proposed Action are based on current utility company billings to the Resort for electricity and on empirical values used by the local utilities for similar facilities, multiplied by the facilities' area or the number of units proposed in the

~~Resort's Comprehensive Plan~~ Proposed Action. As discussed in Chapter Three, the Resort's present electrical usage is estimated to be approximately 1.45 million KW per month.

The estimated electrical usage by the Proposed Action at completion will be approximately 5.57 million KW per month; roughly a 384% increase in consumption.

For purposes of comparison, electrical consumption has been estimated for the three alternatives presented in the SEIS:

- Full Build-Out Alternative = approximately 8.94 million KW per month (a 616% increase over existing use);
- Resort-Residential Alternative = approximately 2.60 million KW per month (a 179% increase over existing use); and
- Conservation Partner Alternative = 3.57 million KW per month (a 245.9% increase over existing use).

B.8. h. Recommended Mitigation Measures

To reduce the demand for electricity created by the Proposed Action, TBR proposes to design and construct sustainable buildings and structures by meeting at a minimum, the perquisites for LEED New Construction for habited structures. (The national green building leadership standard, LEED, was developed to elevate the design and construction industry to a more sustainable level.)

In addition, the full implementation of the energy sustainability strategies of the Proposed Action such as lamp retrofits, solar photovoltaic systems, conservation measures, etc. is anticipated over time to realize a 54.9% reduction in the project's electricity usage. Additional strategies for improved efficiency in energy use are presented in Appendix A of the SEIS.

TBR is also committed to a reuse/recycling program, as discussed in Appendix A. This program includes a commitment to incorporate on-site nonpolluting renewable energy generation, such as solar, wind, and/or biomass, with production capacity of at least 5% of the project's annual electrical and cooling energy cost.

B.8. i. Roadway Improvements

The roadway improvements described in Chapter Three, Section B.6, will improve vehicular, pedestrian, and bike circulation within the resort area by providing access to the various development sites, including the proposed parks and public beach access ways. The provision of bikeways will facilitate alternative means of transportation within the resort. The connection of internal roadways to Kamehameha Highway and Marconi Road will result in the construction of intersection improvements in conformance with the requirements of the Unilateral Agreement (see Appendix B). It is anticipated that all planned roadways will be constructed within the currently identified rights-of-ways.

The cumulative impact of these improvements will be beneficial to both local and regional traffic, principally because persons travelling within the resort area will no longer need to exit the property and travel on Kamehameha Highway to reach the other side of the property. Thus, internal resort travel will not contribute additional traffic on Kamehameha Highway. The construction of Kaihalulu Drive will enable motorists to access the entire property without returning to Kamehameha Highway.

The internal roadways will be designed consistent with the City's Complete Street standards. Street lighting, especially near coastal areas, will be shielded to prevent ambient light from distracting sea birds and turtles. Because of the lack of significant adverse impacts resulting from the construction of internal roadways, no measures to mitigate impacts are warranted.

C. Impacts of the Environment on the Proposed Action

As discussed throughout this Chapter, the Proposed Action will be impacted by both the natural and the human environment. From the perspective of the natural environment, regional flooding conditions resulting from the area's topography will impact the design of new structures at the Resort. The Resort's proximity to the shoreline necessitates the implementation of shoreline setbacks to minimize the potential impact of storm surge on coastal development. The presence of a slender strip of native vegetation along the shoreline (the Coastal Strand) may impact certain human activities in the shoreline area, but will not necessarily impact development because the Coastal Strand is generally located within proposed shoreline setback areas. The geology of the region will also impact the Proposed Action by increasing the need to be vigilant in the disposal of storm water runoff and in the use of pesticides and fertilizers to ensure that they do not contaminate near shore waters. The increasing presence of endangered sea turtles and Hawaiian monk seals in near shore waters will require ~~the Resort~~ TBR to continually educate its guests, visitors, residents, and employees about the need to minimize interaction with these species and to protect their habitat.

From the perspective of the human environment, the design of the proposed Resort facilities and their distribution on the property is influenced by a community-wide desire to see that the rural character of the property is preserved. The prevailing traffic conditions on Kamehameha Highway underscore the need of the Resort owners to employ measures to mitigate the Resort's impacts on regional traffic and to contribute the Resort's fair share to regional roadway improvements that will be necessitated by expansion of the Resort. The presence of archaeological and cultural resources on the property alerts the Resort to the need to proceed cautiously and sensitively with its development plans to ensure that these resources are preserved and protected to the extent practicable.

D. Secondary and Cumulative Impacts

In an environmental impact statement, it is important to ~~cover~~ address both direct and secondary or cumulative impacts. Secondary and cumulative impacts arise from the interaction of changes due to a project with the existing and expected context. The socio-economic analysis presented in Appendix F addresses all of these effects by considering the existing Resort along

with proposed new development, and by identifying effects in the regional, island and state contexts.

A major question is whether new developments will have a cumulative impact that overshadows the impact of any one development. In the KNS region, the Resort and Envision Lāʻie expansions concentrate new development in a fairly small area. They seem more offsetting than likely to have reinforcing impacts. The Lāʻie development would increase enrollments at BYUH and workforce housing for the Lāʻie community. The hotel in ~~the~~ Lāʻie ~~project~~, the Lāʻie Inn, would not be a resort but an amenity supporting BYUH and the PCC. It would have limited amenities and would likely serve a different market than the existing and proposed Resort hotels.

These two projects should not have significant cumulative effects. They both would address residents' demand for housing – but the demand for housing at reasonable prices is great, and the two projects would encourage workers to live near their work sites, reducing highway commutes. When and if the Envision Lāʻie project's housing is approved and built out, it could reduce local demand for workforce housing appreciably. However, that project is designed to serve the Lāʻie community, not provide housing to attract others to the region or address the problems of Kahuku and the North Shore.

Lāʻie and Kahuku are currently the largest communities in the KNS region. Even with much new housing in the two communities, they would remain distinct both geographically and economically. The development of one or two ~~c~~Community ~~h~~Housing increments at the Resort would not change the "country" appearance of the region.

The Proposed Action may have an important secondary impact on the regional housing supply. With new Resort housing available, many vacationers will be drawn to units at the Resort, rather than to illegal transient vacation rentals. Demand for the illegal units will be reduced, and some of these will become available for rental at rates that residents can afford.

Relative to the Proposed Action itself, through 2025, it will create a cumulative total of 8,746 construction jobs. Of this total, 5,482 will be indirect and induced jobs, which are defined as jobs that are supported when construction firms buy materials and services locally. Wages generated from indirect and induced jobs are estimated to be $35.5 million annually from 2025 on. Wages resulting from off-site visitor spending are estimated at $18.4 million from 2025 on.

As the result of the Proposed Action, primary population growth in the Koʻolau Loa/North Shore (KNS) region is forecast to include 951 regional residents and 2,206 visitors by 2025. As nearly all the Resort's future workers will likely come from the KNS region, the Proposed Action is not anticipated to generate significant secondary population growth. New household formation in the region is estimated to be between 83 and 167 households as the result of the Proposed Action.

The anticipated population growth is anticipated to generate from 49 to 123 new K-12 school enrollments to 2025, and 8 to 20 new preschool enrollments. It is estimated that the population increase will create demand for nine new acute care beds and one new EMS staff position by

2025, as well as 5 new police patrol officer positions and 3 fire operation positions. No new public safety facilities are forecast to be required.

The cumulative increase in traffic volume on Kamehameha Highway in the vicinity of the Resort is forecast to increase about 64% by the year 2025 during the morning peak hour and by about 42% during the afternoon peak hour. However, this increase in traffic volume will not change the Level of Service (LOS) on Kamehameha Highway, which today is rate at "E", and will remain at "E" in 2025 despite implementation of the Proposed Action.

With regard to natural resources, it is not anticipated that the Proposed Action will result in significant adverse secondary or cumulative impacts to endangered avian species identified in the area, as the habitat created by the golf course and the marsh within the SEIS Lands provide foraging and nesting habitat for these species. Resort operations likely result in a net benefit to these species as has been recorded on numerous golf courses within the state.

It is not anticipated that the Proposed Action will result in secondary or cumulative impacts to listed waterbird species currently using resources with the James Campbell National Wildlife Refuge. There is movement to-and-from the refuge and the subject property by these birds, thus the resort provides additional foraging and loafing habitat for these species. The proposed increase of vehicular traffic along Marconi Road does raise the potential risk that Gallinules of Coots that may walk across the road may be disturbed by vehicular traffic. Minimization measures including informational and educational signage, traffic calming on the roadway proper, and a posted speed limit of 15 miles an hour will minimize the risk that the additonal traffic will result in deleterious impacts to these waterbirds.

E. Probable Adverse Environmental Impacts That Cannot Be Avoided and Mitigation Measures Proposed to Minimize Impact

Each of the following items represent impacts that cannot be avoided if the Proposed Action, or to a certain degree the development alternatives, are implemented. To that end, unavoidable impacts also contribute to cumulative impacts that will be experienced as a result of the implementation of the Proposed Action in concert with other development projects anticipated elsewhere in the region in the future.

E. 1. Traffic

As discussed above, implementation of the Proposed Action will result in increase traffic on Kamehameha Highway in excess of the traffic that will be generated in the future without the project.

To mitigate the impacts of the project's traffic, improvements to the Resort's intersections with Kamehameha Highway will be implemented in compliance with the Unilateral Agreement and will result in the intersections operating at acceptable levels of service. Several traffic demand management strategies will also be employed in an effort to reduce the volume of vehicular trips

created by Resort guests, visitors and employees. ~~The Resort~~ TBR is also committed to providing its fair share of regional improvements to Kamehameha Highway in collaboration with the State DOT as discussed B.1.b above.

E. 2. Drainage

After construction is completed and activities within the Resort are in operation, an unavoidable increase in storm water runoff, due to groundwater changes and an increase in permeable surfaces, is expected on a temporary basis. It is anticipated that during periods of heaviest rainfall, the golf courses and Punahoʻolapa Marsh will continue to experience temporary flooding to depths of two (2) to three (3) feet deep as they do today.

To mitigate flood hazards to people and property, all habitable floors will be built above the flood height limits established by the applicable Flood Insurance Rate Map for the area.

From a regional perspective, the Proposed Action will provide no measureable cumulative impact. Although it will improve day-to-day drainage of the resort property, the resort is physically separated from other communities such as Kahuku or Sunset and the effects of improved drainage at the resort are too distant from these communities to be measurable.

E. 3. Dust Generation

Clearing and grubbing activities during construction will temporarily disturb soil retention values of the existing vegetation and expose soils to wind erosion. Soil will also be exposed during utility trench excavation. The use of heavy equipment along unpaved roads will also generate fugitive dust.

To mitigate dust impacts, all construction activities will be conducted in conformance with strict dust control regulations. Regular watering will be employed to wet exposed soil surfaces. Areas of exposed soil will be re-vegetated or paved (in the case of roadways) as soon as is practicable.

No cumulative impacts related to dust generation are anticipated because the identified mitigation measures are intended to prevent them from occurring.

E. 4. Construction Noise

The construction phase of development generates noise levels that can be significant, depending upon the methods employed. Earthmoving equipment will likely be the loudest sources of noise during construction.

No mitigate the impacts of construction noise, the project will employ best management practices for all noise generating construction activities. All necessary permits will be secured from the Department of Health. Traffic noise from heavy construction vehicle operation will be conducted in compliance with applicable regulations.

While the existing homes on the west side of Kawela Bay will be impacted by construction noise, as described above, no cumulative impacts related to construction noise are anticipated because the resort is physically separated from other communities and noise-generating activities that may occur elsewhere.

E. 5. Water Consumption

As discussed in earlier in this chapter, the Proposed Action will result in the consumption of over1.2 million gallons of water per day by the year 2025 when the project is anticipated to be completed.

To mitigate the effects of water consumption upon the region, the Resort has developed a system of potable wells to supply the Resort's water demand. Non-potable irrigation wells have also been developed to help reduce the volume of potable water that is used for irrigation purposes. Further, the use of treated effluent for irrigation is intended to also reduce reliance upon potable water for irrigation.

Implementation of the Proposed Action is anticipated to result in a beneficial cumulative impact upon water supply by providing a new privately funded source of potable water to the regional system that will benefit the greater community. In addition, the conversion of R2 effluent to R1 standards will reduce the demand on the aquifer to use potable water for irrigation purposes. This will reduce demand on the aquifer, leaving more potable to be used elsewhere or to be preserved for future use.

E. 6. Non-Renewable Resource Consumption

Implementation of the Proposed Action will increase demand for electrical energy at the Resort. To mitigate this impact, physical elements of the Proposed Action will be constructed in compliance with LEED requirements as discussed in Appendix A of the SEIS.

Implementation of the Proposed Action will have a cumulative impact upon the generation of electrical energy island wide by increasing demand upon existing electrical generation stations. However, to the extent that elements of the Proposed Action are constructed to LEED standards, they will result in a beneficial cumulative impact to the island-wide electrical system by mitigating demand at the resort.

E. 7. Cultural Resources

The Proposed Action will impact cultural resources identified at the Resort property. To mitigate these impacts, ~~implementation of~~ the Proposed Action ~~will be conducted in accordance with~~ incorporates mitigating elements informed by the philosophy of ~~the~~ *Tomorrow's Ahupuaʻa* ~~concept plan upon which the SEIS has been based~~ (see Appendix A). Oversight by advisory councils will provide guidance as the Proposed Action is implemented. In addition, a Cultural and Natural Resource Management Plan (Appendix L) has been prepared and will be implemented to ensure that cultural resources are managed in a sustainable manner.

Implementation of the Proposed Action will have beneficial cumulative impact upon cultural resources to the extent that the management of cultural resources at the resort becomes known and can be replicated elsewhere. As discussed in the Cultural Impact Assessment, the cultural resources at the resort are not unique to the resort. But ~~there~~ loss of these resources or lack of awareness would place increased demand and pressure upon similar resources elsewhere. Thus, the uncontrolled use of the resort's cultural resources will have an adverse cumulative impact on similar cultural resources elsewhere. The measures presented in the SEIS to mitigate the impact of development upon finite cultural resources are intended to reduce direct, secondary and cumulative impacts.

F. Any Irreversable and Irretrievable Commitments of Resources

As discussed in the 1985 EIS, the construction and operation of the Proposed Action will involve the irretrievable commitment of certain natural and fiscal resources. Major resource commitments include the land upon which the structures are actually constructed (does not include open space areas), money, construction materials, human labor, and energy (derived from both fossil fuels and renewable resources). The operation of the Resort will also include the consumption of drinkable water. However, as demonstrated in this document, the Resort has adequate privately developed water resources to address this demand, as well as to contribute to the Board of Water Supply's regional system to benefit the larger community.

The impacts of committing these resources should be weighed against the economic benefits to the residents of the region, County and State. As the SEIS Lands have been approved for the development of 3,500 new units for approximately 25 years, implementing a Proposed Action that represents a substantial decrease in density reduces the corresponding economic benefits. However, this resource commitment is offset to some degree by the increased public benefits derived from the Proposed Action, including an increased focus on sustainable practices, and the provision of additional park space and shoreline access ways over what was previously required.

The irreversible and irretrievable commitment of resources can also be viewed as a cumulative impact. Each of these resources is finite and their consumption will limit their availability elsewhere. The strategic deployment of these resources in accordance with established community goals, objectives, and priorities as determined through legislative action represents society's desire to prioritize the use of these resources for the benefit of the greater community. As discussed in Chapter Six, the Proposed Action is consistent with current land use policies and approvals previously adopted for the resort and development is taking place on disturbed lands. To that end, the Proposed Action results in a beneficial cumulative impact when considering irreversible and irretrievable resources.

G. The Relationship Between Local Short-Term Uses of Man's Environment and the Maintenance and Enhancement of Long-Term Productivity

As discussed in the 1985 EIS, inherent in any intensification of land use is the trade-off between short-term gains at the expense of long-term losses and vice-versa. The implementation of the Proposed Action is no exception.

But in the current instance, the short-term goal is the fulfillment of a decades old public policy to increase employment opportunities in the region and contribute to the long-term stability of the visitor economy for both the state and the county. As the Proposed Action represents a substantial reduction in density over that which has been approved for the Resort property, the adverse and unavoidable effects previously identified for the Resort expansion as construed in 1985 are also proportionately reduced. A distinguishing difference between the Proposed Action and the allowable full build-out of the property is the current focus on improving the sustainability of the Resort operations over the long term.

Implementation of the Proposed Action will foreclose future options on the portions of the property dedicated to open space as specified by convents and restrictive conditions (CC&Rs) to be established.

CHAPTER SIX: Contextual Issues

A. Relationship to Land Use Policies and Controls 6-1
- **1.** FEMA National Flood Insurance Program 6-1
- **2.** Hawai'i State Land Use Law (Chapter 205, HRS) 6-1
- **3.** Hawai'i State Plan (Chapter 226, HRS) . . . . . ~~6-2~~ 6-4
  - *a. Goals, Objectives and Policies* . . . . . ~~6-2~~ 6-4
  - *b. Recently Enacted Legislation Amending the Hawai'i State Plan* . . . . . ~~6-29~~ 6-32
- **4.** State Functional Plans . . . . . ~~6-31~~ 6-34
  - *a. State Agricultural Functional Plan (1991)* . . . . . ~~6-31~~ 6-34
  - *b. State Conservation Functional Plan (1991)* . . . . . ~~6-31~~ 6-34
  - *c. State Educational Functional Plan (1989)* . . . . . ~~6-32~~ 6-35
  - *d. State Higher Education Functional Plan (1984)* . . . . . ~~6-32~~ 6-35
  - *e. State Employment Functional Plan (1990)* . . . . . ~~6-32~~ 6-35
  - *f. State Energy Functional Plan (1991)* . . . . . ~~6-33~~ 6-36
  - *g. State Health Functional Plan (1989)* . . . . . ~~6-34~~ 6-37
  - *h. State Historic Preservation Functional Plan (1991)* . . . . . ~~6-34~~ 6-37
  - *i. State Housing Functional Plan (1990)* . . . . . ~~6-34~~ 6-37
  - *j. State Human Services Functional Plan (1989)* . . . . . ~~6-35~~ 6-38
  - *k. State Recreation Functional Plan (1991)* . . . . . ~~6-35~~ 6-38
  - *l. State Tourism Functional Plan (1991)* . . . . . ~~6-35~~ 6-38
  - *m. State Transportation Functional Plan (1991)* . . . . . ~~6-36~~ 6-39
  - *n. State Water Resources Development Functional Plan (1984)* . . . . . ~~6-36~~ 6-39
- **5.** State Ocean Resources Management Plan . . . . . ~~6-36~~ 6-39
- **6.** State of Hawai'i Water Plan . . . . . ~~6-39~~ 6-43
- **7.** Ko'olau Loa Watershed Management Plan . . . . . ~~6-40~~ 6-45
- **8.** State of Hawai'i Historic Preservation Act (Chapter 6E, HRS) . . . . . ~~6-43~~ 6-48
- **9.** General Plan for the City and County of Honolulu . . . . . ~~6-44~~ 6-49
- **10.** Ko'olau Loa Sustainable Communities Plan . . . . . ~~6-53~~ 6-60
- **11.** Revised Ko'olau Loa Sustainable Communities Plan . . . . . ~~6-54~~ 6-101
- **12.** ~~Complete Streets~~ North Shore Sustainable Communities Plan . . . . . ~~6-57~~ 6-123
- ~~**12.**~~ **13.** Complete Streets . . . . . ~~6-57~~ 6-125
- ~~**13.**~~ **14.** Hawai'i CZM Program and Special Management Area . . . . . ~~6-57~~ 6-126
  - *a. Coastal Zone Management* . . . . . ~~6-58~~ 6-126
  - *b. Special Management Area* . . . . . ~~6-60~~ 6-128
- ~~**14.**~~ **15.** State of Hawai'i Environmental Protection Act (Chapter 343, HRS) . . . . . ~~6-62~~ 6-131
- **16.** Land Use Ordinance (LUO) 6-134

B. Contributing to the Regional and Island Economy . . . . . ~~6-65~~ 6-134

C. Relationship to Short-Term Uses and Long-Term Productivity . . . . . ~~6-65~~ 6-134
- **1.** Trades Offs: Short-Term and Long-Term Gains and Losses . . . . . ~~6-66~~ 6-134
- **2.** Extent to Which the Proposed Action Forecloses Future Options . . . . . ~~6-66~~ 6-135
- **3.** How the Proposed Action Narrows the Range of Beneficial Uses . . . . . ~~6-67~~ 6-136
- **4.** Long-Term Risks to Health and Safety . . . . . ~~6-67~~ 6-136

5. Culturally Significant Consequences . . . . . ~~6-67~~ 6-136
6. Environmentally Significant Consequences. . . . . ~~6-67~~ 6-136
7. Potential Harm to the Environment . . . . . ~~6-67~~ 6-136

D. Irreversible and ~~the~~ Irretrievable Commitments of Resources . . . . . ~~6-68~~ 6-137
1. Unavoidable Impacts and Probable Adverse Effects . . . . . ~~6-68~~ 6-137
2. Use of Non-Renewable Resources . . . . . ~~6-68~~ 6-138
3. Curtailment of the Range of Beneficial Uses . . . . . ~~6-68~~ 6-139
4. Possibility of Environmental Accidents . . . . . ~~6-68~~ 6-139
5. Loss and/or Destruction of Natural and Cultural Resources . . . . . ~~6-69~~ 6-139
6. Addressing the Irretrievable and Irreversible Loss of Resources . . . . . ~~6-69~~ 6-139

E. Government Policies that Offset Identified Adverse Impacts . . . . . ~~6-69~~ 6-140

F. Unresolved Issues . . . . . ~~6-69~~ 6-140

LIST OF TABLES

6-1	Hawai‘i State Planning Act Part ~~1~~ I	~~6-3~~	6-5
6-2	Hawai‘i State Planning Act Part ~~3~~ III	~~6-21~~	6-23

CHAPTER SIX:

CONTEXTUAL ISSUES

A. Relationship to Land Use Policies and Controls

A. 1. FEMA National Flood Insurance Program

The Emergency Management Agency (FEMA) is part of the Department of Homeland Security (DHS). FEMA plans for disaster response and assists states through natural and manmade disasters.

In 1968, the United States Congress established the National Flood Insurance Program (NFIP) to assist communities in time of flood disaster. The NFIP program enables property owners in participating communities to purchase insurance as a protection against flood losses. States and communities must first establish floodplain management regulations that reduce future flood damages. Participation in the NFIP is based on an agreement between communities and the federal government. If a community adopts and enforces a floodplain management ordinance to reduce future flood risk to new construction in floodplains, the federal government will make flood insurance available within the community as a financial protection against flood losses. This insurance is designed to provide an insurance alternative to disaster assistance to reduce the escalating costs of repairing damage to buildings and their contents caused by floods. The NFIP identifies and maps the Nation's floodplains.

On January 19, 2011, new Federal Insurance Rate Maps (FIRMs) for the island of Oʻahu were published by FEMA to delineate flood hazard zones and base flood elevations lines. Figure 2-68 in Chapter Two of the SEIS presents the FIRM for the portion of Oʻahu within which the SEIS lands are located. As evidenced by the map, the property's shoreline is generally designated as a VE zone with elevations ranging between 12 and 18 feet. A majority of the remaining property is designated as AE zone with a base elevation of 11 feet. Zone VE is the flood insurance rate zone that corresponds to the 100-year coastal floodplains that have additional hazards associated with storm waves. Zone AE is a flood insurance rate zone that corresponds to the 100-year floodplain. The Department of Planning and Permitting and the U.S. Army Corps of Engineers regulate construction in a flood plain. The project developer must demonstrate compliance with federal and local regulations before being granted a building permit for new construction.

A. 2. Hawaiʻi State Land Use Law (Chapter 205, HRS)

In 1986, an approximate 236-acre portion of the property that is the subject of this SEIS was reclassified by the State Land Use Commission (LUC) from the Agricultural District to the Urban District, pursuant to Chapter 205, Hawaiʻi Revised Statutes. On Oʻahu, the City and County of Honolulu has jurisdiction over the State Urban District.

The Findings of Fact, Conclusions of Law, and Decision and Order for LUC Docket A85-595 included the following nine conditions of approval (note: Condition 8 was later amended and the amended condition is reflected below). A discussion of the relationship of the Proposed Action to each condition is presented below.

1. The Petitioner shall develop full-service hotels on lands outside of the Property as designated in Petitioner's Master Plan for the Kuilima Resort in order to ensure employment opportunities for North Shore Residents.

Discussion: Originally 5 new hotels with a total of 2,500 units were to be developed. The Proposed Action includes 2 new hotels with a total of 625 units or a reduction of the proposal.

2. Petitioner shall provide housing opportunities for low and moderate income Hawai'i residents and employees employed at the Kuilima Resort by constructing and offering for sale or rent, on a preferential basis on its own or in cooperation with either or both the Hawai'i Housing Authority and the City and County of Honolulu, within or without the Property, a number of residential units, not less than ten percent of the number of resort condominium residential units to be developed on the Property to residents of Hawai'i and employees employed at the Kuilima Resort of low and moderate income as determined by the Hawai'i Housing Authority or the City and County of Honolulu from time to time, or by contributing to the development of such housing without the Property. The preferential residential units shall be offered for sale or rent at prices not exceeding prices that enable such purchasers or including bargaining unit employees of the Petitioner or the full service hotels at the Kuilima Resort to qualify for and obtain State assisted financing, i.e. Act 105 or Hula Mae or federally insured or assisted financing, i.e. FHA, Section 24S Program, intended to encourage home ownership by low and moderate income families.

Discussion: The Proposed Action includes 160 units that will be constructed within the Petition area for affordable and community housing, within the RES-I and RES-2 areas as noted on Figure 3-1, within the Petition area. Community housing is housing that will meet the needs of the regional community. The new residential homes will target 30 percent of these 160 homes for community use. The phasing plan indicates that about 44 units would be built the first year and 25 units in the second year, and about 19 each year for the next 3 years. That equals to 126 homes built in the first 5 years. The remainder of the units (34) would be built over the years until project completion in 2022.

3. Petitioner shall fund the design and construction of improvements to Kamehameha Highway for the Kuilima Resort Expansion as required by the State Department of Transportation, including fully channelized intersections at Marconi Road, Kuilima Drive and West Kuilima Drive. Petitioner shall also assist the State Department of Transportation in its attempt to acquire a 50-foot right-of-way for widening Kamehameha Highway parallel to the boundary of the Kuilima Resort Expansion.

Discussion: The SEIS includes traffic a Traffic Impact Analysis Report currently under review by the State Department of Transportation.

4. Petitioner shall develop additional water sources and related infrastructure to accommodate the water demand of the Kuilima Resort Expansion.

Discussion: The Proposed Action includes improvements to the existing system and the dedication of new wells to meet future water demand.

5. Petitioner shall assist the U.S. Fish and Wildlife Service and the Department of Land and Natural Resources in their activities to improve Punahoʻolapa Marsh.

Discussion: As discussed in the SEIS, the marsh will be improved and restored to enhance the marsh wetlands habitat in coordination with the U.S. Fish and Wildlife Service. Future improvements to the marsh may include viewing areas and walking paths.

6. Petitioner shall take such measures as required by the State Historic Preservation Office to protect archaeological sites F4-l4 and T-l from further disturbance and to monitor construction activities. Should any archaeological resources be discovered during the project's development, the Petitioner shall comply with directives of the State Historic Preservation Office.

Discussion: The site number T-1 was changed to site number 641-I, and this site is proposed for preservation. Site F4-l 4 is another site number for site T-1.

7. The Petitioner shall insure free public access and parking for parks and rights-of-way to the shoreline. Continuous pedestrian access along the shoreline of the proposed Kuilima Resort Expansion shall also be assured by the Petitioner. Petitioner shall dedicate approximately 10 acres of land to the City and County of Honolulu for park purposes.

Discussion: The Proposed Action includes the addition of new parks, 12 public shoreline accessways, bike trails and pedestrian paths, comfort stations, and public parking to mitigate the impacts upon regional recreational facilities. TBR will provide public parking and shoreline accessways free of charge to the public.

8. The Petitioner shall develop a sewage treatment plant and related infrastructure to County standards to accommodate the sewage demand of the Kuilima Resort Expansion. (as amended)

Discussion: The Proposed Action includes the installation of new wastewater collection and transmission lines.

9. The Petitioner shall establish a monitoring program of the coastal resource conditions at the East and West drains and their effects upon offshore waters and marine ecosystems in conjunction with and under the direction of the Department of Land and Natural Resources.

Discussion: A monitoring program has been conducted along the Resort coastline since the late 1980s and will be continued with the implementation of the Proposed Action.

A. 3. Hawai'i State Plan (Chapter 226, HRS)

This section is divided into two parts. Subsection "a" addresses the existing Hawai'i State Plan. Subsection "b" addresses recently enacted legislation amending the Hawai'i State Plan.

A.3. a. Goals, Objectives and Policies

In 1978, the Department of Planning and Economic Development (now known as the Department of Business, Economic Development and Tourism (DBEDT) completed the Hawai'i State Plan to: (1) improve the planning process; (2) increase the effectiveness of government and private actions; (3) improve coordination among agencies and levels of government; (4) provide for the wise use of Hawai'i's resources; and (5) guide the future development of the State. (State of Hawai'i, Department of Planning and Economic Development, 1978, Revised 1989, 1991.)

The State Legislature subsequently adopted 1978 the Hawai'i State Planning Act (Planning Act), as HRS Chapter 226. The Planning Act consists of a series of broad goals, objectives and policies that serve as guidelines for future long-term growth and development. It further (1) provides a basis for determining priorities and allocating limited resources; (2) seeks to improve coordination of Federal, State, and County plans, policies, programs, projects, and regulatory activities; and (3) establishes a system for plan formulation and program coordination to provide for an integration of all major State and County activities.

The Planning Act is divided into three sections: Part I - Overall Theme, Goals, Objectives and Policies; Part II - Planning Coordination and Implementation; and Part III - Priority Guidelines. Part I of the Planning Act consists of three overall themes: (1) individual and family self-sufficiency; (2) social and economic mobility; and (3) community or social well-being. These themes are considered "basic functions of society" and goals toward which government must strive (HRS §226-3). Part II of the Planning Act primarily addresses internal government policies to help streamline, coordinate, and implement various plans and processes between governmental agencies. It seeks to eliminate or consolidate burdensome or duplicative governmental requirements imposed on business, where public health, safety, and welfare would not be adversely affected. Part III of the Planning Act establishes overall priority guidelines to address areas of statewide concern (HRS §226-101). The overall direction and focus are on improving the quality of life for Hawai'i's present and future population through the pursuit of desirable courses of action (HRS §226-102).

The following tables, identified as Table 6-1 and Table 6-2 respectively, presents Parts I and III of the Planning Act, and rates the applicant's conformance and support of the State's goals and objectives. Part II is not presented, as that section primarily pertains to internal government affairs.

Table 6-1: Hawai'i State Planning Act Part I

SECTION	CHAPTER 226 - PART I. OVERALL THEME, GOALS, OBJECTIVES AND POLICIES	RATING
A = actively supportive C= conforms I = goal is inconsistent with applicant's objectives NA = goal is not applicable		
226-1	Findings and purpose.	
226-2	Definitions.	
226-3	Overall Theme	
226-4	State Goals. In order to guarantee, for present and future generations, those elements of choice and mobility that insure that individuals and groups may approach their desired levels of self-reliance and self-determination, it shall be the goal of the State to achieve:	
(1)	A strong, viable economy, characterized by stability, diversity, and growth, that enables the fulfillment of the needs and expectations of Hawai'i's present and future generations.	A
(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.	A
(3)	Physical, social, and economic well being, for individuals and families in Hawai'i, that nourishes a sense of community responsibility, of caring, and of participation in community life.	A
COMMENTARY: As a matter of State and County land use policy, the SEIS lands are intended for resort development to provide employment opportunities for the Ko`olau Loa and North Shore communities. The proposed resort expansion is consistent with those policies. Expansion of the Turtle Bay Resort contributes to the continued strengthening of the island economy.		
226-5	OBJECTIVE AND POLICIES FOR POPULATION	
(a)	It shall be the objective in planning for the State's population to guide population growth to be consistent with the achievement of physical, economic, and social objectives contained in this chapter;	A
(b)	To achieve the population objective, it shall be the policy of this State to:	
(1)	Manage population growth statewide in a manner that provides increased opportunities for Hawai'i's people to pursue their physical, social, and economic aspirations while recognizing the unique needs of each county.	A
(2)	Encourage an increase in economic activities and employment opportunities on the neighbor islands consistent with community needs and desires.	NA
(3)	Promote increased opportunities for Hawai'i's people to pursue their socio-economic aspirations throughout the islands.	C
(4)	Encourage research activities and public awareness programs to foster an understanding of Hawai'i's limited capacity to accommodate population needs and to address concerns resulting from an increase in Hawai'i's population.	C
(5)	Encourage federal actions and coordination among major governmental agencies to promote a more balanced distribution of immigrants among the states, provided that such actions do not prevent the reunion of immediate family members.	NA

SECTION	CHAPTER 226 - PART I. OVERALL THEME, GOALS, OBJECTIVES AND POLICIES	RATING
A = actively supportive C= conforms I = goal is inconsistent with applicant's objectives NA = goal is not applicable		
(6)	Pursue an increase in federal assistance for states with a greater proportion of foreign immigrants relative to their state's population.	NA
(7)	Plan the development and availability of land and water resources in a coordinated manner so as to provide for the desired levels of growth in each geographic area.	A
COMMENTARY: The resort expansion project is consistent with the CC&H's population distribution policies. Implementation of the Proposed Action will actually reduce the proposed density of the project over that which was approved by the Honolulu City Council.		
226-6	OBJECTIVES AND POLICIES FOR THE ECONOMY - IN GENERAL.	
(a)	Planning for the State's economy in general shall be directed toward achievement of the following objectives:	
(1)	Increased and diversified employment opportunities to achieve full employment, increased income and job choice, and improved living standards for Hawai'i's people.	A
(2)	A steadily growing and diversified economic base that is not overly dependent on a few industries, and includes the development and expansion of industries on the neighbor islands.	C
(b)	To achieve the general economic objectives, it shall be the policy of this State to:	
(1)	Expand Hawai'i's national and international marketing, communication, and organizational ties, to increase the State's capacity to adjust to and capitalize upon economic changes and opportunities occurring outside the State.	NA
(2)	Promote Hawai'i as an attractive market for environmentally and socially sound investment activities that benefit Hawai'i's people.	C
(3)	Seek broader outlets for new or expanded Hawai'i business investments.	C
(4)	Expand existing markets and penetrate new markets for Hawai'i's products and services.	C
(5)	Assure that the basic economic needs of Hawai'i's people are maintained in the event of disruptions in overseas transportation.	C
(6)	Strive to achieve a level of construction activity responsive to, and consistent with, state growth objectives.	C
(7)	Encourage the formation of cooperatives and other favorable marketing arrangements at the local or regional level to assist Hawai'i's small-scale producers, manufacturers, and distributors.	NA
(8)	Encourage labor-intensive activities that are economically satisfying and which offer opportunities for upward mobility.	C
(9)	Foster greater cooperation and coordination between the government and private sectors in developing Hawai'i's employment and economic growth opportunities.	C
(10)	Stimulate the development and expansion of economic activities which will benefit areas with substantial or expected employment problems.	C
(11)	Maintain acceptable working conditions and standards for Hawai'i's workers.	C

SECTION	CHAPTER 226 - PART I. OVERALL THEME, GOALS, OBJECTIVES AND POLICIES	RATING
A = actively supportive C= conforms I = goal is inconsistent with applicant's objectives NA = goal is not applicable		
(12)	Provide equal employment opportunities for all segments of Hawai'i's population through affirmative action and nondiscrimination measures.	C
(13)	Encourage businesses that have favorable financial multiplier effects within Hawai'i's economy.	C
(14)	Promote and protect intangible resources in Hawai'i, such as scenic beauty and the aloha spirit, which are vital to a healthy economy.	C
(15)	Increase effective communication between the educational community and the private sector to develop relevant curricula and training programs to meet future employment needs in general, and requirements of new, potential growth industries in particular.	C
(16)	Foster a business climate in Hawai'i - including attitudes, tax and regulatory policies, and financial and technical assistance programs - that is conducive to the expansion of existing enterprises and the creation and attraction of new business and industry.	C
COMMENTARY: The resort expansion project was originally conceived in response to the closure of the Kahuku Mill and the demise of the sugar industry. The need to provide new employment opportunities in the region has not changed since the mid-1980s.		
226-7	OBJECTIVES AND POLICIES FOR THE ECONOMY - AGRICULTURE	
(a)	Planning for the State's economy with regard to agriculture shall be directed towards achievement of the following objectives:	
(1)	Viability of Hawai'i's sugar and pineapple industries.	NA
(2)	Growth and development of diversified agriculture throughout the State.	A
(3)	An agriculture industry that continues to constitute a dynamic and essential component of Hawai'i's strategic, economic, and social well-being.	A
(b)	To achieve the agriculture objectives, it shall be the policy of this State to:	
(1)	Establish a clear direction for Hawai'i's agriculture through stakeholder commitment and advocacy.	A
(2)	Encourage agriculture by making best use of natural resources.	A
(3)	Provide the governor and the legislature with information and options needed for prudent decision making for the development of agriculture.	NA
(4)	Establish strong relationships between the agricultural and visitor industries for mutual marketing benefits.	A
(5)	Foster increased public awareness and understanding of the contributions and benefits of agriculture as a major sector of Hawai'i's economy.	A
(6)	Seek the enactment and retention of federal and state legislation that benefits Hawai'i's agricultural industries.	NA
(7)	Strengthen diversified agriculture by developing an effective promotion, marketing, and distribution system between Hawai'i's producers and consumer markets locally, on the continental United States, and internationally.	NA
(8)	Support research and development activities that provide greater efficiency and economic productivity in agriculture.	NA

SECTION	CHAPTER 226 - PART I. OVERALL THEME, GOALS, OBJECTIVES AND POLICIES	RATING
A = actively supportive C= conforms I = goal is inconsistent with applicant's objectives NA = goal is not applicable		
(9)	Enhance agricultural growth by providing public incentives and encouraging private initiatives.	NA
(10)	Assure the availability of agriculturally suitable lands with adequate water to accommodate present and future needs.	NA
(11)	Increase the attractiveness and opportunities for an agricultural education and livelihood.	A
(12)	Expand Hawai'i's agricultural base by promoting growth and development of flowers, tropical fruits and plants, livestock, feed grains, forestry, food crops, aquaculture, and other potential enterprises.	A
(13)	Promote economically competitive activities that increase Hawai'i's agricultural self-sufficiency.	A
(14)	Promote and assist in the establishment of sound financial programs for diversified agriculture.	A
(15)	Institute and support programs and activities to assist the entry of displaced agricultural workers into alternative agricultural or other employment.	A
(16)	Facilitate the transition of agricultural lands in economically nonfeasible agricultural production to economically viable agricultural uses.	NA
COMMENTARY: The Turtle Bay Resort property ~~includes~~ is adjacent to ~~over 400~~ 470 acres of productive agricultural land. The applicant intends to ~~ensure the preservation of these lands for long-term agricultural use by establishing a conservation easement to protect them in perpetuity. The applicant's efforts to~~ establish and promote farm-to-table program that will facilitate the preservation of those lands for long-term agricultural use. Such programs will strengthen the link between ~~the~~ existing and future farming enterprises on ~~its land~~ the mauka agricultural lands and the resort's restaurants and food outlets. The Proposed Action includes a Farmers Market in support of the region's agricultural activities.		
226-8	OBJECTIVE AND POLICIES FOR THE ECONOMY - VISITOR INDUSTRY.	
(a)	Planning for the State's economy with regard to the visitor industry shall be directed towards the achievement of the objective of a visitor industry that constitutes a major component of steady growth for Hawai'i's economy.	
(b)	To achieve the visitor industry objective, it shall be the policy of this State to:	
(1)	Support and assist in the promotion of Hawai'i's visitor attractions and facilities.	A
(2)	Insure that visitor industry activities are in keeping with the social, economic, and physical needs and aspirations of Hawai'i's people.	A
(3)	Improve the quality of existing visitor destination areas.	A
(4)	Encourage cooperation and coordination between the government and private sectors in developing and maintaining well-designed, adequately serviced visitor industry and related developments which are sensitive to neighboring communities and activities.	A
(5)	Develop the industry in a manner that will continue to provide new job opportunities and steady employment for Hawai'i's people.	A
(6)	Provide opportunities for Hawai'i's people to obtain job training and education that will allow for upward mobility within the visitor industry.	A

SECTION	CHAPTER 226 - PART I. OVERALL THEME, GOALS, OBJECTIVES AND POLICIES	RATING
A = actively supportive C= conforms I = goal is inconsistent with applicant's objectives NA = goal is not applicable		
(7)	Foster a recognition of the contribution of the visitor industry to Hawai'i's economy and the need to perpetuate the aloha spirit.	A
(8)	Foster an understanding by visitors of the aloha spirit and of the unique and sensitive character of Hawai'i's cultures and values.	A
COMMENTARY: The proposed resort expansion has been carefully planned to integrate new development into the rural character of the region. ~~Implementation of the resort's~~ With attention to the guiding philosophy of Tomorrow's Ahupua`a ~~concept~~ the Proposed Action ~~ensures~~ strives to build a foundation that ~~the~~ perpetuates~~ion of~~ Hawaiian cultural awareness among the resort's guests, residents, employees and patrons.		
226-9	OBJECTIVE AND POLICIES FOR THE ECONOMY – FEDERAL EXPENDITURES.	
(a)	Planning for the State's economy with regard to federal expenditures shall be directed towards achievement of the objective of a stable federal investment base as an integral component of Hawai'i's economy;	
(b)	To achieve the federal expenditures objective, it shall be the policy of this State to:	
(1)	Encourage the sustained flow of federal expenditures in Hawai'i that generates long-term government civilian employment.	NA
(2)	Promote Hawai'i's supportive role in national defense.	NA
(3)	Promote the development of federally supported activities in Hawai'i that respect state-wide economic concerns, are sensitive to community needs, and minimize adverse impacts on Hawai'i's environment.	NA
(4)	Increase opportunities for entry and advancement of Hawai'i's people into federal government service.	NA
(5)	Promote federal use of local commodities, services, and facilities available in Hawai'i.	NA
(6)	Strengthen federal-state-county communication and coordination in all federal activities that affect Hawai'i.	NA
(7)	Pursue the return of federally controlled lands in Hawai'i that are not required for either the defense of the nation or for other purposes of national importance, and promote the mutually beneficial exchanges of land between federal agencies, the State, and the counties.	NA
COMMENTARY: As the Proposed Action is privately-funded and involves no federal programs, objectives and policies pertaining to federal expenditures are not applicable.		
226-10	OBJECTIVE AND POLICIES FOR THE ECONOMY – POTENTIAL GROWTH ACTIVITIES.	
(a)	Planning for the State's economy with regard to potential growth activities shall be directed towards achievement of the objective of development and expansion of potential growth activities that serve to increase and diversify Hawai'i's economic base.	
(b)	To achieve the potential growth activity objective, it shall be the policy of this State to:	
(1)	Facilitate investment and employment in economic activities that have the potential for growth such as diversified agriculture, aquaculture, apparel and textile manufacturing, film and television production, and energy and marine-related industries.	C

SECTION	CHAPTER 226 - PART I. OVERALL THEME, GOALS, OBJECTIVES AND POLICIES	RATING
A = actively supportive C= conforms I = goal is inconsistent with applicant's objectives NA = goal is not applicable		
(2)	Expand Hawai'i's capacity to attract and service international programs and activities that generate employment for Hawai'i's people.	C
(3)	Enhance and promote Hawai'i's role as a center for international relations, trade, finance, services, technology, education, culture, and the arts.	C
(4)	Accelerate research and development of new energy- related industries based on wind, solar, ocean, and underground resources and solid waste.	NA
(5)	Promote Hawai'i's geographic, environmental, social, and technological advantages to attract new economic activities into the State.	NA
(6)	Provide public incentives and encourage private initiative to attract new industries that best support Hawai'i's social, economic, physical, and environmental objectives.	NA
(7)	Increase research and the development of ocean-related economic activities such as mining, food production, and scientific research.	NA
(8)	Develop, promote, and support research and educational and training programs that will enhance Hawai'i's ability to attract and develop economic activities of benefit to Hawai'i.	NA
(9)	Foster a broader public recognition and understanding of the potential benefits of new, growth-oriented industry in Hawai'i.	NA
(10)	Encourage the development and implementation of joint federal and state initiatives to attract federal programs and projects that will support Hawai'i's social, economic, physical, and environmental objectives.	NA
(11)	Increase research and development of businesses and services in the telecommunications and information industries.	NA
COMMENTARY: As a uniquely rural visitor destination area, the resort offers several opportunities for new investment and economic opportunities, especially in relation to the film industry and the surfing industry.		
226-10.5	OBJECTIVES AND POLICIES FOR THE ECONOMY – INFORMATION INDUSTRY.	
(a)	Planning for the State's economy with regard to the information industry shall be directed toward the achievement of the objective of positioning Hawai'i as the leading dealer in information businesses and services in the Pacific Rim;	
(b)	To achieve the information industry objective, it shall be the policy of this State to:	
(1)	Encourage the continued development and expansion of the telecommunications infrastructure serving Hawai'i to accommodate future growth in the information industry;	NA
(2)	Facilitate the development of new business and service ventures in the information industry which will provide employment opportunities for the people of Hawai'i;	NA

SECTION	CHAPTER 226 - PART I. OVERALL THEME, GOALS, OBJECTIVES AND POLICIES	RATING
A = actively supportive C= conforms I = goal is inconsistent with applicant's objectives NA = goal is not applicable		
(3)	Encourage greater cooperation between the public and private sectors in developing and maintaining a well-designed information industry;	NA
(4)	Ensure that the development of new businesses and services in the industry are in keeping with the social, economic, and physical needs and aspirations of Hawai'i's people;	NA
(5)	Provide opportunities for Hawai'i's people to obtain job training and education that will allow for upward mobility within the information industry;	NA
(6)	Foster a recognition of the contribution of the information industry to Hawai'i's economy; and	NA
(7)	Assist in the promotion of Hawai'i as a broker, creator, and processor of information in the Pacific.	NA
COMMENTARY: Objectives and policies related to the information and communication industries are generally not applicable to the Proposed Action.		
226-11	OBJECTIVES AND POLICIES FOR THE PHYSICAL ENVIRONMENT – LANDBASED, SHORELINE, AND MARINE RESOURCES.	
(a)	Planning for the State's physical environment with regard to land-based, shoreline, and marine resources shall be directed towards achievement of the following objectives:	
(1)	Prudent use of Hawai'i's land-based, shoreline, and marine resources.	A
(2)	Effective protection of Hawai'i's unique and fragile environmental resources.	A
(b)	To achieve the land-based, shoreline, and marine resources objectives, it shall be the policy of this State to:	
(1)	Exercise an overall conservation ethic in the use of Hawai'i's natural resources.	A
(2)	Ensure compatibility between land-based and water-based activities and natural resources and ecological systems.	A
(3)	Take into account the physical attributes of areas when planning and designing activities and facilities.	A
(4)	Manage natural resources and environs to encourage their beneficial and multiple use without generating costly or irreparable environmental damage.	A
(5)	Consider multiple uses in watershed areas, provided such uses do not detrimentally affect water quality and recharge functions.	A
(6)	Encourage the protection of rare or endangered plant and animal species and habitats native to Hawai'i.	A
(7)	Provide public incentives that encourage private actions to protect significant natural resources from degradation or unnecessary depletion.	NA
(8)	Pursue compatible relationships among activities, facilities, and natural resources.	A

SECTION	CHAPTER 226 - PART I. OVERALL THEME, GOALS, OBJECTIVES AND POLICIES	RATING
A = actively supportive C= conforms I = goal is inconsistent with applicant's objectives NA = goal is not applicable		
(9)	Promote increased accessibility and prudent use of inland and shoreline areas for public recreational, educational, and scientific purposes.	A
COMMENTARY: The Proposed Action actively promotes the provision of greater access to the shoreline while incorporating a strong conservation ethic with regard to marine resources. Proposed improvements to the regional drainage system will greatly improve water quality at Kawela Bay. At the same time, the creation of a conservation area at Kawela Bay would help ensure that marine resources are protected and managed in a sustainable manner. On-going activities to preserve and enhance the Punaho`olapa Wildlife Preserve will ensure the long-term protection of this important bird habitat.		
226-12	OBJECTIVE AND POLICIES FOR THE PHYSICAL ENVIRONMENT – SCENIC, NATURAL BEAUTY, AND HISTORIC RESOURCES.	
(a)	Planning for the State's physical environment shall be directed towards achievement of the objective of enhancement of Hawai'i's scenic assets, natural beauty, and multi-cultural/historical resources.	
(b)	To achieve the scenic, natural beauty, and historic resources objective, it shall be the policy of this State to:	
(1)	Promote the preservation and restoration of significant natural and historic resources.	A
(2)	Provide incentives to maintain and enhance historic, cultural, and scenic amenities.	A
(3)	Promote the preservation of views and vistas to enhance the visual and aesthetic enjoyment of mountains, ocean, scenic landscapes, and other natural features.	A
(4)	Protect those special areas, structures, and elements that are an integral and functional part of Hawai'i's ethnic and cultural heritage.	A
(5)	Encourage the design of developments and activities that complement the natural beauty of the islands.	A
COMMENTARY: Implementation of the Proposed Action's cultural initiatives is consistent with these state objectives and policies. By basing the new development plan upon the findings of the Supplemental archaeological inventory survey and the cultural impact assessment, the Proposed Action will ensure that existing cultural and archaeological resources are preserved.		
226-13	OBJECTIVES AND POLICIES FOR THE PHYSICAL ENVIRONMENT – LAND, AIR, AND WATER QUALITY.	
(a)	Planning for the State's physical environment with regard to land, air, and water quality shall be directed towards achievement of the following objectives:	
(1)	Maintenance and pursuit of improved quality in Hawai'i's land, air, and water resources.	A
(2)	Greater public awareness and appreciation of Hawai'i's environmental resources.	A
(b)	To achieve the land, air, and water quality objectives, it shall be the policy of this State to:	
(1)	Foster educational activities that promote a better understanding of Hawai'i's limited environmental resources.	A

SECTION	CHAPTER 226 - PART I. OVERALL THEME, GOALS, OBJECTIVES AND POLICIES	RATING
A = actively supportive C= conforms I = goal is inconsistent with applicant's objectives NA = goal is not applicable		
(2)	Promote the proper management of Hawai'i's land and water resources.	A
(3)	Promote effective measures to achieve desired quality in Hawai'i's surface, ground, and coastal waters.	A
(4)	Encourage actions to maintain or improve aural and air quality levels to enhance the health and well-being of Hawai'i's people.	A
(5)	Reduce the threat to life and property from erosion, flooding, tsunamis, hurricanes, earthquakes, volcanic eruptions, and other natural or man-induced hazards and disasters.	A
(6)	Encourage design and construction practices that enhance the physical qualities of Hawai'i's communities.	A
(7)	Encourage urban developments in close proximity to existing services and facilities.	A
(8)	Foster recognition of the importance and value of the land, air, and water resources to Hawai'i's people, their cultures and visitors.	C
COMMENTARY: The Proposed Action concentrates new resort density around the existing hotel, thereby making the best use of existing services and facilities. The new development will be designed for compatibility with existing flood plain designations. Proposed improvements to the West Main Drain will greatly improve water quality at Kawela Bay.		
226-14	OBJECTIVE AND POLICIES FOR FACILITY SYSTEMS – IN GENERAL.	
(a)	Planning for the State's facility systems in general shall be directed towards achievement of the objective of water, transportation, waste disposal, and energy and telecommunication systems that support statewide social, economic, and physical objectives.	
(b)	To achieve the general facility systems objective, it shall be the policy of this State to:	
(1)	Accommodate the needs of Hawai'i's people through coordination of facility systems and capital improvement priorities in consonance with state and county plans.	A
(2)	Encourage flexibility in the design and development of facility systems to promote prudent use of resources and accommodate changing public demands and priorities.	A
(3)	Ensure that required facility systems can be supported within resource capacities and at reasonable cost to the user.	A
(4)	Pursue alternative methods of financing programs and projects and cost-saving techniques in the planning, construction, and maintenance of facility systems.	C
COMMENTARY: As a mature resort area, Turtle Bay's ancillary infrastructure has been designed to accommodate the proposed expansion. Because the Proposed Action is privately financed, there will be no burden upon the state or the county to provide additional infrastructure to support the project.		
226-15	OBJECTIVE AND POLICIES FOR FACILITY SYSTEMS -- IN GENERAL.	
(a)	Planning for the State's facility systems with regard to solid and liquid wastes shall be directed towards the achievement of the following objectives:	

SECTION	CHAPTER 226 - PART I. OVERALL THEME, GOALS, OBJECTIVES AND POLICIES	RATING
A = actively supportive C= conforms I = goal is inconsistent with applicant's objectives NA = goal is not applicable		
(1)	Maintenance of basic public health and sanitation standards relating to treatment and disposal of solid and liquid wastes.	C
(2)	Provision of adequate sewerage facilities for physical and economic activities that alleviate problems in housing, employment, mobility, and other areas.	C
(b)	To achieve solid and liquid waste objectives, it shall be the policy of this State to:	
(1)	Encourage the adequate development of sewerage facilities that complement planned growth.	A
(2)	Promote re-use and recycling to reduce solid and liquid wastes and employ a conservation ethic.	A
(3)	Promote research to develop more efficient and economical treatment and disposal of solid and liquid wastes.	C
COMMENTARY: Objective (a) and related policies are directed at government agencies. The proposed project is consistent with Objective (b) and its policies. The Proposed Action is in a location designated for urban growth and the resort's privately funded and operated wastewater treatment plant has sufficient capacity to accommodate the proposed expansion.		
226-16	OBJECTIVE AND POLICIES FOR FACILITY SYSTEMS – WATER.	
(a)	Planning for the State's facility systems with regard to water shall be directed towards achievement of the objective of the provision of water to adequately accommodate domestic, agricultural, commercial, industrial, recreational, and other needs within resource capacities.	
(b)	To achieve the facility systems water objective, it shall be the policy of this State to:	
(1)	Coordinate development of land use activities with existing and potential water supply.	A
(2)	Support research and development of alternative methods to meet future water requirements well in advance of anticipated needs.	C
(3)	Reclaim and encourage the productive use of runoff water and wastewater discharges.	C
(4)	Assist in improving the quality, efficiency, service, and storage capabilities of water systems for domestic and agricultural use.	A
(5)	Support water supply services to areas experiencing critical water problems.	C
(6)	Promote water conservation programs and practices in government, private industry, and the general public to help ensure adequate water to meet long-term needs.	A
COMMENTARY: The State has approved the potable water wells needed to support the Proposed Action, which have been constructed and outfitted for dedication to the City. The developer has funded the development of the potable water system, including wells, reservoirs and transmission lines.		
226-17	OBJECTIVES AND POLICIES FOR FACILITY SYSTEMS – TRANSPORTATION	
(a)	Planning for the State's facility systems with regard to transportation shall be directed towards the achievement of the following objectives:	

SECTION	CHAPTER 226 - PART I. OVERALL THEME, GOALS, OBJECTIVES AND POLICIES	RATING
A = actively supportive C= conforms I = goal is inconsistent with applicant's objectives NA = goal is not applicable		
(1)	An integrated multi-modal transportation system that services statewide needs and promotes the efficient, economical, safe, and convenient movement of people and goods.	A
(2)	A statewide transportation system that is consistent with and will accommodate planned growth objectives throughout the State.	A
(b)	To achieve the transportation objectives, it shall be the policy of this State to:	
(1)	Design, program, and develop a multi-modal system in conformance with desired growth and physical development as stated in this chapter;	NA
(2)	Coordinate state, county, federal, and private transportation activities and programs toward the achievement of statewide objectives;	A
(3)	Encourage a reasonable distribution of financial responsibilities for transportation among participating governmental and private parties;	A
(4)	Provide for improved accessibility to shipping, docking, and storage facilities;	NA
(5)	Promote a reasonable level and variety of mass transportation services that adequately meet statewide and community needs;	C
(6)	Encourage transportation systems that serve to accommodate present and future development needs of communities;	A
(7)	Encourage a variety of carriers to offer increased opportunities and advantages to interisland movement of people and goods;	NA
(8)	Increase the capacities of airport and harbor systems and support facilities to effectively accommodate transshipment and storage needs;	NA
(9)	Encourage the development of transportation systems and programs which would assist statewide economic growth and diversification;	A
(10)	Encourage the design and development of transportation systems sensitive to the needs of affected communities and the quality of Hawai'i's natural environment;	A
(11)	Encourage safe and convenient use of low-cost, energy-efficient, non-polluting means of transportation;	A
(12)	Coordinate intergovernmental land use and transportation planning activities to ensure the timely delivery of supporting transportation infrastructure in order to accommodate planned growth objectives; and	A
(13)	Encourage diversification of transportation modes and infrastructure to promote alternate fuels and energy efficiency.	A
COMMENTARY: Traffic-related issues are a principal concern among North Shore residents, as well as the applicant. The North Shore's surfing destinations, as will as attractions including Hale`iwa Town, the Polynesian Cultural Center, and Waimea Valley Park attract residents and visitors island-wide. While the Proposed Action will represent an increase to vehicular trips on Kamehameha Highway, any increase is viewed with concern. The applicant is assessing mitigations for resort-oriented traffic impacts on the regional roadway system and is committed to working with the State DOT to determine the Resort's fair share of regional roadway improvements that may be necessary as the result of implementing the Proposed Action.		

SECTION	CHAPTER 226 - PART I. OVERALL THEME, GOALS, OBJECTIVES AND POLICIES	RATING
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226-18	OBJECTIVES AND POLICIES FOR FACILITY SYSTEMS – ENERGY	
(a)	Planning for the State's facility systems with regard to energy shall be directed toward the achievement of the following objectives, giving due consideration to all	
(1)	Dependable, efficient, and economical statewide energy systems capable of supporting the needs of the people;	C
(2)	Increased energy self-sufficiency where the ratio of indigenous to imported energy use is increased;	C
(3)	Greater energy security in the face of threats to Hawai'i's energy supplies and systems; and	NA
(4)	Reduction, avoidance, or sequestration of greenhouse gas emissions from energy supply and use.	C
(b)	To achieve the energy objectives, it shall be the policy of this State to ensure the provision of adequate, reasonably priced, and dependable energy services to accommodate demand.	
(c)	To further achieve the energy objectives, it shall be the policy of this State to:	
(1)	Support research and development as well as promote the use of renewable energy sources;	A
(2)	Ensure that the combination of energy supplies and energy-saving systems is sufficient to support the demands of growth;	C
(3)	Base decisions of least-cost supply-side and demand-side energy resource options on a comparison of their total costs and benefits when a least-cost is determined by a reasonably comprehensive, quantitative, and qualitative accounting of their long-term, direct and indirect economic, environmental, social, cultural, and public health costs and benefits;	C
(4)	Promote all cost-effective conservation of power and fuel supplies through measures including: (A) Development of cost-effective demand-side management programs; (B) Education; and (C) Adoption of energy-efficient practices and technologies;	C
(5)	Ensure to the extent that new supply-side resources are needed, the development or expansion of energy systems utilizes the least-cost energy supply option and maximizes efficient technologies;	NA
(6)	Support research, development, and demonstration of energy efficiency, load management, and other demand-side management programs, practices, and technologies;	NA
(7)	Promote alternate fuels and energy efficiency by encouraging diversification of transportation modes and infrastructure;	A
(8)	Support actions that reduce, avoid, or sequester greenhouse gases in utility, transportation, and industrial sector applications; and	C
(9)	Support actions that reduce, avoid, or sequester Hawai'i's greenhouse gas emissions through agriculture and forestry initiatives.	C

SECTION	CHAPTER 226 - PART I. OVERALL THEME, GOALS, OBJECTIVES AND POLICIES	RATING
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COMMENTARY: A number of the policies are directed at government agencies. However, the Proposed Action can contribute to energy efficiency in at least two arenas: energy consumption and transportation. To the extent possible, the developer is to design and construct buildings to meet LEED standards and to incorporate design features to conserve energy and water usage, as discussed in Appendix A of the SEIS. The Proposed Action is to also incorporate principles of waste minimization and pollution prevention. In terms of transportation, the regional roadway mitigations that will result from the project will contribute to improved vehicular circulation in Ko`olau Loa and the North Shore, which translates into less energy consumption. The conceptual design of the project promotes a walkable, bikeable community.		
226-18.5	OBJECTIVES AND POLICIES FOR FACILITY SYSTEMS – TELECOMMUNICATIONS.	
(a)	Planning for the State's telecommunications facility systems shall be directed towards the achievement of dependable, efficient, and economical statewide telecommunications systems capable of supporting the needs of the people.	
(b)	To achieve the telecommunications objective, it shall be the policy of this State to ensure the provision of adequate, reasonably priced, and dependable telecommunications services to accommodate demand.	
(c)	To further achieve the telecommunications objective, it shall be the policy of this State to:	
(1)	Facilitate research and development of telecommunications systems and resources;	NA
(2)	Encourage public and private sector efforts to develop means for adequate, ongoing telecommunications planning;	NA
(3)	Promote efficient management and use of existing telecommunications systems and services; and	C
(4)	Facilitate the development of education and training of telecommunications personnel.	NA
COMMENTARY: The Proposed Action will require the expansion of the existing telecommunications systems to service the proposed project.		
226-19	OBJECTIVES AND POLICIES FOR SOCIO – CULTURAL ADVANCEMENT – HOUSING	
(a)	Planning for the State's socio-cultural advancement with regard to housing shall be directed toward the achievement of the following objectives:	
(1)	Greater opportunities for Hawai'i's people to secure reasonably priced, safe, sanitary, and livable homes, located in suitable environments that satisfactorily accommodate the needs and desires of families and individuals, through collaboration and cooperation between government and nonprofit and for-profit developers to ensure that more affordable housing is made available to very low, low- and moderate-income segments of Hawai'i's population.	A
(2)	The orderly development of residential areas sensitive to community needs and other land uses.	A
(3)	The development and provision of affordable rental housing by the State to meet the housing needs of Hawai'i's people.	A

SECTION	CHAPTER 226 - PART I. OVERALL THEME, GOALS, OBJECTIVES AND POLICIES	RATING
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(b)	To achieve the housing objectives, it shall be the policy of this State to:	
(1)	Effectively accommodate the housing needs of Hawai'i's people.	A
(2)	Stimulate and promote feasible approaches that increase housing choices for low-income, moderate-income, and gap-group households.	A
(3)	Increase homeownership and rental opportunities and choices in terms of quality, location, cost, densities, style, and size of housing.	A
(4)	Promote appropriate improvement, rehabilitation, and maintenance of existing housing units and residential areas.	NA
(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.	A
(6)	Facilitate the use of available vacant, developable, and underutilized urban lands for housing.	A
(7)	Foster a variety of lifestyles traditional to Hawai'i through the design and maintenance of neighborhoods that reflect the culture and values of the community.	C
(8)	Promote research and development of methods to reduce the cost of housing construction in Hawai'i.	NA
COMMENTARY: As part of the Proposed Action, the applicant proposes to increase the number of requisite residential housing units at affordable prices by 70 units (from 90 units to 160 units).		
226-20	OBJECTIVES AND POLICIES FOR SOCIO – CULTURAL ADVANCEMENT – HEALTH.	
(a)	Planning for the State's socio-cultural advancement with regard to health shall be directed towards achievement of the following objectives:	
(1)	Fulfillment of basic individual health needs of the general public.	C
(2)	Maintenance of sanitary and environmentally healthful conditions in Hawai'i's communities.	C
(b)	To achieve the health objectives, it shall be the policy of this State to:	
(1)	Provide adequate and accessible services and facilities for prevention and treatment of physical and mental health problems, including substance abuse.	NA
(2)	Encourage improved cooperation among public and private sectors in the provision of health care to accommodate the total health needs of individuals throughout the State.	NA
(3)	Encourage public and private efforts to develop and promote statewide and local strategies to reduce health care and related insurance costs.	NA
(4)	Foster an awareness of the need for personal health maintenance and preventive health care through education and other measures.	NA
(5)	Provide programs, services, and activities that ensure environmentally healthful and sanitary conditions.	C
(6)	Improve the State's capabilities in preventing contamination by pesticides and other potentially hazardous substances through increased coordination, education, monitoring, and enforcement.	NA

SECTION	CHAPTER 226 - PART I. OVERALL THEME, GOALS, OBJECTIVES AND POLICIES	RATING
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COMMENTARY: The Proposed Action will connect to regional infrastructure systems. On-site infrastructure improvements will be constructed to comply with relevant DOH and County standards. Collectively, the on-site and off-site systems will ensure that sanitary and healthful conditions are maintained for the benefit of the area's residents and visitors.		
226-21	OBJECTIVE AND POLICIES FOR SOCIO – CULTURAL ADVANCEMENT – EDUCATION	
(a)	Planning for the State's socio-cultural advancement with regard to education shall be directed towards achievement of the objective of the provision of a variety of educational opportunities to enable individuals to fulfill their needs, responsibilities, and aspirations.	NA
(b)	To achieve the education objective, it shall be the policy of this State to:	
(1)	Support educational programs and activities that enhance personal development, physical fitness, recreation, and cultural pursuits of all groups.	NA
(2)	Ensure the provision of adequate and accessible educational services and facilities that are designed to meet individual and community needs.	NA
(3)	Provide appropriate educational opportunities for groups with special needs.	NA
(4)	Promote educational programs which enhance understanding of Hawai'i's cultural heritage.	NA
(5)	Provide higher educational opportunities that enable Hawai'i's people to adapt to changing employment demands.	NA
(6)	Assist individuals, especially those experiencing critical employment problems or barriers, or undergoing employment transitions, by providing appropriate employment training programs and other related educational opportunities.	NA
(7)	Promote programs and activities that facilitate the acquisition of basic skills, such as reading, writing, computing, listening, speaking, and reasoning.	NA
(8)	Emphasize quality educational programs in Hawai'i's institutions to promote academic excellence.	NA
(9)	Support research programs and activities that enhance the education programs of the State.	NA
COMMENTARY: These objectives and policies are not applicable to a resort expansion project.		
226-22	OBJECTIVE AND POLICIES FOR SOCIO-CULTURAL ADVANCEMENT – LEISURE.	
(a)	Planning for the State's socio-cultural advancement with regard to social services shall be directed towards the achievement of the objective of improved public and private social services and activities that enable individuals, families, and groups to become more self-reliant and confident to improve their well-being.	NA
(b)	To achieve the social service objective, it shall be the policy of the State to:	NA

SECTION	CHAPTER 226 - PART I. OVERALL THEME, GOALS, OBJECTIVES AND POLICIES	RATING
A = actively supportive C= conforms I = goal is inconsistent with applicant's objectives NA = goal is not applicable		
(1)	Assist individuals, especially those in need of attaining a minimally adequate standard of living and those confronted by social and economic hardship conditions, through social services and activities within the State's fiscal capacities.	NA
(2)	Promote coordination and integrative approaches among public and private agencies and programs to jointly address social problems that will enable individuals, families, and groups to deal effectively with social problems and to enhance their participation in society.	NA
(3)	Facilitate the adjustment of new residents, especially recently arrived immigrants, into Hawaii's communities.	NA
(4)	Promote alternatives to institutional care in the provision of long-term care for elder and disabled populations.	NA
(5)	Support public and private efforts to prevent domestic abuse and child molestation, and assist victims of abuse and neglect.	NA
(6)	Promote programs which assist people in need of family planning services to enable them to meet their needs.	NA
COMMENTARY: This objective and its policies are directed towards governmental responsibilities and are, therefore, beyond the scope of the Proposed Action		
226-23	OBJECTIVE AND POLICIES FOR SOCIO-CULTURAL ADVANCEMENT – LEISURE.	
(a)	Planning for the State's socio-cultural advancement with regard to leisure shall be directed towards the achievement of the objective of the adequate provision of resources to accommodate diverse cultural, artistic, and recreational needs for present and future generations.	
(b)	To achieve the leisure objective, it shall be the policy of this State to:	
(1)	Foster and preserve Hawai'i's multi-cultural heritage through supportive cultural, artistic, recreational, and humanities-oriented programs and activities.	C
(2)	Provide a wide range of activities and facilities to fulfill the cultural, artistic, and recreational needs of all diverse and special groups effectively and efficiently.	C
(3)	Enhance the enjoyment of recreational experiences through safety and security measures, educational opportunities, and improved facility design and maintenance.	C
(4)	Promote the recreational and educational potential of natural resources having scenic, open space, cultural, historical, geological, or biological values while ensuring that their inherent values are preserved.	C
(5)	Ensure opportunities for everyone to use and enjoy Hawai'i's recreational resources.	C
(6)	Assure the availability of sufficient resources to provide for future cultural, artistic, and recreational needs.	C
(7)	Provide adequate and accessible physical fitness programs to promote physical and mental well-being of Hawai'i's people.	C
(8)	Increase opportunities for appreciation and participation in the creative arts, including the literary, theatrical, visual, musical, folk, and traditional art forms.	C

SECTION	CHAPTER 226 - PART I. OVERALL THEME, GOALS, OBJECTIVES AND POLICIES	RATING
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(9)	Encourage the development of creative expression in the artistic disciplines to enable all segments of Hawai'i's population to participate in the creative arts.	C
(10)	Assure adequate access to significant natural and cultural resources in public ownership.	C
COMMENTARY: Turtle Bay Resort has a long and respected history of supporting cultural and artistic events that benefit the surrounding communities and the region. The provision of an extensive pedestrian path system throughout the resort, with increased shoreline accessibility, will contribute to the physical and mental well-being of resort guests, visitors, residents and the visiting public.		
226-24	OBJECTIVE AND POLICIES FOR SOCIO-CULTURAL ADVANCEMENT--INDIVIDUAL RIGHTS AND PERSONAL WELL-BEING.	
(a)	Planning for the State's socio-cultural advancement with regard to individual rights and personal well-being shall be directed towards achievement of the objective of increased opportunities and protection of individual rights to enable individuals to fulfill their socio-economic needs and aspirations.	
(b)	To achieve the individual rights and personal well- being objective, it shall be the policy of this State to:	
(1)	Provide effective services and activities that protect individuals from criminal acts and unfair practices and that alleviate the consequences of criminal acts in order to foster a safe and secure environment.	NA
(2)	Uphold and protect the national and state constitutional rights of every individual.	C
(3)	Assure access to, and availability of, legal assistance, consumer protection, and other public services which strive to attain social justice.	NA
(4)	Ensure equal opportunities for individual participation in society.	NA
COMMENTARY: This objective is not directly applicable to the Proposed Action.		
226-25	OBJECTIVE AND POLICIES FOR SOCIO – CULTURAL ADVANCEMENT – CULTURE.	
(a)	Planning for the State's socio-cultural advancement with regard to culture shall be directed toward the achievement of the objective of enhancement of cultural identities, traditions, values, customs, and arts of Hawai'i's people.	
(b)	To achieve the culture objective, it shall be the policy of this State to:	
(1)	Foster increased knowledge and understanding of Hawai'i's ethnic and cultural heritages and the history of Hawai'i.	C
(2)	Support activities and conditions that promote cultural values, customs, and arts that enrich the lifestyles of Hawai'i's people and which are sensitive and responsive to family and community needs.	NA
(3)	Encourage increased awareness of the effects of proposed public and private actions on the integrity and quality of cultural and community lifestyles in Hawai'i.	NA
(4)	Encourage the essence of the aloha spirit in people's daily activities to promote harmonious relationships among Hawai'i's people and visitors.	NA
COMMENTARY: Archaeological sites that have been identified as significant on the SEIS Lands by the SHPD will be preserved. Preserved sites will likely become elements of open space areas throughout the development.		

SECTION	CHAPTER 226 - PART I. OVERALL THEME, GOALS, OBJECTIVES AND POLICIES	RATING
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226-26	SECTION 226-26 OBJECTIVES AND POLICIES FOR SOCIO – CULTURAL ADVANCEMENT – PUBLIC SAFETY.	
(a)	Planning for the State's socio-cultural advancement with regard to public safety shall be directed towards the achievement of the following objectives:	
(1)	Assurance of public safety and adequate protection of life and property for all people.	C
(2)	Optimum organizational readiness and capability in all phases of emergency management to maintain the strength, resources, and social and economic well-being of the community in the event of civil disruptions, wars, natural disasters, and other major disturbances.	C
(3)	Promotion of a sense of community responsibility for the welfare and safety of Hawai'i's people.	NA
(b)	To achieve the public safety objectives, it shall be the policy of this State to:	
(1)	Ensure that public safety programs are effective and responsive to community needs.	NA
(2)	Encourage increased community awareness and participation in public safety programs.	C
(c)	To further achieve public safety objectives related to criminal justice, it shall be the policy of this State to:	
(1)	Support criminal justice programs aimed at preventing and curtailing criminal activities.	NA
(2)	Develop a coordinated, systematic approach to criminal justice administration among all criminal justice agencies.	NA
(3)	Provide a range of correctional resources which may include facilities and alternatives to traditional incarceration in order to address the varied security needs of the community and successfully reintegrate offenders into the community.	NA
(d)	To further achieve public safety objectives related to emergency management, it shall be the policy of this State to:	NA
(1)	Ensure that responsible organizations are in a proper state of readiness to respond to major war-related, natural, or technological disasters and civil disturbances at all times.	NA
(2)	Enhance the coordination between emergency management programs throughout the State.	NA
COMMENTARY: Given its proximity to the shoreline, the project's owners are already cognizant of the state and county's public safety objectives and, in working with their counterparts in public service to preserve and protect public safety, have already instituted a comprehensive emergency evacuation program. The program will be expanded as necessary to accommodate the Proposed Action.		

SECTION	CHAPTER 226 - PART I. OVERALL THEME, GOALS, OBJECTIVES AND POLICIES	RATING
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226-27	OBJECTIVES AND POLICIES FOR SOCIO-CULTURAL ADVANCEMENT – GOVERNMENT	
(a)	Planning the State's socio-cultural advancement with regard to government shall be directed towards the achievement of the following objectives:	
(1)	Efficient, effective, and responsive government services at all levels in the State.	NA
(2)	Fiscal integrity, responsibility, and efficiency in the state government and county governments.	NA
(b)	To achieve the government objectives, it shall be the policy of this State to:	
(1)	Provide for necessary public goods and services not assumed by the private sector.	NA
(2)	Pursue an openness and responsiveness in government that permits the flow of public information, interaction, and response.	NA
(3)	Minimize the size of government to that necessary to be effective.	NA
(4)	Stimulate the responsibility in citizens to productively participate in government for a better Hawai'i.	NA
(5)	Assure that government attitudes, actions, and services are sensitive to community needs and concerns.	NA
(6)	Provide for a balanced fiscal budget.	NA
(7)	Improve the fiscal budgeting and management system of the State.	NA
(8)	Promote the consolidation of state and county governmental functions to increase the effective and efficient delivery of government programs and services and to eliminate duplicative services wherever feasible.	NA
COMMENTARY: This objective is not directly relevant to the Proposed Action.		

Table 6-2: Hawai'i State Planning Act Part III

SECTION	CHAPTER 226 - PART III. PRIORITY GUIDELINES	RATING
A = actively supportive C = conforms I = goal is inconsistent with applicant's objectives NA = goal is not applicable		
226-101	Establishes overall priority guidelines to address areas of statewide concern.	
226-102	Overall direction. The State shall strive to improve the quality of life for Hawai'i's present and future population through the pursuit of desirable courses of action in five major areas of statewide concern which merit priority attention: economic development, population growth and land resource management, affordable housing, crime and criminal justice, and quality education.	

SECTION	CHAPTER 226 - PART III. PRIORITY GUIDELINES	RATING
A = actively supportive C = conforms I = goal is inconsistent with applicant's objectives NA = goal is not applicable		
226-103	ECONOMIC PRIORITY GUIDELINES.	
(a)	Priority guidelines to stimulate economic growth and encourage business expansion and development to provide needed jobs for Hawai'i's people and achieve a stable and diversified economy:	
(1)	Seek a variety of means to increase the availability of investment capital for new and expanding enterprises.	NA
(A)	Encourage investments which:	
(i)	Reflect long term commitments to the State;	A
(ii)	Rely on economic linkages within the local economy;	A
(iii)	Diversify the economy;	A
(iv)	Reinvest in the local economy;	A
(v)	Are sensitive to community needs and priorities, and	A
(vi)	Demonstrate a commitment to provide management opportunities to Hawai'i residents.	A
(2)	Encourage the expansion of technological research to assist industry development and support the development and commercialization of technological advancements.	NA
(3)	Improve the quality, accessibility, and range of services provided by government to business, including data and reference services and assistance in complying with governmental regulations.	NA
(4)	Seek to ensure that state business tax and labor laws and administrative policies are equitable, rational, and predictable.	NA
(5)	Streamline the building and development permit and review process, and eliminate or consolidate other burdensome or duplicative governmental requirements imposed on business, where public health, safety and welfare would not be adversely affected.	NA
(6)	Encourage the formation of cooperatives and other favorable marketing or distribution arrangements at the regional or local level to assist Hawai'i's small-scale producers, manufacturers, and distributors.	C
(7)	Continue to seek legislation to protect Hawai'i from transportation interruptions between Hawai'i and the continental United States.	NA
(8)	Provide public incentives and encourage private initiative to develop and attract industries which promise long-term growth potentials and which have the following characteristics:	NA
(A)	An industry that can take advantage of Hawai'i's unique location and available physical and human resources.	NA
(B)	A clean industry that would have minimal adverse effects on Hawai'i's environment.	NA

SECTION	CHAPTER 226 - PART III. PRIORITY GUIDELINES	RATING
A = actively supportive C = conforms I = goal is inconsistent with applicant's objectives NA = goal is not applicable		
(C)	An industry that is willing to hire and train Hawai'i's people to meet the industry's labor needs at all levels of employment.	NA
(D)	An industry that would provide reasonable income and steady employment.	NA
(9)	Support and encourage, through educational and technical assistance programs and other means, expanded opportunities for employee ownership and participation in Hawai'i business.	C
(10)	Enhance the quality of Hawai'i's labor force and develop and maintain career opportunities for Hawai'i's people through the following actions:	NA
(A)	Expand vocational training in diversified agriculture, aquaculture, information industry, and other areas where growth is desired and feasible.	NA
(B)	Encourage more effective career counseling and guidance in high schools and post-secondary institutions to inform students of present and future career opportunities.	NA
(C)	Allocate educational resources to career areas where high employment is expected and where growth of new industries is desired.	NA
(D)	Promote career opportunities in all industries for Hawai'i's people by encouraging firms doing business in the State to hire residents.	NA
(E)	Promote greater public and private sector cooperation in determining industrial training needs and in developing relevant curricula and on-the-job training opportunities.	NA
(F)	Provide retraining programs and other support services to assist entry of displaced workers into alternative employment.	NA
(b)	Priority guidelines to promote the economic health and quality of the visitor industry:	
(1)	Promote visitor satisfaction by fostering an environment which enhances the aloha spirit and minimizes inconveniences to Hawai'i's residents and visitors.	A
(2)	Encourage the development and maintenance of well-designed, adequately serviced hotels and resort destination areas which are sensitive to neighboring communities and activities and which provide for adequate shoreline setbacks and beach access.	A
(3)	Support appropriate capital improvements to enhance the quality of existing resort destination areas and provide incentives to encourage investment in upgrading, repair, and maintenance of visitor facilities.	C
(4)	Encourage visitor industry practices and activities which respect, preserve, and enhance Hawai'i's significant natural, scenic, historic, and cultural resources.	A

SECTION	CHAPTER 226 - PART III. PRIORITY GUIDELINES	RATING
A = actively supportive C = conforms I = goal is inconsistent with applicant's objectives NA = goal is not applicable		
(5)	Develop and maintain career opportunities in the visitor industry for Hawai'i's people, with emphasis on managerial positions.	A
(6)	Support and coordinate tourism promotion abroad to enhance Hawai'i's share of existing and potential visitor markets.	A
(7)	Maintain and encourage a more favorable resort investment climate consistent with the objectives of this chapter.	A
(8)	Support law enforcement activities that provide a safer environment for both visitors and residents alike.	C
(9)	Coordinate visitor industry activities and promotions to business visitors through the state network of advanced data communication techniques.	C
(c)	Priority guidelines to promote the continued viability of the sugar and pineapple industries:	
(1)	Provide adequate agricultural lands to support the economic viability of the sugar and pineapple industries.	NA
(2)	Continue efforts to maintain federal support to provide stable sugar prices high enough to allow profitable operations in Hawai'i.	NA
(3)	Support research and development, as appropriate, to improve the quality and production of sugar and pineapple crops.	NA
(d)	Priority guidelines to promote the growth and development of diversified agriculture and aquaculture:	
(1)	Identify, conserve, and protect agricultural and aquacultural lands of importance and initiate affirmative and comprehensive programs to promote economically productive agricultural and aquacultural uses of such lands.	A
(2)	Assist in providing adequate, reasonably priced water for agricultural activities.	A
(3)	Encourage public and private investment to increase water supply and to improve transmission, storage, and irrigation facilities in support of diversified agriculture and aquaculture.	C
(4)	Assist in the formation and operation of production and marketing associations and cooperatives to reduce production and marketing costs.	NA
(5)	Encourage and assist with the development of a waterborne and airborne freight and cargo system capable of meeting the needs of Hawai'i's agricultural community.	NA
(6)	Seek favorable freight rates for Hawai'i's agricultural products from interisland and overseas transportation operators.	NA
(7)	Encourage the development and expansion of agricultural and aquacultural activities which offer long-term economic growth potential and employment opportunities.	A
(8)	Continue the development of agricultural parks and other programs to assist small independent farmers in securing agricultural lands and loans.	NA

SECTION	CHAPTER 226 - PART III. PRIORITY GUIDELINES	RATING
A = actively supportive C = conforms I = goal is inconsistent with applicant's objectives NA = goal is not applicable		
(9)	Require agricultural uses in agricultural subdivisions and closely monitor the uses in these subdivisions.	NA
(10)	Support the continuation of land currently in use for diversified agriculture.	A
(e)	Priority guidelines for water use and development:	
(1)	Maintain and improve water conservation programs to reduce the overall water consumption rate.	A
(2)	Encourage the improvement of irrigation technology and promote the use of nonpotable water for agricultural and landscaping purposes.	A
(3)	Increase the support for research and development of economically feasible alternative water sources.	NA
(4)	Explore alternative funding sources and approaches to support future water development programs and water system improvements.	NA
(f)	Priority guidelines for energy use and development:	
(1)	Encourage the development, demonstration, and commercialization of renewable energy sources.	C
(2)	Initiate, maintain, and improve energy conservation programs aimed at reducing energy waste and increasing public awareness of the need to conserve energy.	C
(3)	Provide incentives to encourage the use of energy conserving technology in residential, industrial, and other buildings.	C
(4)	Encourage the development and use of energy conserving and cost-efficient transportation systems.	C
(g)	Priority guidelines to promote the development of the information industry:	
(1)	Establish an information network that will serve as the catalyst for establishing a viable information industry in Hawai'i.	NA
(2)	Encourage the development of services such as financial data processing, products and services exchange, foreign language translations, telemarketing, teleconferencing, a twenty-four-hour international stock exchange, international banking, and a Pacific Rim management center.	NA
(3)	Encourage the development of small businesses in the information field such as software development, the development of new information systems and peripherals, data conversion and data entry services, and home or cottage services such as computer programming, secretarial, and accounting services.	NA
(4)	Encourage the development or expansion of educational and training opportunities for residents in the information and telecommunications fields.	NA
(5)	Encourage research activities, including legal research in the information and telecommunications fields.	NA

SECTION	CHAPTER 226 - PART III. PRIORITY GUIDELINES	RATING
A = actively supportive C = conforms I = goal is inconsistent with applicant's objectives NA = goal is not applicable		
(6)	Support promotional activities to market Hawai'i's information industry services.	NA
226-104	POPULATION GROWTH AND LAND RESOURCES PRIORITY GUIDELINES.	
(a)	Priority guidelines to effect desired statewide growth and distribution:	
(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 Hawai'i's people.	C
(2)	Manage a growth rate for Hawai'i's economy that will parallel future employment needs for Hawai'i's people.	C
(3)	Ensure that adequate support services and facilities are provided to accommodate the desired distribution of future growth throughout the State.	C
(4)	Encourage major state and federal investments and services to promote economic development and private investment to the neighbor islands, as appropriate.	NA
(5)	Explore the possibility of making available urban land, low-interest loans, and housing subsidies to encourage the provision of housing to support selective economic and population growth on the neighbor islands.	A
(6)	Seek federal funds and other funding sources outside the State for research, program development, and training to provide future employment opportunities on the neighbor islands.	NA
(7)	Support the development of high technology parks on the neighbor islands.	NA
(b)	Priority guidelines for regional growth distribution and land resource utilization:	
(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.	A
(2)	Make available marginal or nonessential agricultural lands for appropriate urban uses while maintaining agricultural lands of importance in the agricultural district.	NA
(3)	Restrict development when drafting of water would result in exceeding the sustainable yield or in significantly diminishing the recharge capacity of any groundwater area.	NA
(4)	Encourage restriction of new urban development in areas where water is insufficient from any source for both agricultural and domestic use.	NA

SECTION	CHAPTER 226 - PART III. PRIORITY GUIDELINES	RATING
A = actively supportive C = conforms I = goal is inconsistent with applicant's objectives NA = goal is not applicable		
(5)	In order to preserve green belts, give priority to state capital-improvement funds which encourage location of urban development within existing urban areas except where compelling public interest dictates development of a noncontiguous new urban core.	C
(6)	Seek participation from the private sector for the cost of building infrastructure and utilities, and maintaining open spaces.	A
(7)	Pursue rehabilitation of appropriate urban areas.	C
(8)	Support the redevelopment of Kakaako into a viable residential, industrial, and commercial community.	NA
(9)	Direct future urban development away from critical environmental areas or impose mitigating measures so that negative impacts on the environment would be minimized.	A
(10)	Identify critical environmental areas in Hawai'i to include but not be limited to the following: watershed and recharge areas; wildlife habitats (on land and in the ocean); areas with endangered species of plants and wildlife; natural streams and water bodies; scenic and recreational shoreline resources; open space and natural areas; historic and cultural sites; areas particularly sensitive to reduction in water and air quality; and scenic resources.	A
(11)	Identify all areas where priority should be given to preserving rural character and lifestyle.	A
(12)	Utilize Hawai'i'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.	A
(13)	Protect and enhance Hawai'i's shoreline, open spaces, and scenic resources.	A
226-105	CRIME AND CRIMINAL JUSTICE. PRIORITY GUIDELINES IN THE AREA OF CRIME AND CRIMINAL JUSTICE:	
(1)	Support law enforcement activities and other criminal justice efforts that are directed to provide a safer environment.	NA
(2)	Target state and local resources on efforts to reduce the incidence of violent crime and on programs relating to the apprehension and prosecution of repeat offenders.	NA
(3)	Support community and neighborhood program initiatives that enable residents to assist law enforcement agencies in preventing criminal activities.	NA

SECTION	CHAPTER 226 - PART III. PRIORITY GUIDELINES	RATING
A = actively supportive C = conforms I = goal is inconsistent with applicant's objectives NA = goal is not applicable		
(4)	Reduce overcrowding or substandard conditions in correctional facilities through a comprehensive approach among all criminal justice agencies which may include sentencing law revisions and use of alternative sanctions other than incarceration for persons who pose no danger to their community.	NA
(5)	Provide a range of appropriate sanctions for juvenile offenders, including community-based programs and other alternative sanctions.	NA
(6)	Increase public and private efforts to assist witnesses and victims of crimes and to minimize the costs of victimization.	NA
226-106	AFFORDABLE HOUSING. PRIORITY GUIDELINES FOR THE PROVISION OF AFFORDABLE HOUSING:	
(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.	A
(2)	Encourage the use of alternative construction and development methods as a means of reducing production costs.	A
(3)	Improve information and analysis relative to land availability and suitability for housing.	A
(4)	Create incentives for development which would increase home ownership and rental opportunities for Hawai'i's low- and moderate-income households, gap-group households, and residents with special needs.	A
(5)	Encourage continued support for government or private housing programs that provide low interest mortgages to Hawai'i's people for the purchase of initial owner-occupied housing.	A
(6)	Encourage public and private sector cooperation in the development of rental housing alternatives.	A
(7)	Encourage improved coordination between various agencies and levels of government to deal with housing policies and regulations.	A
(8)	Give higher priority to the provision of quality housing that is affordable for Hawai'i's residents and less priority to development of housing intended primarily for individuals outside of Hawai'i.	A
226-107	QUALITY EDUCATION. PRIORITY GUIDELINES TO PROMOTE QUALITY EDUCATION:	
(1)	Pursue effective programs which reflect the varied district, school, and student needs to strengthen basic skills achievement;	NA
(2)	Continue emphasis on general education "core" requirements to provide common background to students and essential support to other university programs;	NA

SECTION	CHAPTER 226 - PART III. PRIORITY GUIDELINES	RATING
A = actively supportive C = conforms I = goal is inconsistent with applicant's objectives NA = goal is not applicable		
(3)	Initiate efforts to improve the quality of education by improving the capabilities of the education work force;	NA
(4)	Promote increased opportunities for greater autonomy and flexibility of educational institutions in their decision-making responsibilities;	NA
(5)	Increase and improve the use of information technology in education by the availability of telecommunications equipment for:	NA
(A)	The electronic exchange of information;	NA
(B)	Statewide electronic mail; and	NA
(C)	Access to the Internet.	NA
(6)	Encourage programs that increase the public's awareness and understanding of the impact of information technologies on our lives;	NA
(7)	Pursue the establishment of Hawai'i's public and private universities and colleges as research and training centers of the Pacific;	NA
(8)	Develop resources and programs for early childhood education;	NA
(9)	Explore alternatives for funding and delivery of educational services to improve the overall quality of education; and	NA
(10)	Strengthen and expand educational programs and services for students with special needs.	NA

In 2011, the Governor signed into law Act 181 amending Chapter 226 to add a new definition (Sustainability) and new priority guidelines and principles to promote sustainability. Following is a discussion of how the Proposed Action fulfills the intent of these amendments.

As set forth in Act 181, "Sustainability means achieving the following:

1. Respect of the culture, character, beauty, and history of the State's island communities;
2. Striking a balance between economic, social, community, and environmental priorities; and
3. Meeting the needs of the present without compromising the ability of future generations to meet their own needs.

New Priority Guidelines:

(1) Encouraging balanced economic, social, community, and environmental priorities;
(2) Encouraging planning that respects and promotes living within the natural resources and limits of the State;
(3) Promoting a diversified and dynamic economy;
(4) Encouraging respect for the host culture;
(5) Promoting decisions based on meeting the needs of the present without compromising the needs of future generations;

(6) Considering the principles of the ahupuaʻa system; and
(7) Emphasizing that everyone, including individuals, families, communities, businesses, and government, has the responsibility for achieving a sustainable Hawaii.

Discussion: TBR has addressed these seven Priority Guidelines, as well as the State's definition of sustainability, through the ~~concept~~ philosophy of *Tomorrow's Ahupuaʻa*, that has become the basis for the planning, design, and implementation of the Proposed Action. Appendix A of the SEIS presents a detailed discussion of the full range of actions that are proposed as part of the Proposed Action.

A.3. b. Recently Enacted Legislation Amending the Hawaiʻi State Plan

In July 2012, the Governor signed Senate Bill 2745 CD1 into law, amending the Hawaiʻi State Plan by adding climate change adaptation priority guidelines that are intended to serve as guiding policy for all major state and county activities, programs, land use and other decision making processes, and county general plans and development plans. Following is a discussion of the Proposed Action's relationship to climate change adaptation priority guidelines.

(1) *Ensure that Hawaiʻi's people are educated, informed and aware of the impacts climate change may have on their communities;*

Discussion: The SEIS includes a specific section (Chapter Two, Section H4b) that addresses issues related to climate change that may impact the SEIS Lands and the Proposed Action. As a disclosure document, the SEIS will contribute to the fulfillment of this policy.

(2) *Encourage community stewardship groups and local stakeholders to participate in planning and implementation of climate change policies;*

Discussion: Among the mitigation measures proposed as part of the Proposed Action is the creation of an advisory council to assist the landowner in the formulation of policies and programs to preserve cultural and natural resources identified within the SEIS Lands. Issues pertaining to climate change and how the resort's natural and cultural resources may be affected by it would be appropriate for the advisory council to consider. Thus, the Proposed Action is consistent with and supportive of this policy.

(3) *Invest in continued monitoring and research of Hawaiʻi's climate and the impacts of climate change on the State;*

Discussion: While the principal focus of this policy is on governmental agencies that are capable of conducting statewide research, such as the University of Hawaiʻi, the Department of Health, and the Department of Business, Economic Development and Tourism, among others, the Turtle Bay Resort may be able to contribute to this effort. Since the mid-1980s, the resort's owners have sponsored the regular and systematic collection of monitoring data pertaining to near shore water quality along the Turtle Bay Resort coastline. This data may be useful to governmental research agencies. Thus, the Proposed Action is supportive of this policy.

(4) *Consider native Hawaiian traditional knowledge and practices in planning for the impacts of climate change;*

Discussion: As discussed in Chapter Two, implementation of the Proposed Action is based upon a program specifically intended to perpetuate traditional Hawaiian knowledge and practices. The Proposed Action is supportive of this policy.

(5) *Encourage the preservation and restoration of natural landscape features, such as coral reefs, beaches and dune, forests, streams, floodplains, and wetlands that have the inherent capacity to avoid, minimize, or mitigate the impacts of climate change;*

Discussion: Chapter Five of the SEIS presents numerous mitigation measures pertaining specifically to the restoration of natural landscape features, such as coral reefs, beaches and dune, forests, streams, floodplains, and wetlands. The Proposed Action is consistent with and supportive of this policy.

(6) *Explore adaptation strategies that moderate harm or exploit beneficial opportunities in response to actual or expected climate change impacts to the natural and built environments;*

Discussion: The inclusion of generous coastal setbacks beyond what are required by law is and example of the adaptive strategy employed by the Proposed Action. The Proposed Action is consistent with and supportive of this policy.

(7) *Promote sector resilience in areas such as water, roads, airports, and public health, by encouraging the identification of climate change threats, assessment of potential consequences, and evaluation of adaptive options;*

Discussion: This policy appears to pertain most directly to governmental agencies responsible for public health and infrastructure. However, to the extent possible for a private property, the landowners have, and will continue to, explore adaptive options for the implementation of the Proposed Action. The Proposed Action is supportive of this policy.

(8) *Foster cross-jurisdictional collaboration between county, state, and federal agencies and partnerships between government and private entities and other non-governmental entities, including non-profit entities;*

Discussion: Although this policy is best implemented by government agencies, the Proposed Action is receptive to it, and is therefore, supportive.

(9) *Use management and implementation approaches that encourage continual collection, evaluation, and integration of new information and strategies into existing practices, policies, and plans; and*

Discussion: Implementation of the Proposed Action is intended to be consistent with and support of this management approach.

(10) *Encourage planning and management of the natural and built environments that effectively integrate climate change policy.*

Discussion: As demonstrated throughout the SEIS, the Proposed Action is consistent with and supportive of this policy.

A. 4. State Functional Plans

The Planning Act called for the creation of functional plans to set specific objectives, establish policies, and implement actions for a particular field of activity. These functional plans further identified those organizations responsible in carrying out the actions, the implementing timeframe, and the proposed budgets.

The most current functional plans and the relationship, if any, to the Turtle Bay Resort expansion project are discussed in the following sections.

A.4. a. State Agricultural Functional Plan (1991)

Goals of the Plan: The State Agricultural Functional Plan sought to ultimately increase the overall level of agricultural development in Hawai'i. Its fundamental objectives were to (1) ensure the continued viability of Hawai'i's sugar and pineapple industries, and (2) encourage the continued growth and development of diversified agriculture throughout the State. The functional plan for agriculture also sets objectives to develop capabilities to convert Hawai'i-grown crops into potential new value/added products for the local community, visitor industry, and export markets.

Conformance with the Goals of the Plan: ~~Because the Turtle Bay Resort's agricultural lands are not included in the proposed expansion project, the~~ The State Agricultural Function Plan is not directly relevant to the proposed project. However, it is indirectly relevant because the proposed project intends to strengthen the relationship between the agricultural lands *mauka* of Kamehameha Highway and resort lands *makai* of the highway. The inclusion of a farmers' market in the proposed development and the promotion of farm-to-plate market opportunities for the lessees of the agricultural lands are both consistent with the goals of the plan to encourage diversified agriculture.

A.4. b. State Conservation Functional Plan (1991)

Goals of the Plan: The State Conservation Lands Functional Plan addresses the impacts of population growth and economic development on Hawai'i's natural environment and provides a framework for the protection and preservation of pristine lands and shore lands. The objective of the plan is to provide for a management program allowing the judicious use of the State's natural resources balanced with the need to protect these resources to varying degrees. The State is primarily responsible to provide the management of conservation areas. However, counties play a key role in directing urban and agricultural activities and in retaining open space and cultural sites as lands become urbanized.

Conformance with the Goals of the Plan: The proposed project is consistent with goal to protect natural resources and sensitive shoreline areas. The increased shoreline setbacks provided in the proposed project (over those that have been previously established by ordinance) result in approximately 42 acres being set aside as protected shoreline area. While only the portion of this shoreline situated seaward of the certified shoreline falls under the direct jurisdiction of the State of Hawai'i, the property owner is committed to working with the State to ensure that the coastline fronting the resort remains in open space for the enjoyment of residents and visitors alike. In addition, the property owner is committed to the enhancement of near-shore aquatic resources and will employ best efforts toward the designation of Kawela Bay as a marine-life conservation district and pursue proposed improvements to existing drainage channels to reduce the sediment load entering Kawela Bay.

A.4. c. State Educational Functional Plan (1989)

Goals of the Plan: The State Educational Functional Plan reflects the State Department of Education's (DOE) strategy to address the goals, policies, and priority guidelines of the Planning Act and the goals of the Board of Education (BOE). The plan outlines actions to be taken by the DOE to improve the public school system and to attend to various societal needs and trends.

Conformance with the Goals of the Plan: As implementation of the State Educational Function Plan is the responsibility of the DOE, it is not directly relevant to the proposed project.

A.4. d. State Higher Education Functional Plan (1984)

Goals of the Plan: The objectives of the State Higher Education Functional Plan are to provide (1) a number of diverse postsecondary education institutions; (2) quality educational, research, and public services programs; (3) appropriate opportunities for all who can benefit; (4) financing to ensure accessibility; and (5) coordination of educational resources.

Conformance with the Goals of the Plan: The State Higher Educational Function Plan is not relevant to the proposed project because its implementation is largely the responsibility of the DOE and the University of Hawaii.

A.4. e. State Employment Functional Plan (1990)

Goals of the Plan: The 1990 State Employment Functional Plan's objectives, policies, and implementing actions address four major issue areas: (1) education and preparation services for employment; (2) job placement; (3) quality of work life; and (4) employment planning information and coordination.

Conformance with the Goals of the Plan: Upon completion, the Proposed Action will be a principal source of new employment opportunities for the Ko'olau Loa region. To that end, it is supportive of the Employment Functional Plan.

A.4. f. State Energy Functional Plan (1991)

Goals of the Plan: The State Energy Functional Plan sought to (1) support the commercialization of Hawai'i's alternative energy resources, (2) implement a wide range of energy conservation and efficiency technologies; (3) prepare for disruptions in the energy supply; and (4) reduce the State's dependence on imported fossil fuels, such as oil, for 90 percent of its total energy needs as opposed to 42 percent nationally.

The plan called for objectives and courses of action to lessen Hawai'i's dependence on imported fossil fuels. The objectives were to: (1) moderate the growth in energy demand through conservation and energy efficiency; (2) displace oil and fossil fuels through alternate and renewable energy sources; (3) promote energy education and legislation; (4) support and develop an integrated approach to energy development and management; (5) ensure the State's abilities to implement energy emergency actions immediately in the event of fuel supply disruptions, and ensure essential public services are maintained and provisions are made to alleviate economic and personal hardships that may arise.

Conformance with the Goals of the Plan: As discussed in Appendix A, the project will utilize advanced best management practices (BMP) for green building to incorporate sustainable principals from conceptual design through the end of construction. These BMP's address aspects of site, water efficiency and reuse, energy consumption, day-lighting, recycling and construction waste management, materials (local, recycled), fixtures, indoor environmental quality, low-emitting materials, and natural resources.

The proposed resort expansion project will seek to minimize its impact on the environment through the appropriate selection of energy efficient systems, and considering sustainable material choices to achieve an environmentally responsible design that strikes a balance between known established practices and emerging sustainable best management practices. In this manner, the proposed project is consistent with the objective to moderate the growth in energy demand through conservation and energy-efficient practices. As discussed in Appendix A, *Tomorrow's Ahupua'a* includes guidelines that emphasize the overall moku (land district) and how each individual *ahupua'a* within the SEIS Lands has a symbiotic relationship between its natural resources and built environment. The proper balance of this relationship ensures economic and social/political sustainability and supports strong health and welfare of its residents, guest and visitors.

The intent of these guidelines is to respond to Hawai'i's complex growth challenges by promoting sustainable practices, high performance energy efficient buildings, economically viable and environmentally mindful development, and by encouraging best practices in new development today.

With the intent of providing a measurable basis for assessment, many of these standards are modeled after and based on highly respected and established programs like the US Green Building Council's LEED (Leadership in Energy and Environmental Design) Green Building Rating System and other similar industry standard best practice rating and measurements systems.

A.4. g. State Health Functional Plan (1989)

Goals of the Plan: The 1989 State Health Functional Plan addressed six issue areas: (1) health promotion and disease prevention; (2) communicable disease prevention and control; (3) special populations with impaired access to health care; (4) healthcare services (acute, long-term, primary and emergent) for rural communities; (5) environmental health and protection; and (6) Department of Health (DOH) leadership. The plan also sought to boost the long-term economy by attracting a share of the rapidly developing, affluent, wellness-oriented market. It also sought to develop and implement new environmental protection and health services that would protect, monitor, prevent degradation, and enhance the quality of Hawai'i's air, land, and water.

Conformance with the Goals of the Plan: The State Health Function Plan is not directly relevant to the proposed project.

A.4. h. State Historic Preservation Functional Plan (1991)

Goals of the Plan: The State Historic Functional Plan identifies issues, policies, and implementing actions that seek to preserve and protect the unsurpassable beauty, history, and culture of the Hawaiian Islands. Hawai'i's natural scenic beauty, clean environment, and rich multi-cultural heritage (including historic/cultural sites) are reasons why so many people have made Hawai'i their home, and why so many visit the State.

Conformance with the Goals of the Plan: The proposed project is supportive of the Historic Preservation Functional Plan. The property owners' voluntary commitment to a supplemental archaeological inventory survey for the expressed purpose of identifying archaeological and cultural resources so that they can be avoided is consistent with the spirit and intent of the Plan. The preparation of the Cultural Impact Assessment included in this EIS furthers the understanding of the region's valued cultural resources. Finally, the formulation of the overall conceptual development plan in the context of the property's historic land divisions ensures that the area's cultural traditions will be preserved.

A.4. i. State Housing Functional Plan (1990)

Goals of the Plan: The 1990 State Housing Functional Plan identified a need to develop affordable housing throughout the State, and found that the housing needs of lower income households would not be adequately met in future residential developments. Obstacles identified to the development of affordable housing include (1) the lack of infrastructure, particularly on the neighbor islands; (2) the high cost of zoned land, high development costs, and the regulatory system particularly on O'ahu; (3) government policies that have created a shortage of urban land zoned for housing; (4) lack of government funds to develop rental housing; (5) building codes and subdivision standards that constrain innovative, cost-saving technologies; and (6) current labor wages. The Plan recommended increased densities in residential developments where feasible, smaller and basic units, funding for rental developments, and state subsidies.

Conformance with the Goals of the Plan: The proposed project is consistent with the goals of the plan pertaining to the provision of housing that is affordable to Hawai'i's residents. The proposed project includes nearly double the number of community-focused housing units that are presently required by law.

A.4. j. State Human Services Functional Plan (1989)

Goals of the Plan: The Human Services Functional Plan addressed: (1) elder abuse; (2) child abuse and neglect; and (3) spouse/domestic abuse and violence. The plan details statistics, causes, and prevention measures that can help to combat very pressing societal issues.

Conformance with the Goals of the Plan: The State Human Services Function Plan is not directly relevant to the proposed project.

A.4. k. State Recreation Functional Plan (1991)

Goals of the Plan: The 1991 State Recreation Functional Plan focused on six issue areas: (1) ocean and shoreline recreation; (2) *mauka*, urban, and other recreation; (3) public access to the shoreline and upland recreation areas; (4) resource conservation and management, (5) management of recreation programs and facilities; and (6) wetlands protection and management.

Conformance with the Goals of the Plan: The proposed project is consistent with all the goals of the State Recreational Functional Plan. The proposed development plan greatly improves opportunities for ocean and shoreline recreation through the provision of an extensive coastal trail system that also integrates pedestrian uses with equestrian and bicycle activities. The proposed plan increases the number of public access paths to the shoreline over what is required by ordinance. The plan preserves the natural resources of the coastline as well as the extensive Punaho'olapa Marsh area. And finally, the coordinated management of these resources under the auspices of a visitor-destination resort will ensure adequate security and safety for all guest, visitors and residents pursuing recreational opportunities at the Turtle Bay Resort.

A.4. l. State Tourism Functional Plan (1991)

Goals of the Plan: The 1991 State Tourism Functional Plan focused on six issues: (1) the positive and negative impacts of tourism growth on the community; (2) physical development in terms of product quality, product diversity, land use planning, adequate infrastructure, and visitor use of public services; (3) environmental resources and cultural heritage; (4) community, visitor, and industry relations; (5) employment and career development; and (6) effective marketing.

Conformance with the Goals of the Plan: The proposed resort expansion plan is consistent with the State Tourism Functional Plan. The Honolulu General Plan designated Turtle Bay as a visitor destination area over thirty years ago. The proposed expansion of the resort in a manner that is consistent with and complimentary to the region's rural character fulfills the State and County's desire to ensure that the visitor industry benefits the quality of life of Hawai'i's residents.

A.4. m. State Transportation Functional Plan (1991)

Goals of the Plan: The 1991 State Transportation Functional Plan sought to (1) construct facility and infrastructure improvements in support of Hawai'i's thriving economy and growing population base; (2) develop a transportation system balanced with an array of new alternatives; (3) implement Transportation Systems Management to maximize the use of existing facilities and systems; (4) foster innovation and use of new technology in transportation; (5) maximize joint efforts with the private sector; (6) pursue land use initiatives which help reduce travel demand; (7) encourage resident quality-of-life improvements through improved mobility opportunities and travel reduction.

Conformance with the Goals of the Plan: The proposed resort expansion plan is consistent with the Transportation Functional Plan's goals to help reduce travel times and improve the quality of life for area residents. Given that the resort, as well as the entire North Shore of O'ahu is served by a single two-lane highway; the mitigation of transportation-related impacts must concentrate on transportation demand management (TDM). Neither the State nor the City and County of Honolulu have the financial resources, the desire, nor the intent to widen the existing highway. Implementation of TDM measures is consistent with the Transportation Functional Plan.

A.4. n. State Water Resources Development Functional Plan (1984)

Goals of the Plan: The 1984 State Water Resources Development Functional Plan set objectives to: (1) clarify the State water policy and improve management framework; (2) maintain the long-term availability of freshwater supplies while considering environmental values; (3) improve management of flood plains; (4) assure adequate municipal water supplies for planned urban growth; (5) assure the availability of adequate water for agriculture; (6) encourage and coordinate development of self-supplied industrial water and the production of water-based energy; (7) provide for the protection and enhancement of Hawai'i's freshwater and estuarine environment; (8) improve state grant and loan procedures for water programs and projects; and (9) pursue water resources data collection and research to meet changing needs.

Conformance with the Goals of the Plan: The integration of the resort's privately-funded water into the Board of Water Supply's regional water system has benefitted the entire community. The proposed reduction in the density of development will provide a greater surplus for the BWS system.

A. 5. State Ocean Resources Management Plan

The State Ocean Resources Management Plan (ORMP) was adopted by the State Department of Land and Natural Resources in 2006 to establish management goals and strategic actions pertaining to three broad areas of concern. Following is a review of how the proposed resort expansion plan relates to the ORMP.

Management Goals and Strategic Actions	Supports	Conforms	Inconsistent	Not Applicable

Improve coastal water quality by reducing land-based sources of pollution.	**S**	**C**	**I**	**NA**
Reduce soil erosion from upland forest ecosystems and conservation lands.	x			
Reduce pollutant loads from residential, agricultural, and commercial uses in priority watersheds.	x			

Discussion: ~~The entire resort property, including the *mauka* agricultural lands, are~~ Turtle Bay Resort is managed by a single entity whose primary environmental interest is to ensure that the quality of the coastal resources are improved, preserved, and protected for the benefit of guests, visitors and residents. In addition to establishing internal operational procedures for its users and tenants, the property owner is coordinating with the U.S. Army, which owns portions of the land *mauka* of the resort property to reduce soil erosion from *mauka* lands.

Protect beaches, wetlands, and coastal communities from shoreline erosion and other coastal hazards.	**S**	**C**	**I**	**NA**
Develop and implement a comprehensive and integrated shoreline policy that addresses the impacts of chronic and episodic coastal hazards.	x			
Develop a Hawai`i beach and shoreline management plan with specific management measures to address coastal erosion and other hazards in priority coastal areas.				x
Encourage appropriate coastal-dependent development that reduces risks from coastal hazards and protects coastal and cultural resources.	x			

Discussion: The proposed expansion plan incorporates development restrictions imposed by the Federal Emergency Management Agency through its Flood Insurance Rate Map (FIRM) program. Shoreline setback areas in excess of those imposed by ordinance have been included in the proposed development plan to ensure that risks for coastal hazards are reduced.

Improve and ensure maintenance and appropriate use of environmental infrastructure.	**S**	**C**	**I**	**NA**
Repair leaking sewers in priority watersheds.	x			
Reduce the number of individual wastewater disposal systems in the coastal environment.	x			
Reduce unpermitted storm-water discharges to the sewers in priority watersheds.	x			
Provide appropriate waste management infrastructure to support commercial and recreational marine facilities.	x			

Discussion: The resort's privately funded and operated wastewater treatment plant will accommodate the proposed development.

Management Goals and Strategic Actions	Supports	Conforms	Inconsistent	Not Applicable

Improve coastal water quality by reducing marine sources of pollution.	**S**	**C**	**I**	**NA**
Minimize the introduction and spread of marine alien and invasive species into and throughout archipelagic waters.				x
Establish wastewater-discharge restricted zones and conditions for commercial vessels in archipelagic waters.				x

Discussion: As the existing and proposed development does not include facilities to allow the launching of boats from the coastline fronting the resort, the regulation and/or control of marine sources of pollution, in the form of boats that sail or motor into the Turtle Bay Resort coastal waters are beyond the authority of the applicant.

Improve the health of coral reef resources for sustainable traditional, subsistence, recreational, and commercial uses.	**S**	**C**	**I**	**NA**
Strengthen and expand marine protected area management.	x			
Develop ecosystem-based approaches for near-shore fisheries management.	x			
Establish and institutionalize approaches for restoring, operating, and preserving ancient Hawaiian coastal fishponds for the benefit of coastal communities around the State.	x			
Improve enforcement capacity and voluntary compliance with existing rules and regulations for ocean resource protection.	x			

Discussion: The proposed creation of a Kawela Bay conservation management district will be based upon traditional cultural practices associated with the Turtle Bay Resort coastal area. While the resort does not have the authority to regulate the activities of persons who access the coastline on public land, it can implement and enforce a marine-based conservation program for those who access the coastline through the resort property.

Enhance public access and appropriate coastal-dependent uses of the shoreline.	**S**	**C**	**I**	**NA**
Enhance and restore existing public shoreline areas and scenic vistas.	x			
Establish new shoreline areas public and appropriate coastal-dependent uses.	x			

Discussion: The proposed resort expansion plan nearly doubles the number of required public shoreline accesses (from the 8 required by ordinance to a total of 12).

Management Goals and Strategic Actions	Supports	Conforms	Inconsistent	Not Applicable

Promote appropriate and responsible ocean recreation and tourism that provide culturally informed and environmentally sustainable uses for visitors and residents.	**S**	**C**	**I**	**NA**
Develop community-based frameworks and practices for identifying and mitigating ocean recreational use conflicts.	x			
Develop responsible and sustainable ocean-based tourism.	x			

Discussion: The resort operator is committed to ensuring that resort visitors and guests conduct themselves in a manner that will not result in adverse environmental impacts upon the shoreline or near-shore waters.

Encourage cutting edge and appropriate ocean science and technology with safeguards for ocean resource protection.	**S**	**C**	**I**	**NA**
Promote alternative ocean energy sources.				x
Plan and develop sustainable commercial aquaculture in coastal areas and ocean waters to diversify and expand Hawai`i's economy and provide locally produced sources of seafood.				x
Expand ocean science and technology.				x

Discussion: Achievement of this goal is beyond the scope of the proposed action.

Apply integrated and place-based approaches to the management of natural and cultural resources.	**S**	**C**	**I**	**NA**
Develop integrated natural and cultural resources planning process and standardized tools.	x			
Build capacity for community participation in natural and cultural resources management.	x			

Discussion: The applicant's development plan as reflected in its *Tomorrow's Ahupuaʻa* management ~~concept~~ philosophy bases proposed resort expansion and long-term operations on the implementation of a culturally-based program that is consistent with traditional and customary practices. The program will be implemented through a coordinated community-based effort.

Improve the existing legal, regulatory, and institutional framework for integrated natural resources management based on scientific data, traditional knowledge, and field experience.	**S**	**C**	**I**	**NA**
Establish a legislative and administrative reform agenda to improve management of natural resources.				x
Develop integrated information management systems for priority watersheds and coastal areas.				x
Document and share experiences and lessons learned in Hawai`i and globally to promote natural and cultural resource policy reforms and adoption.				x
Monitor and evaluate ORMP implementation.				x

Discussion: The implementation of this goal and its accompanying strategic actions lies with the State Department of Land and Natural Resources.

A. 6. State of Hawai'i Water Plan

The Hawai'i Water Plan (HWP), under HRS §174C-31, consists of four parts: (1) a water resource protection plan prepared by the water commission; (2) water use and development plans for each county prepared by each separate county and adopted by ordinance, setting forth the allocation of water to land use in that county; (3) a state water projects plan prepared by the agency which has jurisdiction over such projects in conjunction with other state agencies; and (4) a water quality plan prepared by the DOH.

All water use and development plans shall be conditioned upon and be consistent with: (1) water resource protection and water quality plans; (2) respective county land use plans and policies including general plan and zoning as determined by each respective county; (3) state land use classification and policies.

The State Water Code's Declaration of Policy recognizes the need for comprehensive water resources planning and establishes the HWP as the guide for developing and implementing this policy. The HWP is intended to serve as a continuing long-range guide for the State Water Commission in executing its general powers, duties, and responsibilities assuring economic development, good municipal services, agricultural stability, and environmental protection.

Part 1 of the HWP, The Updated Water Resource Protection Plan (2008), consists of eleven (11) sections:

Section 1: Introduction
Section 2: General Water Resource Management Principals and Policies
Section 3: Inventory and Assessment of Resources
Section 4: Monitoring of Water Resources
Section 5: Commission on Water Resource Management (CWRM) Regulatory Programs
Section 6: Existing and Future Demands
Section 7: Resource Conservation and Augmentation
Section 8: Drought Planning
Section 9: Watershed Protection
Section 10: Water Quality
Section 11: Priority Recommendations and Implementation Plan

The Updated Water Resource Protection Plan (WRPP) provides the overall guidance and direction for managing Hawai`i's water resources, and reflects the latest efforts in water resource planning as part of the State's mandate to protect and sustain the water resources for the benefit of the citizens of the State of Hawai`i. While most of the plan is directed to the coordination of agencies at the state and county level to assess, monitor, and manage water resources, the WRPP also functions as a resource document in the identification of sustainable yields for the aquifers on each island.

The WRPP identifies the sustainable yield of the Koolauloa aquifer to be 35 mgd. It identifies existing permit allocations as of 2008 to total 21.508 mgd, leaving over 13.5 mgd unallocated. As of July 2005, the WWRP determined existing water use to be 9.7 mgd.

As identified in Table ES-3 of the SEIS, the total projected demand of the Proposed Action is 1.2 mgd in the year 2025. As discussed in SEIS Chapter Three Section B.7.c[2] the resort's three existing wells, developed in 1991, have a combined capacity of up to 1.34 mgd. In consideration of TBR's anticipated dedication of the wells to the City and County of Honolulu Board of Water Supply, the BWS has agreed to allocate a sufficient amount of potable water for the Proposed Action. Thus, the Proposed Action is consistent with the projected future water demands identified in the WWRP and the potable water demands of the Proposed Action have been accommodated in the WWRP's projections.

The Water Code recognizes that the HWP must be continually updated to remain useful and relevant and further specifies that "[e]ach county shall update and modify its water use and development plans as necessary to maintain consistency with its zoning and land use policies". HRS §l74C-31(q) HRS. In response, City Ordinance 90-62, Water Management, established the Oʻahu Water Management Plan (OWMP), which has evolved into a framework of regional WMPs by City development plan district to plan for the management of all water resources within each watershed. The WMPs are prepared by the Honolulu Board of Water Supply (BWS) and its consultants, in collaboration with the City's DPP and the Commission on Water Resource Management (CWRM). Each of the eight WMPs together will constitute the OWMP.

To that end, in March 2011, the State Commission on Water Resource Management adopted the Koʻolau Loa Watershed Management Plan. Section 7 below discusses how the Turtle Bay Resort expansion plan relates to the Koʻolau Loa Watershed Management Plan.

A. 7. Koʻolau Loa Watershed Management Plan

The 2009 Koʻolau Loa Watershed Management Plan (KLWMP) presents objectives, sub-objectives that reflect the desired outcome of the plan, and strategies to implement them. The plan is generally intended to guide agencies and organizations in implementing the most important initiatives for Koʻolau Loa watersheds and water resources. However, as stated in the plan, "… implementation will likely depend on budgetary priorities, grant availability and partnering efforts over the long term. Following is a summary of the sub-objectives, and strategies that are applicable to the Turtle Bay Resort, as a major land use in the Koʻolau Loa region.

Sub-Objective	Strategies	
1.1		Strive to enhance and protect natural resources including land, streams and near shore waters ecosystems.
	1.1.2	Manage agricultural lands for watershed health in addition to income generation.
	1.1.3	Ensure that the additional urban growth is clustered within the Sustainable Communities Plan Rural Community Boundary and is designed for minimal impact on the environment.
1.3		Collaborate with responsible agencies to identify and implement environmentally-friendly measures to alleviate flooding issues and reduce pollution caused by runoff.
	1.3.1	Plan and implement flood control measures.
	1.3.2	Improve management of streams and stream banks.
	1.33	Restore muliwai and wetlands for flood protection.

Discussion: ~~While no resort expansion is directly associated with the Turtle Bay Resort agricultural lands, they are an important element of the overall resort.~~ The water quality of surface drainage and of the near shore coastal waters is greatly affected by the proper management of these properties, ~~which include both~~ including the farmlands *mauka* of Kamehameha Highway and the Punahoʻolapa marsh (classified as State Agricultural District). To that end, the applicant has proposed several measures to improve flood control on the property (see discussion in Chapter Two and Chapter Five). Restoration of the Kawela Stream to align with the West Main Drain, in particular, will also help reduce the sediment load on Kawela Bay. Continued restoration efforts at the marsh will help improve near shore water quality by capturing nutrients that might otherwise make their way to the ocean and improving the capacity of the marsh for storm water retention during flood events. In addition, the applicant ~~is reviewing the construction~~ has entered into preliminary discussions with the owner of the agricultural lands *mauka* of Kamehameha Highway about the feasibility of constructi~~o~~ng ~~of~~ approximately 30 acres of storm water retention and detention basins on such lands ~~the agricultural lands *mauka* of Kamehameha Highway~~. ~~These~~ If determined to be feasible, these basins would be intended to intercept storm water runoff during heavy rainfall events and reduce flooding across Kamehameha Highway and into the *makai* resort lands.

The Resort property is fully contained within the Rural Community Boundary established by the Ko'olau Loa Sustainable Communities Plan. The applicant's proposed expansion plan represents a substantial reduction in density over that which was previously approved by ordinance, thereby greatly reducing the project's potential environmental impacts.

Sub-Objective	Strategies	
1.4		Promote initiatives that preserve species and habitat biodiversity, particularly native species.
	1.4.1	Protect native species by reducing the threats of invasive plant species.

Discussion: As discussed in the botanical inventory survey conducted for the SEIS, native species are generally limited to the coastal strand fronting the resort property. The Proposed Action increases the development setback from the shoreline, and in so doing, creates a 42-acre expanse of property that will be retained in open space and help protect the fragile coastal strand. Selective pruning and tree removal in the setback area will also help reduce the density of invasive ironwood trees, whose needle litter prohibits understory growth and inhibits native plant re-vegetation. Elsewhere, native plants will be incorporated into landscape features on the resort grounds.

Sub-Objective	Strategies	
1.5		Ensure the export of water from Ko`olau Loa will not be detrimental to Ko`olau Loa.

Discussion: The applicant owns three wells on the *mauka* side of Kamehameha Highway (the 'Ōpana Wells), but these wells are not part of the SEIS Lands. Two of these wells have been improved and ~~have been~~ will be transferred to the Board of Water Supply (BWS). The third well has been tested, not yet improved, and is also intended to be transferred to the BWS. The total capacity of the two wells being transferred to the BWS is 2 mgd. The estimated capacity of the third well is 1 mgd. The capacity of the Opana Well system greatly exceeds the resort's maximum estimated demand. The excess water provided by the Opana Wells will benefit the greater Ko'olau Loa water system, as owned and operated by BWS, to ensure the potable water needs of the Ko'olau Loa area are met.

Sub-Objective	Strategies	
2.2		Maintain and improve the water quality of near shore waters.
	2.2.1	Implement measures that improve the quality of surface waters that come from urban and agricultural land uses.
	2.2.2	Monitor near shore water quality.

Discussion: As mentioned above, the proposed restoration of the Kawela Stream alignment will redirect storm water flow away from Kawela Bay and greatly improve water quality in the bay. Outflow from the redirected channel will enter the ocean in an area that is exposed to much greater wave energy than the bay, resulting in much more rapid flushing of the sediment load.

The applicant and its predecessors have conducted regular shoreline water quality monitoring of the near shore waters over the past 20 years and this monitoring will continue.

Sub-Objective	Strategies	
3.1		Plan for the enhancement of Native Hawaiian water rights and cultural and traditional uses.
	3.1.2	Develop new groundwater sources that do not impact surface waters.
	3.1.3	Promote and preserve Native Hawaiian practices in the watershed.
3.2		Consult with Native Hawaiian agencies/community on water-related issues.
	3.2.1	Prior to constructing projects in culturally sensitive areas, consult with the Native Hawaiian community.
	3.2.2	Use the guidance from the *Kapa`akai* (2000) court decision on Native Hawaiian consultation on providing for the ability to exercise traditional and customary rights.

Discussion: The development of the ʻŌpana Wells, together with the use of reclaimed water from the resort's wastewater treatment plant, reduces the resort's impact upon surface waters. As discussed in Chapter Two of the SEIS, ~~the implementation~~ a commitment to the philosophy of ~~the~~ *Tomorrow's Ahupuaʻa* ~~concept~~ is intended to restore a land management system to the area that is consistent with traditional and customary practices. This ~~plan~~ philosophy has been carefully developed in consultation with the Native Hawaiian community. A cultural impact assessment has been prepared for the SEIS and is presented in Appendix ~~A~~ D and summarized in Chapter Two as a means of documenting traditional and customary practices associated with the property. The applicant is committed to fulfilling its obligations under the *PASH* and *Kapaʻakai* court decisions.

Sub-Objective	Strategies	
4.1		Implement watershed management projects and programs, through a combination of agency initiatives, watershed partnerships and community-based implementation entities.
	4.1.1	Support the existing and future watershed partnerships in Ko`olau Loa.

Discussion: The ~~applicant has been engaged~~ owner of the *mauka* agricultural lands is preparing a sustainable agricultural master plan in discussions with its farming tenants ~~as well as the owners of land inland of the resort~~ to encourage improved watershed management practices.

Sub-Objective	Strategies	
5.2		Efficiently meet water demands and match quality (i.e. potable, brackish, recycled) with use (drinking, irrigation, etc.)
	5.2.1	Increase water conservation measures.
	5.2.2	Develop and use recycled water to meet non-potable demands, where feasible.

Discussion: As discussed above, the dedication of the ʻŌpana Wells to the BWS not only addresses the resort expansion's water demands, but also provides a value contribution to the BWS's regional system. The resort's ongoing use of recycled water helps to offset demand of potable water for irrigation purposes.

A. 8. State of Hawaiʻi Historic Preservation Act (Chapter 6E, HRS)

As set forth in Section 1 of Chapter 6E, HRS, "The Constitution of the State of Hawaiʻi recognizes the value of conserving and developing the historic and cultural property within the State for the public good. The legislature declares that the historic and cultural heritage of the State is among its important assets and that the rapid social and economic developments of contemporary society threaten to destroy the remaining vestiges of this heritage. The legislature further declares that it is in the public interest to engage in a comprehensive program of historic preservation at all levels of government to promote the use and conservation of such property for the education, inspiration, pleasure, and enrichment of its citizens. The legislature further declares that it shall be the public policy of this State to provide leadership in preserving, restoring, and maintaining historic and cultural property, to ensure the administration of such historic and cultural property in a spirit of stewardship and trusteeship for future generations, and to conduct activities, plans, and programs in a manner consistent with the preservation and enhancement of historic and cultural property."

The Proposed Action does not include any land registered as a State or National historic site. As discussed in Chapter Two of the SEIS, a supplemental archaeological inventory survey (SAIS) has been conducted on the SEIS lands, pursuant to a plan approved by the SHPD in December 2011, and consistent with the rules enacted by SHPD to fulfill its obligations under Chapter 6E. In addition, burials that have been previously identified and inadvertently discovered on the Resort land have been respectfully cared for and disposition (preservation in place of relocation) have followed the Hawaiʻi State Burial Laws as contained in chapter 6E. A CIA was prepared pursuant to Act 50, 2000 Hawaiʻi Session Laws, as part of the SEIS process. The CIA and the community consultation process identified cultural and natural resources within the Resort Lands and a proposed consultation process has been recommended to address potential impacts of the proposed project on these valuable cultural, natural and historic resources.

A. 9. General Plan for the City and County of Honolulu

The General Plan for the City and County of Honolulu (referred to herein as the "O'ahu General Plan"), first enacted in 1977 and amended in 2002, is a statement of the long-range social, economic, environmental, and design objectives for the general welfare and prosperity of the people of O'ahu and a statement of broad policies that facilitate the attainment of those objectives. The General Plan identifies eleven areas of concern. Following is a discussion of those objectives and policies that are directly relevant to the Proposed Action.

~~In 2011, the DPP initiated a General Plan Update program to solicit public input on possible revisions to the O'ahu General Plan. At the time the SEIS was being prepared, the initial round of public meetings had begun.~~

Population Objective	Policy	
B		To plan for future population growth.
	2	Provide adequate support facilities to accommodate future growth in the number of visitors to Oahu.
C		To establish a pattern of population distribution that will allow the people of Oahu to live and work in harmony.
	3	Manage physical growth and development in the urban-fringe and rural areas so that: a. An undesirable spreading of development is prevented; and b. Their population densities are consistent with the character of development and environmental qualities desired for such areas.

Discussion: The Proposed Action represents a considerable improvement over the resort master plan that was previously enacted by ordinance. The ~~proposed~~ Proposed ~~plan~~ Action includes a substantial reduction in the number of visitor units and a generous increase in the amount of open space at the resort. ~~At the same time, it better integrates the resources of the property with the resort, especially through the strengthening of~~ In addition, The Proposed Action enhances the relationship between ~~the *mauka*~~ nearby agricultural lands and the resort. The proposed expansion fulfills the long-delayed commitment to providing new employment opportunities for the Ko'olau Loa and North Shore districts.

Economic Activity Objective	Policy	
A		To promote employment opportunities that will enable all the people of Oahu to attain a decent standard of living.
	1	Encourage the growth and diversification of Oahu's economic base.
	2	Encourage the development of small businesses and larger industries which will contribute to the economic and social well-being of Oahu residents.
	3	Encourage the development in appropriate locations on Oahu of trade, communications, and other industries of a nonpolluting nature.

Discussion: As a long-planned visitor destination area, Turtle Bay Resort represents a significant contribution to the diversification of O'ahu's economic base in the Ko'olau Loa region.

The proposed expansion will not only create direct employment in the visitor industry, but will create new opportunities for small businesses that provide visitor-related services and amenities. The provision of new employment opportunities in the area will also contribute to improving the quality of life for area residents by providing an alternative to having to commute to Honolulu for work.

Economic Activity Objective	Policy	
B		To maintain the viability of Oahu's visitor industry.
	6	Permit the development of secondary resort areas in West Beach, Kahuku (encompassing Kuilima), Makaha, and Laie.
	7	Manage the development of secondary resort areas in a manner which respects existing lifestyles and the natural environment, and avoids substantial increases in the cost of providing public services in the area.
	8	Preserve the well-known and widely publicized beauty of Oahu for visitors as well as residents.
	9	Encourage the visitor industry to provide a high level of service to visitors.

Discussion: Expansion of Turtle Bay Resort fulfills the General Plan policy of providing a secondary resort area at Kahuku. The proposed reduction in density over that which is allowable by ordinance results in a development plan that is more consistent with the rural character of the area and more compatible with principal of natural resource preservation. After nearly 40 years of operation, the success of Turtle Bay is indisputable. The applicant fully recognizes that the rural character of the region is a primary attraction for Turtle Bay visitors, and the proposed development plan is intended to preserve that valued rural character.

Economic Activity Objective	Policy	
C		To maintain the viability of agriculture on Oahu.
	1	Assist the agricultural industry to ensure the continuation of agriculture as an important source of income and employment.
	3	Support the development of markets for local products, particularly those with the potential for economic growth.
	5	Maintain agricultural land along the Windward, North Shore, and Waianae coasts for truck farming, flower growing, aquaculture, livestock production, and other types of diversified agriculture.
	6	Encourage the more intensive use of productive agricultural land.

Discussion: ~~The applicant is working to establish a conservation easement over its agricultural lands *mauka* of Kamehameha Highway, which will ensure the perpetuation of farming over the long term. This action provides the basis for renegotiating longer-term leases with the farming tenants, thereby providing with the security needed to justify the farmers' reinvestment in their farms. The integration of the farms into the resort under the auspices of a farm-to-plate program will help to~~

~~ensure a reliable market for locally-grown crops.~~ These policies are not applicable to the Proposed Action because the Proposed Action does not contain any agricultural lands.

Natural Environment Objective	Policy	
A		To protect and preserve the natural environment.
	1	Protect Oahu's natural environment, especially the shoreline, valleys, and ridges, from incompatible development.
	2	Seek the restoration of environmentally damaged areas and natural resources.
	3	Retain the Island's streams as scenic, aquatic, and recreation resources.
	4	Require development projects to give due consideration to natural features such as slope, flood and erosion hazards, water- recharge areas, distinctive land forms, and existing vegetation.
	5	Require sufficient setbacks of improvements in unstable shoreline areas to avoid the future need for protective structures.
	6	Design surface drainage and flood-control systems in a manner which will help preserve their natural settings.
	7	Protect the natural environment from damaging levels of air, water, and noise pollution.
	8	Protect plants, birds, and other animals that are unique to the State of Hawaii and the Island of Oahu.
	10	Increase public awareness and appreciation of Oahu's land, air, and water resources.

Discussion: The Proposed Action includes several initiatives that will benefit the natural environment. ~~The restoration of the Kawela Stream alignment is intended to reduce the sediment load on Kawela Bay and improve its water quality.~~ Generous shoreline setbacks incorporated into the expansion plan will help to protect the fragile shoreline and dune system. At the same time, the increased recreational usage of the beaches will hopefully help to discourage the unregulated use of the beach by off-road vehicles for sport, an activity that is severely damaging to the native plants that make up the coastal strand. Selective thinning of invasive ironwood trees in the forest fronting the shoreline will help to reduce the canopy and promote understory growth of native plants, which will, in turn, help to promote the stabilization of the dune system. ~~Implementation of the *ahupuaʻa*-oriented development program,~~ Consistent with the philosophy of *Tomorrow's Ahupuaʻa*, the Applicant will ~~provide the basis for visitor education~~ endeavor to educate guests of the Resort not only about ~~not only~~ the Native Hawaiian culture, but also the sensitive character of natural resources in the area. Of particular importance is the protection of the Hawaiian monk seals that now regularly visit the Turtle Bay Resort coastline. The resort already supports an extensive volunteer program to protect the seals when they haul out and prevent pedestrians from disturbing them. The proposed resort expansion is not anticipated to have a detrimental impact on resting seals. They are known to haul out in much more active areas such as Kailua Beach. Rather, the additional protection afforded the animals by hotel staff and security will ensure that they will be undisturbed and will help to further public education about this special resource.

Natural Environment Objective	Policy	
B		To preserve and enhance the natural monuments and scenic views of Oahu for the benefit of both residents and visitors.
	1	Protect the Island's well-known resources: its mountains and craters; forests and watershed areas; marshes, rivers, and streams; shoreline, fishponds, and bays; and reefs and offshore islands.
	4	Provide opportunities for recreational and educational use and physical contact with Oahu's natural environmental.

Discussion: The proposed expansion plan will improve views from Kamehameha Highway to the shoreline by opening up a visual corridor along the new access road. New hotel buildings will be limited in height and scale and will not likely be visible from the highway. The reduction in the number of hotel sites, together with the provision of increased setback from the shoreline will create an expanded open space corridor along the coastline, thereby preserving the existing rural character of the area. As an approved visitor destination area, the expansion of Turtle Bay Resort not only fulfills the City's goals for the area, but also provides new opportunities to educate visitors about the sensitive character of the natural environment. The relatively modest expansion (in comparison to the extent of development allowable by ordinance) will help to extend resort management over the area, thereby improving security and resource protection, without compromising natural resource values.

Housing Objective	Policy	
A		To provide decent housing for all the people of Oahu at prices they can afford.
	1	Develop programs and controls which will provide decent homes at the least possible cost.
	3	Encourage innovative residential development which will result in lower costs, added convenience and privacy, and the more efficient use of streets and utilities.
	5	Make full use of State and Federal programs that provide financial assistance for low- and moderate-income homebuyers.
	8	Encourage and participate in joint public- private development of low- and moderate- income housing.
	10	Promote the construction of affordable dwellings which take advantage of Oahu's year-round moderate climate.
	12	Encourage the production and maintenance of affordable rental housing.
	13	Encourage the provision of affordable housing designed for the elderly and the handicapped.
	14	Encourage equitable relationships between landowners and leaseholders, between landlords and tenants, and between condominium developers and owners.

Discussion: 160 units of housing affordable to the community will be built for sale or lease as part of the Proposed Action. With more stable jobs created in the region, as the result of the Proposed Action, more residents will want to, and be able to, set up their own households

nearby. The proposed number of Community Housing units will generally address the demand for affordable units created by the Proposed Action.

Housing Objective	Policy	
C		To provide the people of Oahu with a choice of living environments which are reasonably close to employment, recreation, and commercial centers and which are adequately served by public utilities.
	1	Encourage residential developments that offer a variety of homes to people of different income levels and to families of various sizes.
	2	Encourage the fair distribution of low- and moderate-income housing throughout the Island.
	3	Encourage residential development near employment centers.

Discussion: The Proposed Action will include resort residential units ranging from multi-family condominium units to single family homes, as well as community housing priced to be affordable to residents of the region.

Transportation & Utilities Objective	Policy	
A		To create a transportation system which will enable people and goods to move safely, efficiently, and at a reasonable cost; serve all people, including the poor, the elderly, and the physically handicapped; and offer a variety of attractive and convenient modes of travel.
	5	Improve roads in existing communities to reduce congestion and eliminate unsafe conditions.
	9	Promote programs to reduce dependence on the use of automobiles.
	10	Discourage the inefficient use of the private automobile, especially in congested corridors and during peak-hours.
	11	Make public, and encourage private, improvements to major walkway systems.

Discussion: The applicant recognizes the depth of concern about traffic congestion on Kamehameha Highway, especially between the resort and Hale‘iwa. The traffic study conducted for the SEIS quantifies the extent to which the proposed expansion will add to traffic. It also provides the basis for implementing traffic system management protocols to help reduce peak-period traffic congestion. However, given that the North Shore is a primary visitor destination and neither the City nor the State have the resources to implement anything other than safety-related improvements on the highway, the best that can likely be done is to implement selective improvements along the North Shore highway segment to improve left-turn vehicular movement and pedestrian crossings at choke-points. As determined in cooperation with the State DOT, the applicant will provide its fair share towards these improvements based upon the extent that its traffic contributes to the problem.

The provision of an extensive coastal trail system and intra-resort pedestrian pathways, together with the expanded park area and increased shoreline public accesses included in the expansion plan will greatly benefit the passive recreational activities available to the surrounding community.

Transportation & Utilities Objective	Policy	
B		To meet the needs of the people of Oahu for an adequate supply of water and for environmentally sound systems of waste disposal.
	1	Develop and maintain an adequate supply of water for both residents and visitors.
	2	Develop and maintain an adequate supply of water for agricultural and industrial needs.
	5	Provide safe, efficient, and environmentally sensitive waste-collection and waste-disposal services.

Discussion: The dedication of the ʻŌpana Wells to the BWS ensures that the resort's drinking water needs will be addressed, with the excess water provided by the wells contributing to the benefit of the entire surrounding region. The privately constructed and operated wastewater treatment system ~~a Turtle Bay~~ ~~Bay~~ *mauka* of the resort, owned by Turtle Bay Wastewater Treatment, LLC, provides for the safe collection and treatment of resort-generated wastewater.

Energy Objective	Policy	
C		To fully utilize proven alternative sources of energy.
	1	Encourage the use of commercially available solar energy systems in public facilities, institutions, residences, and business developments.
E		To establish a continuing energy information program.
	2	Foster the development of an energy conservation ethic among Oahu residents.

Discussion: It will be the ultimate decision of the future hotel developer(s) to determine the extent of energy saving initiatives that will be implemented as the result of the expansion plan. If the applicant takes on the development obligation, it will work with the State to identify the most appropriate conservation programs for the resort. As discussed in Section B.3.h of Part Four, TBR is committed to requiring that all major development structures meet the LEED certification standards for new structures on all individual site development.

Physical Development & Urban Design Objective	Policy	
A		To coordinate changes in the physical environment of Oahu to ensure that all new developments are timely, well-designed, and appropriate for the areas in which they will be located.
	2	Coordinate the location and timing of new development with the availability of adequate water supply, sewage treatment, drainage, transportation, and public safety facilities.
	3	Phase the construction of new developments so that they do not require more regional supporting services than are available.
	4	Require new developments to provide or pay the cost of all essential community services, including roads, utilities, schools, parks, and emergency facilities that are intended to directly serve the development.
	5	Provide for more compact development and intensive use of urban lands where compatible with the physical and social character of existing communities.
	6	Encourage the clustering of developments to reduce the cost of providing utilities and other public services.

Discussion: An urban design plan for the Resort was established over twenty years ago and remains in force for the property.

Physical Development & Urban Design Objective	Policy	
D		To maintain those development characteristics in the urban-fringe and rural areas which make them desirable places to live.
	4	Maintain rural areas as areas which are intended to provide environments supportive of lifestyle choices which are dependent on the availability of land suitable for small to moderate size agricultural pursuits, a relatively open and scenic setting, and/or a small town, country atmosphere consisting of communities which are small in size, very low density and low rise in character, and may contain a mixture of uses.

Discussion: Over 30 years ago, the City approved the expansion of the Resort as a means of providing new employment opportunities for the region. The concept of a self-contained visitor destination area within a rural region was deemed appropriate then, and remains appropriate today. The proposed expansion plan includes a dramatic reduction in the proposed density of the resort, thereby enhancing the compatibility of a visitor destination in a resort setting with the rural character of the region. The proposed low-density character of the Proposed Action is consistent with this objective.

Physical Development & Urban Design Objective	Policy	
E		To create and maintain attractive, meaningful, and stimulating environments throughout Oahu.
	3	Encourage distinctive community identities for both new and existing districts and neighborhoods.
	4	Require the consideration of urban-design principles in all development projects.
	5	Require new developments in stable, established communities and rural areas to be compatible with the existing communities and areas.
	8	Preserve and maintain beneficial open space in urbanized areas.
	9	Design public structures to meet high aesthetic and functional standards and to complement the physical character of the communities they will serve.

Discussion: The proposed development will be subject to urban design principals that were adopted as part of the resort's original zoning ordinance in 1987. The proposed expansion will be consistent with the rural character of the area by concentrating the resort development in a rural-like village setting surrounded by extensive open space.

Public Safety Objective	Policy	
A		To prevent and control crime and maintain public order.
	1	Provide a safe environment for residents and visitors on Oahu.
B		To protect the people of Oahu and their property against natural disasters and other emergencies, traffic and fire hazards, and unsafe conditions.
	2	Require all developments in areas subject to floods and tsunamis to be located and constructed in a manner that will not create any health or safety hazard.
	4	Cooperate with State and Federal agencies to provide tsunami warning and protection for Oahu.
	6	Reduce hazardous traffic conditions.
	7	Provide adequate fire protection and effective fire prevention programs.
	12	Provide educational materials on civil defense preparedness, fire protection, traffic hazards and other unsafe conditions.

Discussion: The security provided by resort staff will ensure that visitors, guests and area residents will enjoy a safe recreational experience at the resort. Tsunami warning sirens are already located on Kamehameha Highway fronting the resort and the hotel is an official evacuation site, thereby ensuring that resort residents are warned of an impending tsunami. The resort's planned intersections with Kamehameha Highway will be designed in a manner that is consistent with highway safety standards.

Culture & Recreation Objective	Policy	
B		To protect Oahu's cultural, historic, architectural, and archaeological resources.
	2	Identify, and to the extent possible, preserve and restore buildings, sites, and areas of social, cultural, historic, architectural, and archaeological significance.
	3	Cooperate with the State and Federal governments in developing and implementing a comprehensive preservation program for social, cultural, historic, architectural, and archaeological resources.
	4	Promote the interpretive and educational use of cultural, historic, architectural, and archaeological sites, buildings, and artifacts.

Discussion: The applicant's commitment to a supplemental archaeological inventory survey, a cultural impact assessment, and an *ahupuaʻa*-based development plan together demonstrate the project's compliance to the objective of protecting Oʻahu's cultural, historic, and archaeological resources.

Culture & Recreation Objective	Policy	
D		To provide a wide range of recreational facilities and services that are readily available to all residents of Oahu.
	1	Develop and maintain community-based parks to meet the needs of the different communities on Oahu.
	6	Provide convenient access to all beaches and inland recreation areas.
	9	Require all new developments to provide their residents with adequate recreation space.
	10	Encourage the private provision of recreation and leisure-time facilities and services.
	13	Encourage the safe use of Oahu's ocean environments.

Discussion: The ordinance granting rezoning for the original expansion project in the 1980s included commitments for a coastal trail system, five public accesses, and approximately 54 acres of park area to be included in the project. The Proposed Action voluntarily expands upon these requirements by providing an additional four public accesses, approximately 19 more acres of park area, and an expanded shoreline setback area that will increase open space along the coastline by approximately 18 acres. At the same time, the applicant has eliminated parking restrictions within the resort as a means of facilitating greater access to the resort's recreational resources by the general community.

General Plan Update Program

In 2011, the DPP initiated a General Plan Update program to solicit public input on possible revisions to the Oahu General Plan. At the time the Draft SEIS was being prepared, the initial

round of public meetings had begun. In 2012, the DPP released a public review draft of the proposed General Plan Update. Public review meetings continued into early 2013.

Following is a summary of the Proposed Action's compliance with revisions being proposed to the O'ahu General Plan as discussed in the 2012 General Plan Update - Public Review Draft (GPUPRD).

The GPUPRD adds new language promoting sustainability. The Proposed Action is consistent with and supportive of these amendments. As discussed in Appendix A of the SEIS, the Proposed Action will be implemented in accordance with contemporary sustainable practices.

The GPUPRD emphasizes the need for economic diversification. The Proposed Action is consistent with and supportive of these amendments. While a major focus of the Proposed Action is to help sustain O'ahu's visitor industry, the indirect and induced job growth resulting from the Proposed Action will contribute to growth in other sectors of the O'ahu economy. In addition, the inclusion of the Farmers Market in the Proposed Action, together with Turtle Bay Mauka Lands, LLC's plans to preserve the *mauka* agricultural lands in perpetuity through a conservation easement, will help to promote agricultural activity and incubation of new businesses in the Kahuku area.

The GPUPRD recognizes relationships between the visitor industry, residents' quality of life and Native Hawaiian culture. The Proposed Action is consistent with and supportive of these amendments, as demonstrated in detail by Appendix A of the SEIS: A Cultural Approach to Sustainability. The Proposed Action is based upon the philosophy of *Tomorrow's Ahupua'a* described in the SEIS, which is intended to strengthen the relationship between existing and future resort operations and the sustainable aspects of Hawaiian culture.

The GPUPRD updates the list of secondary resort areas by renaming the Kahuku area to Kuilima. As the resort is presently known as the Turtle Bay Resort, and the name Kuilima is not currently referenced, it may be appropriate for the General Plan to reflect the most current name associated with the existing resort.

The GPUPRD recognizes expanded options for visitor accommodations, including community hotels and alternative lodging. The Proposed Action is consistent with and supportive of this provision. The Proposed Action includes provisions for whole condo, fractional and/or timeshare ownership alternatives that represent the most current trend in hotel accommodations.

The GPUPRD supports the diversification of the agricultural industry, increased food security, and self-sufficiency. The Proposed Action is consistent with and supportive of this policy. By including a Farmers Market, the Proposed Action supports a greater emphasis on small farming operations.

The GPUPRD emphasizes the importance of growth boundaries. The Proposed Action is consistent with and support of these amendments. The Turtle Bay Resort is fully contained within the existing growth boundary for the area.

The GPUPRD updates policies on affordable housing. The Proposed Action is consistent with and supportive of this policy. By providing affordable housing at the resort in excess of what is required by the previously granted land use approvals, TBR is demonstrating a strong commitment to the provision of new housing opportunities that will be affordable to residents of the Koʻolau Loa and North Shore regions.

The GPUPRD promotes mixed use and higher density development. As these policies are targeted to the Primary Urban Center, they are not relevant to the rural character that is one of the goals of the Koʻolau Loa SCP.

The GPUPRD emphasizes the creation of a multi-modal transportation system and improvements to existing transportation and utility systems. The Proposed Action is consistent with and supportive of these policies. The Proposed Action includes specific measures to promote multi-model transport to the resort for its guests, employees, and residents. Planned Traffic Demand Management (TDM) measures are summarized in Chapter 5 Section B. 1. b. Traffic Mitigation. These measures include but are not limited to local and airport shuttles, car-pooling, hourly car rentals at the resort, multi-modal paths for walking/ biking and encouraging as much ride sharing as possible.

The GPUPRD recognizes Native Hawaiian culture, language and history. The Proposed Action is consistent with and supportive of this policy. The *Tomorrow's Ahupuaʻa* philosophy that constitutes the basis for the Proposed Action celebrates the importance of Native Hawaiian culture to the resort.

A. 10. Ko'olau Loa Sustainable Communities Plan

As set forth in the 1999 Ko'olau Loa Sustainable Communities Plan (KLSCP), "The vision for Ko'olau Loa seeks to preserve the region's rural character and its natural, cultural, scenic and agricultural resources. The region will remain country, characterized by small towns and villages with distinct identities that exist in harmony with the natural settings of mountain ridges and winding coastline." The KLSCP identifies the Resort (then known as Kuilima) as being located within the Rural Community Boundary and characterizes it as a "Major Resort Destination" planned for a total of 4,000 visitor units.

~~Following is a discussion of how the Proposed Action will comply with the four planning principles presented in the KLSCP:~~

~~***Design Character: Kuilima Resort is conceived as a destination resort relating to and integrated with the rural North Shore of O'ahu. It is envisioned as a resort overlaid with the simplicity and timelessness of a kama'aina country estate with characteristic hospitality and elegance.***~~

~~**Discussion:** The substantial reduction in density for the proposed resort expansion is consistent with this planning principle. By concentrating new resort development around the existing hotel, the rural character of the surrounding property is maintained.~~

~~***Appropriate Scale and Siting: The master plan reflects the estate-like quality in the low density of buildings, the lush and extensive landscaping on all parcels and common areas, and the gracious entry drive servicing the entire property.***~~

~~**Discussion:** The proposed expansion plan is consistent with this planning principle. The overall density of development on the property is reduced by over 60%. The number of new hotel sites has been reduced from five to two. While the new visitor units will be concentrated within the central portion of the resort property, their height and massing will compliment the rural character of the property.~~

~~***Environmental Compatibility: Kuilima Resort is within a unique environment with several major constraints and guidelines for development, which have been factored into the siting for major facilities. New resort facilities should respect constraints of flooding, wetlands, sand dunes, wildlife, and archaeology.***~~

~~**Discussion:** The proposed expansion plan is consistent with this planning principle. The proposed development plan accommodates the environmental constraints associated with the property. Setbacks from the shoreline have been increased over what is allowable by ordinance, resulting in the allocation of approximately 42 acres of open space fronting the coastline. This increase will enhance the protection of ocean front development from storm waves and ensure the preservation of the existing dune system. Several mitigation measures to address the potential impacts of flooding are proposed, including the realignment of the two~~

~~existing drainage channels and the continued restoration of the Punahoʻolapa marsh. Activities associated with the latter will also increase the amount of habitat for water birds by expanding the acreage of open water in the marsh. The proposed development plan has been based upon an updated archaeological inventory survey that included extensive subsurface testing to ensure that new construction will avoid archaeological sites.~~

~~***Community Integration. The master plan includes dedicated public parks at Kawela Bay and Kahuku Point, as well as community access and parking for shoreline use at multiple locations within the resort.***~~

~~**Discussion:** The proposed expansion plan increases the number of public beach access at the resort from the 8 required by ordinance to 12 and expands the total acreage of parks from approximately 54 acres to over 73 acres. Together with the already planned coastal trail and pedestrian path along the entire shorefront of the resort, these improvements will greatly increase the public's access to the Turtle Bay shoreline.~~

~~The proposed expansion plan will continue to adhere to the design principals previously established for the resort and included in the KLSCP.~~

Following is a discussion of the Proposed Action's relationship to relevant land use policies and guidelines identified in the Koʻolau Loa SCP:

FUTURE LAND USE AND DEVELOPMENT PRINCIPLES

Section 1 of the Koʻolau Loa SCP establishes the following principles for future land use and development in the SCP Area:

- ***Recognize traditional* ahupuaʻa *divisions and distinctions and incorporate the ahupuaʻa concept as the primary basis for land use planning in Koʻolau Loa.***

Discussion: The Proposed Action is inspired by the *Tomorrow's Ahupuaʻa* philosophy described in the SEIS.

- ***Maintain and, where possible, expand critical open space areas and shoreline views between the existing pattern of community development so as to preserve a separation between the natural and built environment within each* ahupuaʻa.**

Discussion: Additional open space is provided at the resort pursuant to the Proposed Action through the increase of shoreline setbacks in development parcels. Shoreline views will be expanded as the result of this increase in setback areas. *Mauka-makai* view corridors are also incorporated into the Proposed Action as evidenced in Figure 3-15 in the SEIS.

- ***Preserve the existing strong relationship between the natural landscape of the mountains to the ocean, and the man-made landscape of agricultural fields and small rural communities.***

Discussion: The Proposed Action seeks to preserve the strong relationship between the natural landscape of the mountains to the ocean by maintaining and further enhancing golf courses, parks, marshlands, and other open space elements. In addition, although the *mauka* agricultural lands are not part of the Proposed Action, the preservation of these lands through the negotiation of a conservation easement will further help to accomplish this policy by establishing the agricultural lands as a transitory area between the resort and the mountains.

- ***Promote diversified agriculture and aquaculture on existing agricultural lands in accordance with the General Plan policy to support agricultural diversification in all rural areas on Oʻahu.***

Discussion: The Proposed Action does not propose any development on agricultural lands, and therefore this policy does not directly apply. Nonetheless, TBR is committed to the preservation of agriculture on the *mauka* agricultural lands by supporting the negotiation of a conservation easement as described in the SEIS.

- ***Preserve continuous coastal views and scenic views of ridges, valley slopes, and prominent land features.***

Discussion: The creation of expanded shoreline setbacks will preserve continuous views of the coastal area. Reduced building heights presented in the Proposed Action will help to preserve views of the ridgeline *mauka* of the agricultural lands.

- ***Provide for new employment-based development which will offer quality jobs and be compatible with the existing communities' rural fabric and the natural environment.***

Discussion: Implementation of the Proposed Action will result in an estimated 1,539 new on-site jobs, with an additional 5,482 indirect and induced jobs. The new jobs created as the result of the Proposed Action would likely be in a range of industries supporting the Turtle Bay Resort facilities and activities, and such jobs are compatible with the existing communities' rural fabric. Similar jobs at the Turtle Bay Resort have been described in interviews as the best available in the Koʻolau Loa area, since few employers offer salaries, benefits, and job security found at a unionized resort. As discussed in Chapters Two, Three and Five of this document, the Proposed Action is generally limited to development within previously approved areas. In so doing, it supports the preservation of natural resources including the existing wetlands and the coastal area. In fact, shoreline setbacks included in the Proposed Action exceed those that are required by law. The new jobs that are being created are, therefore, compatible with the preservation of natural resources and the environment.

- ***Limit future resort development to the existing zoned lands in secondary resort areas at Kahuku Point-Kawela Bay area and Lāʻie.***

Discussion: The Proposed Action is consistent with this policy.

- ***Support and encourage improvements at existing educational and recreational facilities.***

Discussion: New tax revenues resulting from implementation of the Proposed Action will improve the State's and City's ability to support improvements at existing educational and recreation facilities as needed.

- ***Preserve the "country" lifestyle as expressed by rural housing clusters or neighborhoods which are defined by open space and blend into the surrounding landscape with as little disruption as possible to the scenic quality of the area.***

Discussion: The Proposed Action includes resort-residential development with responsible densities for a designated resort area ranging from two to seven units per acre. This minimal density will ensure that the majority of the development site will be retained as open space, and that much of the surrounding landscape will be preserved. Further, the resort-residential structures will be built no higher than 50 feet, further preserving the open space and views. Residential development will be implemented in a manner that is consistent with the Unilateral Agreement presented as Appendix B in the SEIS.

- ***Establish rural residential development standards so that new infrastructure and site layout requirements will be in keeping with the desired rural character of the region.***

Discussion: The Proposed Action will be implemented in accordance with the Unilateral Agreement that supports a focus on rural character. To ensure perpetual enforcement of the Unilateral Agreement, and all applicable development standards, TBR anticipates implementing Covenants, Conditions and Restrictions (CC&Rs) on the SEIS Lands. Among other things, these CC&Rs will establish rural residential development standards so that new infrastructure and site layout requirements will be consistent with the desired rural character of the region.

- ***Establish country town design guidelines for commercial and other nonresidential use areas so that new development will be in keeping with the region's rural character.***

Discussion: The Proposed Action will be implemented in a manner that is consistent with urban design guidelines that have previously been adopted by the resort and approved by the City and County of Honolulu that are consistent with country town design guidelines. Further, the CC&Rs proposed by TBR will establish country town design guidelines for commercial and other nonresidential use areas so that new development will be in keeping with the region's rural character.

- ***Promote access to mountain and shoreline resources for recreational purposes and traditional hunting, fishing, gathering, religious, and cultural practices.***

Discussion: The Proposed Action includes a total of 12 shoreline access ways and a continuous pedestrian trail paralleling the shoreline to improve community access to the Turtle

Bay Resort coastline. Five new parks that will be open to the public are also included in the Proposed Action. Traditional hunting, fishing, gathering, religious and cultural practices will be preserved and protected in compliance with all State and County laws and rules. In addition to providing convenient access to these resources, TBR plans to initiate a Cultural and Natural Resources Management Plan (CNRMP) as well as multi-faceted Education Programs to further protect and enhance these practices and resources. The CNRMP is presented as Appendix L to the SEIS.

OPEN SPACE PRESERVATION GENERAL POLICIES

Section 3.1.1 of the Koʻolau Loa SCP establishes the following general policies related to open space.

- ***Maintain the region's rural character, protect scenic views and provide recreational resources.***
- ***Define clear boundaries and separations between existing communities.***

Discussion: The Proposed Action implements the Open Space policy and principles by reducing the unit density by approximately 60 percent of what is allowable under land use approvals previously granted, increasing shoreline setbacks from the required 100 feet to include an additional 50 feet along most of the resort's coastline and by an additional 200 feet at Kawela Bay, and by implementing the Unilateral Agreement enacted for the resort. As discussed in Chapter Five, the scenic views identified in the 1987 Coastal View Study will be not only protected and preserved, but enhanced by these increased shoreline setbacks and reduced height, as well as the provision of a new resort entrance at Kawela Bay which will provide coastal views from Kamehameha Highway. Inclusion of the five (5) new parks, golf courses, the Equestrian Center, and the shoreline coastal trail in the Proposed Action will ensure that recreational resources continue to be provided at the resort in the future. The eastern boundary of the resort will be clearly defined by Marconi Road. The resort's vegetative palette will define its western boundary. The distinctive landscaping of the resort residential properties at Kawela Bay will terminate at the setback boundaries along the residential beach cottages an adjacent to Park (P-1) surrounding the western half of Kawela Bay begin.

OPEN SPACE PRESERVATION PLANNING PRINCIPLES

Section 3.1.2 of the Koʻolau Loa SCP establishes the following planning principles related to open space.

- ***3.1.2 Enhance the Visual and Physical Definition of Rural Communities. Ko`olau Loa's rural residential communities are generally visually defined and separated physically due in large part to the topography of the region. These open space "gaps" as well as the large expanses of open space mauka of the Rural Community Boundary, need to be maintained so they will continue to provide the basic definition of the region's rural development pattern.***

Discussion: The Proposed Action includes large expanses of open space throughout the SEIS Lands. As shown in Figure ES-1, of the 852 acres that are included in the SEIS Lands, over 500 of those acres are preserved in open space uses. Further, the Proposed Action includes an expanded shoreline setback area that will increase open space along the coastline by approximately 18 acres. As expressed in section B.4.b of Chapter 5 of the SEIS, TBR has proposed extensive mitigation measures in efforts to preserve the rural character of the area, such as reducing density.

The SEIS Lands do not extend past the Rural Community Boundary. Nonetheless, TBR and its affiliates are working to preserve the large expanses of open space *mauka* of the Rural Community Boundary.

- ***3.1.2 Provide Passive and Active Open Spaces. The open space system consists of areas in both active and passive uses. Active areas include community-based and State parks, golf courses and agricultural fields. Passive areas include the State Conservation District, fallow land in the State Agricultural District, drainage and utility corridors, nature preserves, and other fallow lands left undeveloped due to physical or hazard constraints. Beach parks and shoreline areas may be either active or passive, depending on the extent to which the landscape has been modified by grading and construction of facilities and the intensity of public use.***

Discussion: The Proposed Action includes the provision of both passive and active open spaces. Proposed active areas include community-based and state parks, golf courses, and an equestr ian center. Passive areas include the Punahoʻlapa Marsh wetlands, as well as drainage and utility corridors. Further, the Proposed Action includes a new inland park, four oceanfront parks and 12 public shoreline access points. These beach parks and shoreline areas may be either active or passive.

- ***3.1.2 Promote Accessibility of Recreational Open Space. Public parks and most golf courses will be accessible for recreational use, but the open space system should also promote the accessibility of shoreline and mountain areas (as required by City Ordinance and State law). Access to mountain trails and shoreline areas should be readily available. Where required, this includes the provision of parking areas that are conducive to the environment.***

Discussion: As discussed in Chapter Five, Section B.6.m, in addition to a new inland park, the Proposed Action calls for establishment of oceanfront parks at Kawela Bay, Turtle Bay, Kuilima Bay, and Kahuku Point, with a total of 12 public shoreline access points and a public path along the shoreline . Between the five parks, a minimum of 106 public parking stalls will be provided.

- ***3.1.2 Dual Use of Roadway and Drainageway Corridors. Roadways should be attractively landscaped to serve as linear open space features and create an inviting environment for walking, jogging and biking. Where physical modification of natural drainageways is necessary to provide adequate flood protection, modifications should***

attempt to the extent possible to: maintain existing habitat capacity, maintain existing rural character and aesthetic quality, and avoid increase in rate and volume of freshwater run-off into near-shore waters.

Discussion: The Proposed Action is consistent with this policy. TBR plans to landscape all roadways in an attractive and inviting fashion. New parks and pathways, along with improved access to beach areas, will make walking, jogging and bicycling convenient and accessible for Resort residents, visitors, and community neighbors.

Generous shoreline setbacks incorporated into the expansion plan will help to protect the fragile shoreline and dune system. At the same time, the increased recreational usage of the beaches and access for safety patrols are planned to discourage any unregulated use of the beach by off-road vehicles for sport and in advertent pedestrian trampling of areas, activities that have damaged the native plants that make up the coastal strand. Selective thinning of invasive ironwood trees in the forest fronting the shoreline will help to reduce the canopy and promote understory growth of native plants, which will, in turn, help to promote the stabilization of the dune system.

SHORELINE AREA GUIDELINES

Section 3.1.3.2 of the Koʻolau Loa SCP establishes the following guidelines pertaining to shoreline areas.

- ***Maintain and, where possible, enhance the physical integrity and habitat value of shoreline areas.***
- ***Preserve rare coastal resources including coastal strand vegetation, sand dunes, and anchialine pools. Establish buffer zones around these resources where necessary.***
- ***Maintain existing*** **makai** ***view openings along the coastal highway. Avoid obstructions, such as walls and heavy landscaping which block views, except where necessary for safety reasons. Maintain public beach parks to avoid unnecessary landscape screening or the placement of park structures within the view corridor. Recommendations of the Coastal View Study (1987) should be incorporated.***
- ***To the extent possible, acquire shallow developed beach-front lots which would be impractical to redevelop given existing zoning standards or wave hazard considerations in order to improve public access and lateral shoreline views along Kamehameha Highway.***
- ***Require additional minimum setbacks for structures near the shoreline and implement other management strategies to protect unstable sandy beach areas that impact Kamehameha Highway along the Kaʻaʻawa, Punaluʻu and Hauʻula shorelines.***
- ***Maintain the untamed landscape quality of the Kahuku shoreline.***
- ***Protect nearshore coral reefs from damaging activities such as soil erosion, non-point source pollution, dredging, and alterations to near-shore water circulation.***

Discussion: The Proposed Action is consistent with and supportive of all applicable Shoreline Area guidelines. As described in Chapter Three, the Proposed Action includes setback areas along the shoreline in excess of what is required by the Unilateral Agreement; 300 feet at Kawela Bay and 150 feet along the new expansion areas of the resort coastline. The majority of the sand dunes existing along the shoreline will be contained within this setback area, and as a result, preserved. (It should be noted that some dune areas extend further inland and have been cultivated with turf as part of the Palmer Golf Course approvals when it was constructed in the late 1980s. No changes to these vegetated dunes are contemplated.)

As discussed in Appendix F and Chapter Five of the SEIS, the coastal strand has been identified as a specific vegetation type at the resort and will be preserved as part of the Proposed Action. Because much of the coastal strand will be situated within the expanded shoreline setback areas, the setback areas constitute the type of buffer contemplated in the guidelines.

The discussion of View Impacts in Chapter Five of the SEIS includes a review of the 1987 Coastal View Study and addresses how the Proposed Action complies with it.

The recommended acquisition of shallow beachfront lots is not relevant to the Proposed Action as none exist at the Turtle Bay Resort.

While the untamed character of the coastal strand will be maintained, it will also be improved through the selective thinning of invasive ironwood trees to allow native understory to reestablish.

WILDLIFE SANCTUARY GUIDELINES

Section 3.1.3.3 of the Koʻolau Loa SCP establishes the following guidelines relating to wildlife sanctuaries.

- ***Respect and establish an appropriate balance between natural habitats and human uses in the management of wildlife sanctuaries. Appropriate buffers between uses should be established wherever necessary. In general, there should be no reduction in preservation zoning in the vicinity of Kahuku's Punahoʻolapa Marsh, Punamano and Kiʻi Pond National Wildlife Refuges.***
- ***Encourage landowners to establish additional sanctuaries in other areas within the region that provide habitats for endangered wildlife, flora and fauna.***

Discussion: The Punahoʻolapa Marsh has been preserved at the resort and will continue to be maintained as a wildlife refuge in a manner consistent with the Unilateral Agreement. TBR and the U.S. Fish and Wildlife Services will coordinate the improvement of the Punahoʻolapa Marsh wetlands for the benefit of endangered water bird species.

NATURAL GULCHES, STREAMS, AND DRAINAGEWAY GUIDELINES

Section 3.1.3.4 of the Koʻolau Loa SCP establishes the following guidelines pertaining to natural gulches, streams and drainageways.

- ***Preserve the aesthetic and biological values of natural gulches, streams and drainageways as part of the open space system. Protect ecologically sensitive areas and ecosystems which should be maintained and enhanced as open space elements. Any activities in the vicinity of these areas need to ensure that the open space system will not be significantly impacted or that biological values will not be significantly degraded.***

Discussion: Due to the extensive development history of the property (ranching, sugar plantation, military), the natural drainage ways at the resort have been modified. As discussed in Chapters Two and Five, the resort owners support the restoration of Kawela Stream to its original alignment which corresponds to the alignment of the existing West Main Drain as a means of improving water quality at Kawela Bay. The existing drainage ways at the resort are maintained as open space.

- ***Minimize soil erosion, runoff of pesticides, fertilizers and other non-point source contaminants into streams, wetlands and marine habitats with strategies such as stream setbacks, erosion control devices, integrated pest management plans, and revegetation of disturbed areas. Incorporate erosion control measures and best management practices, as cited in Office of State Planning, Hawaiʻi Coastal Zone Management Program, Hawaiʻi's Coastal Non-point Pollution Control Program Management Plan, Volume I (June 1996), to prevent pollution of wetlands, streams, estuaries, and nearshore waters.***

Discussion: As disclosed in Chapter Two, Section E.3.d, a 1985 Drainage Plan for Kuilima Resort and an approved 2005 Drainage Master Plan for the Turtle Bay Resort constitute the basis for existing and proposed drainage patterns on the Resort property *makai* of Kamehameha Highway. Figures 2-21 through 2-25 provide detailed, colorful representations of the flood maps of the Turtle Bay Resort. The 2005 Drainage Master Plan was prepared to comply with City and County Standards. Their Standards have a water quality section that is in compliance with the existing NPDES Permit:

"In compliance with the provisions of the Clean Water Act, as amended, (33 U.S.C. §1251 et. seq.; the 'Act"); Hawaii Revised Statutes, Chapter 342D; and Hawaii Administrative Rules, Department of Health (DOH), State of Hawaii, Chapters 11-54 and 11-55;"

When TBR applies for Army Corps of Engineers 404 Permits for the wetland and outlet structures, they will have to be in compliance with the Department of Health's 401 Water Quality Certification and the State's Coastal Zone Management Program.

Presently, Hoʻolapa Stream flows under and over the highway into Turtle Bay and also could carry sediment from the *mauka* lands. There is a small ditch that leads to the marsh. Originally, the marsh was the sediment control. To change that situation, sediment would have to be removed as the runoff flows over the golf course fairway or into a golf course water hazard on its way to the marsh. The existing golf courses at the resort are operated in a manner that is consistent with this guideline. The BMPs and mitigation included in the Proposed Action are intended to *not* allow sediment loads from construction activities to reach the ocean. There will also be monitoring requirements associated with the construction activities that will document any impacts and provide information for corrective action.

- ***Where feasible, establish setbacks along rivers, streams, and shoreline areas to preserve these resources and protective buffer zones around biologically sensitive areas to minimize habitat disturbance. Where possible, provide access as part of the open space network.***

Discussion: The Proposed Action includes the provision of setback areas along the shoreline in excess of what is required by the Unilateral Agreement. The resort's East Main Drain and West Main Drain serve as the principal drainage features for the resort and are incorporated into the design of the golf courses. (As discussed in Chapter Two of the SEIS, the current alignment of Kawela Stream is the product of a stream diversion project implemented by the Oahu Sugar Company prior to the development of the property as a resort.) The resort owner supports the restoration of the stream to its original alignment, which corresponds to the present alignment of the West Main Drain, for the purpose of improving water quality in Kawela Bay. No further setbacks are needed. As discussed in Chapter Three, the majority of the resort property will be preserved in open space and public access will be provided along the entire length of the resort coastline.

- ***Uses in these areas should be limited to conservation uses, compatible recreational uses such as walking and bicycling, protection of traditional and customary Hawaiian rights, and controlled diversion for agricultural purposes. Avoid development in ecologically sensitive areas; if activities are allowed, minimize impacts and implement mitigative measures that will fully offset any loss of resources.***

Discussion: All areas where there exist natural gulches, streams, and drainageways will be preserved in conservation and/or compatible recreational uses such as walking and bicycling. TBR will avoid development in ecologically sensitive areas, and will implement mitigative measures to offset and minimize any adverse impacts or loss of resources.

TBR is committed to the protection of traditional and customary Hawaiian rights. Between 1977 and 2006, no less than 21 separate reports have been prepared documenting the archaeological resources at the Turtle Bay Resort (the Resort). Nearly 30 years of work has culminated in an approval by the State Historic Preservation Division of the Department of Land and Natural Resources of an Archaeological Mitigation Plan in 2007. TBR will continue to comply with all State and County laws and rules regarding the preservation of archaeological and historic sites,

and will employ BMPs to respect and protect traditional and customary Hawaiian rights, culture and values.

The Proposed Action includes the provision of setback areas along the shoreline in excess of what is required by the Unilateral Agreement. The resort's East Main Drain and West Main Drain serve as the principal drainage features for the resort and are incorporated into the design of the golf courses. No further setbacks are needed. As discussed in Chapter Three, the majority of the resort property will be preserved in open space and public access will be provided along the entire length of the resort coastline.

- ***Protect and maintain stream habitat values along the entire stream length, from the headwaters to the ocean, to avoid degradation or interruption of habitat for native organisms.***
- ***To the extent possible, limit any modifications to natural gulches and streams, except for measures which are necessary for flood protection. If modifications are needed, take all possible steps to preserve water quality and protect aesthetic and biological resources. These could include streamside vegetation and rip-rap boulder lining of stream banks; channelization should be a last resort and should be limited to v-shaped bottom channels to maintain a stream flow during low rainfall periods and/or other measures that maintain environmental habitat qualities and capabilities.***
- ***Enhance, restore and preserve streams while providing public access.***
- ***Develop an implementation schedule with input from community and public agencies to establish permanent instream flow standards. The setting of instream flow standards should weigh the benefits of instream and noninstream uses of water resources, including the economic impact of restrictions of such uses.***

Discussion: Kawela Stream and ʻŌʻio Stream stream flow in the SEIS Lands, particularly in those areas that constitute the lowest reach of the streams, generally occurs only during the wet season or after heavy rainfall events in the mountains. For this reason, the streams may serve as intermittent avenues of migration between the sea and upstream perennial reaches, but not as permanent habitat for native fishes, crustaceans, and mollusks. Because of their limited stream flow, it is not always possible to protect and maintain the stream habitat values along the entire stream length. Nonetheless, TBR intends to maintain, protect and enhance the streams on the SEIS Lands from their sources to the outflow.

COMMUNITY BASED PARK GUIDELINES

Section 3.1.3.5 of the Koʻolau Loa SCP establishes the following guidelines pertaining to community-based parks.

- ***Expand or provide new community-based parks in areas where there is a lack of sufficient facilities and where recreational needs of residents are not being adequately met.***

- ***Design and site structural improvements and landscaping in community based parks so as to create or add to the aesthetic value of these open space elements.***

Discussion: As discussed in Chapter Three, the Proposed Action includes the provision of five new parks that will be available for public use. Four of these parks (P-1, P-2, P-4 and P-5) are located along the shoreline and will contribute to the open space character of the resort's coastline.

GOLF COURSE GUIDELINES

Section 3.1.3.6 of the Koʻolau Loa SCP establishes the following guidelines pertaining to golf courses.

- ***Optimize and maintain the function of golf courses as passive drainageways to maximize their potential to serve as drainage retention areas, as well as wildlife habitats.***
- ***Maintain golf course designs to provide view amenities for adjacent urban areas, including public rights-of-way, parks and vista points.***
- ***Provide safe access through golf courses, as necessary, for regional continuity of shoreline access.***
- ***When necessary for safety reasons, use screening, landscape treatment, setbacks and modifications to the course layout rather than fencing or solid barriers.***
- ***Golf courses must be designed to minimize environmental impacts such as siltation, pesticide and fertilizer runoff, and destruction of coastal, riparian and wetland habitat. New golf courses should conform to Office of State Planning, Golf Course Development in Hawaii – Impacts and Policy Recommendations (1992).***

Discussion: The resort's golf courses are presently designed and operated in a manner that is consistent with these guidelines. The Proposed Action will also comply with these guidelines. As discussed in Chapters Two and Five, the golf courses will continue to function as the resort's regional drainage control system. The golf course ponds function as retention basins. As the Palmer Course abuts the Punahoʻolapa Marsh, it was designed and constructed to preserve the integrity of the marsh.

AGRICULTURAL AREA POLICIES

Section 3.2.1 of the Koʻolau Loa SCP establishes the following general policies relating to agricultural areas.

- ***Preserve the availability and crop production potential of lands designated as Agriculture in the Koʻolau Loa Sustainable Communities Plan.***

- ***Protect agricultural lands from conversion to uses that are primarily residential, industrial, or commercial in purpose.***
- ***Encourage diversification of agriculture-related enterprises for the continued production of truck-crops, vegetables, flowers and landscaping plants, aquaculture and ranching activities.***
- ***Allow residential use in agricultural areas only as secondary to agricultural activity. In all such cases, the site's primary use should be agricultural and either the owner/occupant or lessee(s) should be actively engaged in crop or livestock production for the duration of their tenure. Allow facilities necessary to support intensive cultivation of arable agricultural lands to be located in agricultural areas.***
- ***Allow for appropriate non-agricultural uses that are compatible with open space and resource character, such as recreational or educational programs, or other uses consistent with the character of a rural agricultural area which provide supplemental income necessary to sustain the primary agricultural activity. There should be a direct connection between those activities and the maintenance of agricultural uses on the same or nearby properties.***
- ***Recognize the function of agricultural areas as an important part of the region's natural drainage system. Cultivation activities or physical improvements in agricultural areas should not adversely modify critical natural drainageways.***
- ***Agricultural uses should be designed to minimize environmental impacts such as soil erosion, siltation, pesticide and fertilizer runoff and avoid destruction to coastal, riparian and wetland habitat.***

Discussion: As discussed in the SEIS, a conservation easement covering the agricultural lands *mauka* of Turtle Bay Resort that are owned by TBML, a separate but related entity to TBR, is presently being negotiated. It is the intention of TBML that the easement preserves those lands for agricultural farming and recreational uses in perpetuity. At the same time, the Farmers Market included in the Proposed Action will strengthen the relationship between the resort and its *mauka* agricultural lands by providing an immediate and organized outlet for the sale of crops and agricultural products produced on the *mauka* lands, and by promoting farm-to-table programs for a majority of the resorts food outlets. TBR and TBML support the use of the *mauka* agricultural lands for residential use as a secondary use to agricultural activity, to the extent permitted by law. As discussed in Chapter Five, the development of flood retention basins in the *mauka* area is presently being considered as a means to further improve near shore water quality.

AGRICULTURAL AREA PLANNING PRINCIPLES

Section 3.2.2 of the Koʻolau Loa SCP establishes the following planning principles relating to agricultural areas.

- ***Maintain the Long-Term Economic Viability of Agricultural Lands. To preserve active agricultural uses and provide employment opportunities for Koʻolau Loa's residents, reserve lands currently designated as Agriculture on the Koʻolau Loa Sustainable Communities Plan principally for such uses. No actions or uses that would undermine or irreversibly compromise their longterm availability or agricultural production capabilities should be permitted.***
- ***Recognize the Contribution of Agricultural Lands to Koʻolau Loa's Rural Character. Koʻolau Loa's rural character is in large part defined by the region's agricultural areas. Allowable uses should be appropriate to onsite or adjacent resources and open space settings. Any onsite development must be low-key, low-impact and predominately open space in character.***

Discussion: There are no areas zoned for agricultural use in the SEIS Lands. Nonetheless, as discussed in the SEIS, a conservation easement covering the *mauka* agricultural lands owned by TBML, a separate but related entity to TBR, is presently being negotiated. It is the intention of TBML that the easement maintains the long-term economic viability of agricultural lands, and recognizes the contribution of agricultural lands to the region's rural character.

AGRICULTURAL AREA GUIDELINES

Section 3.2.3 of the Koʻolau Loa SCP establishes the following guidelines relating to agricultural areas.

- ***Discourage subdivision of Agricultural designated and zoned lands for residential uses, except for farm dwellings that have bona fide agricultural activities on site.***
- ***Cluster agricultural subdivisions that include farm dwellings to avoid the inefficient use of more productive agricultural lands and to reduce infrastructure costs. Locate agricultural subdivisions near similar subdivisions or rural communities.***
- ***Maintain adequate buffers between agricultural lands and new residential development, with consideration given to prevailing winds and the noise or air-borne emissions associated with the type of agricultural operation.***
- ***Design and locate buildings and other facilities that are accessory to an agricultural operation in a way that minimizes the impact on nearby community and residential areas, and the road system.***

Discussion: TBML is presently negotiating a conservation easement to preserve the 470 acres of agricultural lands *mauka* of Kamehameha Highway. These existing lands constitute a significant cluster of concentrated agricultural activity in the area, and the Proposed Action will not change the character of this use. The Turtle Bay Resort golf courses establish a natural open space buffer between the agricultural lands on the *mauka* side of Kamehameha Highway and the hotel and residential uses in the interior of the resort property. The agricultural area has been in continuous and active use, agricultural operations are well established. Future enhancements

contemplated by TBML include supporting the design and location of any new accessory agricultural and agri-tourism support buildings or operational facilities in ways that minimize the impact on nearby community and residential areas, and the road system. The Proposed Action includes the provision of a Farmers Market on the *makai* side of Kamehameha Highway as a means of concentrating activity in one area, as opposed to it being dispersed through a number of individual produce stands strung along the highway.

ISLAND-BASED PARKS AND OTHER RECREATION AREAS

Section 3.3.2.1 of the Koʻolau Loa SCP establishes the following general policies relating to island -based parks, community-based parks and other recreational resources.

- ***Maintain and enhance, to the extent possible, existing island-based parks by utilizing land area that has not been fully developed for recreational use and improving the condition of existing facilities. These island-based parks are a critical component of the region's abundance of natural and scenic resources and contribute to the attractiveness and accessibility of Koʻolau Loa's coastline and* mauka *areas for both residents and visitors.***

Discussion: As discussed in Chapter Five, Section B.6.m of the SEIS, in addition to a new inland park, the Proposed Action calls for establishment of oceanfront parks at Kawela Bay, Turtle Bay, Kuilima Bay, and Kahuku Point, with a total of 12 public shoreline access points. These five parks and the shoreline access points will contribute to the attractiveness and accessibility of the coastline and *mauka* areas for both residents and visitors.

- ***Establish a wilderness coastline park/reserve from Kuilima Resort to Kahuku Town. Wetland preserve areas should be integrated with the park resources. Any activities or uses proposed for these areas should be carefully reviewed as to their potential impacts on the integrity and viability of this wetland complex.***

Discussion: In addition to the establishment of four oceanfront parks, TBR will provide enhanced access to the shoreline for visitors, residents, and guests alike through the provision of the Shoreline Trail that will meander along the oceanfront in a 100-foot shoreline access easement. Setbacks from the shoreline have been increased, resulting in the allocation of approximately 42 acres of open space fronting the coastline. This increase will enhance the protection of ocean front development from storm waves and ensure the preservation of the existing dune system. Several mitigation measures to address the potential impacts of flooding are proposed, including the realignment of the two existing drainage channels and the continued restoration of the Punahoʻolapa marsh. Activities associated with the latter will also increase the amount of habitat for water birds by expanding the acreage of open water in the marsh.

- ***3.3.2.1 Develop an integrated system of bikeways to link parks and recreation areas. Consider use of the O R & L tracks where feasible.***

Discussion: The proposed shoreline park areas shall be linked, with the exception of the shoreline along the existing Turtle Bay Hotel, by a continuous shoreline easement (to be publicly-owned, privately maintained, and open to the general public), which will be further augmented by pedestrian easements and the easement to Kalokoiki beach (Kuilima Cove). Use of the O R & L tracks is not feasible under the Proposed Action.

COMMUNITY-BASED PARKS

Section 3.3.2.2 of the Koʻolau Loa SCP establishes the following general policies relating to community-based parks.

- ***Support the development of a community park with a community center facility in Lāʻie.***
- ***Expand the Hauʻula Community Park by acquiring adjacent parcels, when feasible, to include a multi-purpose recreation facility.***
- ***Provide neighborhood parks in Kaʻaʻawa, Punaluʻu, and Kahuku (Adams Field) to serve the residential population of these small communities.***
- ***Support the development of a gymnasium and pool complex at Kahuku District Park to service the Koʻolau Loa communities.***
- ***Larger new residential developments will generate larger community-based "neighborhood" recreational needs and may, because of their size, also have the capability of supplying neighborhood park space to satisfy these needs within the development, where it would be most rational, safe, and needed.***

Discussion: The Proposed Action will result in construction related revenues to the State of Hawaiʻi of nearly $10 million by 2020, and visitor related revenues to the State of Hawaiʻi of over $190 million through buildout, as discussed in Chapter 5 Sections B.6.e.1 and B.6.e.2, respectively. These additional tax revenues will hopefully contribute to an improvement in the State's and the City's ability to fund public facilities and services, including the creation of community-based parks in Lāʻie, Hauula, Kaʼaʼawa, and Kahuku.

The Proposed Action includes over 73 acres of dedicated public parks at Kawela Bay and Kahuku Point, as well as community access and parking for shoreline use at multiple locations within the Resort. In addition, the Proposed Action includes a generous coastal setback of at least 150 feet from the shoreline, which will increase open space along the coastline by approximately 18 acres. The proposed recreational amenities that will be available to the community satisfy the above policies, though they are not located in the suggested areas.

PARK AND RECREATION AREA PLANNING PRINCIPLES

Section 3.3.3 of the Koʻolau Loa SCP establishes the following planning principles for parks and recreation resources.

- ***Appropriate Siting and Screening. Carefully site active playfields and supporting facilities for intensive use, and use generous landscaping and screening to reduce the potential impacts on surrounding areas.***
- ***Environmental Compatibility. Construct park facilities in a manner that avoids adverse impacts on natural resources or processes in the coastal zone or any other environmentally sensitive area. In the design of recreation areas, incorporate natural features of the site and use landscape materials that are indigenous to the area where feasible to retain a sense of place.***

Discussion: Future developments on the SEIS lands, including new park and recreation areas, will continue utilizing appropriate native species in landscaping to retain a sense of place. The construction of these park and recreation areas along the coastline ensure that there will be no adverse impacts on the coastline, as it will be preserved in open space.

- ***Community Integration. Link recreational attractions in these parks with the surrounding area through the use of connecting roadways, bikeways, walkways, and landscape features or architectural design. Support establishment of community gardens in unused park areas to expand gardening opportunities for area residents.***

Discussion: The proposed shoreline park areas shall be linked, with the exception of the shoreline along the existing Turtle Bay Hotel, by a continuous shoreline easement (to be publicly-owned, privately maintained, and open to the general public), which will be further augmented by pedestrian easements and the easement to Kalokoiki beach (Kuilima Cove).

BEACH OR PASSIVE PARK GUIDELINES

Section 3.3.4.1 of the Koʻolau Loa SCP establishes the following guideline relating to beach or passive parks.

- ***Preserve and enhance coastal-oriented beach and passive park resources by maintaining existing facilities and making site improvements as required.***

Discussion: The Proposed Action will implement the four new parks required by the Unilateral Agreement. However, it adds a fifth park, as well as an increased number of public shoreline access ways and expanded shoreline setback zones for public use.

COMMUNITY BASED PARK GUIDELINES

Section 3.3.4.2 of the Koʻolau Loa SCP establishes the following guidelines relating to community-based parks.

- ***Continue coordination efforts between the City Department of Parks and Recreation and the State Department of Education to co-locate neighborhood or community parks with elementary or intermediate schools. Facilities should be designed and operated***

to achieve efficiencies and reduce duplication in the development and use of athletic, recreation, meeting and parking facilities, wherever possible, either by dedication, or upon agreements between the developer, DOE, and DPR. Co-located parks should be ready for public use upon opening.

- ***Where feasible, site community and neighborhood parks at the center of neighborhoods to maximize accessibility.***
- ***Provide for accessible pathways from surrounding streets to facilitate pedestrian and bicycle access to parks in master plans for development of new parks or redevelopment of existing parks.***

Discussion: While the first guideline is not relevant to the Proposed Action because it is beyond its scope, the Proposed Action is consistent with the second and third guidelines. The proposed resort expansion constitutes its own "community", and the provision of five new parks within the 852-acre area will ensure that each new residential area will be developed in relative close proximity to a park. The Proposed Action includes the development of a continuous pathways and trail systems to facilitate pedestrian and bicycle access to the entire resort coastline. This pathway will link the four shoreline parks together.

ACTIVE RECREATION AREAS

Section 3.3.4.3 of the Koʻolau Loa SCP establishes the following guidelines relating to active recreation areas.

- ***Locate bus stops or loading areas at principal entries and adjacent to convenient pedestrian access to main activity areas within the park.***

Discussion: As a part of the Proposed Action, TBR continues to work closely with City and State Agencies on the continued cooperation and coordination of optimum bus stops on site and by future intersections along Kamehameha Highway to facilitate more convenient public transportation.

- ***Minimize the visibility of perimeter fencing and maintenance facilities through landscape plantings or other appropriate visual screens adjacent to residential areas and major roadways.***

Discussion: The Proposed Action is consistent with this policy. Future developments on the SEIS lands, including new park and recreation areas, will continue utilizing appropriate native species in landscaping to retain a sense of place. These landscape plantings will also operate as a visual screen to minimize the visibility of perimeter fencing and maintenance facilities from residential and roadway areas.

HISTORIC AND CULTURAL RESOURCE POLICIES

Section 3.4.2 of the Koʻolau Loa SCP establishes the following general policies relating to historic and cultural resources.

- ***Emphasize physical references to Koʻolau Loa's history and cultural roots.***
- ***Protect existing visual landmarks and support the creation of new, culturally appropriate landmarks at ahupuaʻa boundaries.***
- ***Preserve and restore historic and cultural resources associated with native Hawaiian and pre-contact periods.***
- ***Preserve significant historic features from earlier periods such as the plantation era.***
- ***Retain, wherever possible, significant vistas associated with archaeological features.***
- ***Revitalize Hukilau Beach.***

Discussion: As described in Appendix A, TBR is committed to the development and operation of the resort in a culturally sustainable manner. This includes ensuring that resort's employees are well versed in the resort's history and cultural roots. Educational materials, programs, exhibits and signage will also contribute to this effort. The philosophy of *Tomorrow's Ahupuaʻa*, upon which the Proposed Action is inspired, is specifically intended to celebrate the *ahupuaʻa* and their respective delineations. As discussed in Chapter Five, a Supplemental Archaeological Inventory Survey has been conducted on the property, and once approved by the State, will provide the basis for implementing archaeological mitigations including data recovery and site preservation as determined by the regulating authority. Although the property has undergone several phases of occupation (pre-contact, post-contact ranching, plantation, and military occupation) and, as a result, cultural resources from the earliest periods have been mostly lost, the educational programs associated with *Tomorrow's Ahupuaʻa* will offer visitors, guests, and residents opportunities to learn about the resort property's rich history.

HISTORIC AND CULTURAL RESOURCE PLANNING POLICIES

Section 3.4.3 of the Koʻolau Loa SCP establishes the following planning principles relating to historic and cultural sites.

- ***Preservation and Protection. Implement in situ preservation and appropriate protection measures for sites that have high preservation value because of their good condition or unique features.***
- ***Compatible Setting. Determine the appropriate treatment for an historic site by the particular qualities of the site and its relationship to its physical surroundings. The context of an historic site is usually a significant part of its value. Care should be taken in the planning and design of adjacent uses to avoid conflicts or abrupt contrasts that detract from or destroy the physical integrity, historic or cultural value of the site.***

- ***Accessibility and Interpretation. Establish the degree of public access and interpretation that would best promote the preservation of the historic, cultural and educational value of a site. Public access to and interpretation of an historic site may take many forms. In some cases, it may be highly advisable to restrict access to protect the physical integrity or sacred value of the site, while in other cases it may be necessary to recognize that some form of low-impact economic use is an appropriate and feasible way to preserve it.***

Discussion: TBR will continue to comply with all State and County laws and rules regarding the preservation of archaeological and historic sites. Should historic remains, such as artifacts or *iwi kūpuna* be encountered during construction activities, work will cease in the immediate vicinity of the find and the State Historic Preservation Division will be contacted for appropriate mitigation, if necessary. As discussed in Chapter Five, Section B.4.b of the Draft SEIS, TBR will employ best practices to respect the *iwi kūpuna*, and other aspects of traditional Hawaiian culture and values.

The approach developed by the project team to inform the planning and development of the Proposed Action is called *Tomorrow's Ahupuaʻa*, which is detailed in "A Cultural Approach to Sustainability," which is presented as Appendix A of this SEIS. The concept of *Tomorrow's Ahupuaʻa* honors the important aspects of the traditional *ahupuaʻa*; understanding and maintaining lands from *mauka* to *makai*; recognizing and stewarding the unique elements and resources of each *ahupuaʻa* in order to strive for a path towards higher sustainability; and creating a management framework inspired by the traditional *ahupuaʻa* to care for the natural and cultural resources.

HISTORICAL AND CULTURAL RESOURCE GUIDELINES

Section 3.4.4 of the Koʻolau Loa SCP establishes the following guidelines relating to cultural, historical and archaeological sites.

- ***Require preservation in situ only for those features that the State Historic Preservation Officer has recommended such treatment in conjunction with the community.***
- ***Determine the following on a site-by-site basis in consultation with the State Historic Preservation Officer, Oʻahu Burial Council, local Hawaiian cultural organizations, and the owner of the land on which the site is located, and the community:***

  - appropriate preservation methods;

  - appropriate delineation of site boundaries and setbacks;

  - appropriate restrictions on uses and development of adjacent lands; and

  - the appropriateness of public access and interpretation.
- ***Include sight lines and view planes that are significant to the original purpose and value of the site in any restrictions placed on adjacent uses and development.***

Discussion: As discussed in the SEIS in Appendix C and G, a new Supplemental Archaeological Inventory Survey has been completed for the Proposed Action and has been submitted to the State Historic Preservation Division of the Department of Land and Natural Resources for approval. It includes recommendations for the preservation of archaeological sites identified as significant. The submittal of the SAIS constitutes the continuation of a formal process to ensure that historical and cultural features are preserved and protected in a manner consistent with all legal requirements and protocols. As part of this process, representatives of the resort owners have consulted and will continue to consult with local cultural organizations and community organizations. The *Tomorrow's Ahupuaʻa* philosophy that inspires the Proposed Action represents an initiative taken by the resort to ensure that proposed expansion is conducted in a culturally sustainable manner, as expressed in Appendix B of the SEIS.

RESIDENTIAL USES POLICIES

Section 3.5.2 of the Koʻolau Loa SCP establishes the following general policies applicable to existing and new residential communities.

- ***Respect and help to preserve the natural setting of the Koʻolau Loa region by requiring development in residential areas to be sensitive to physical constraints and have minimal impact on the area's rural character.***
- ***Provide a sufficient capacity within the Rural Community Boundary to accommodate existing and future housing needs. Allow for limited expansion of residential areas in Kahuku and Lāʻie to meet existing pent-up demand, and anticipated future housing needs related to long-term planned job growth at Kuilima Resort and new diversified employment opportunities in Lāʻie.***
- ***Maintain the existing residential capacities for the communities of Kaʻaʻawa, Hauʻula and Punaluʻu. Future residential needs in these communities will be met through infill residential development on appropriately zoned vacant lots within existing neighborhoods. No new housing areas are designated in these areas.***
- ***Adopt zoning, subdivision and related project design regulations which foster a rural character in new residential developments and improvements to existing residential areas.***
- ***Encourage and support the development of affordable housing in the region in order to meet the needs of a variety of market sectors, existing pent-up demand for housing, and overcrowded housing conditions.***

Discussion: As there is no existing residential development within the resort-owned property, the preservation of residential areas is not applicable to the Proposed Action. However, as discussed in Chapter Three, the Proposed Action includes the provision of new affordable housing opportunities in excess of what has been required under previously granted land use approvals. The discussion in the SEIS's socio-economic impact analysis demonstrates that the

Community Housing program generally meets the demand that is anticipated to be result from implementation of the Proposed Action. Design Guidelines already established for the resort will ensure that the future expansion plans will be implemented in a manner that is consistent with the existing Unilateral Agreement that calls for the preservation of the area's rural character.

RESIDENTIAL USES PLANNING PRINCIPLES

Section 3.5.3 of the Koʻolau Loa SCP establishes the following planning principles relating to residential communities.

- ***Rural Character of Neighborhoods. Enhance the design character of existing housing areas and of infill and new residential development through the application of rural development standards which will help to maintain the relatively rural quality of Koʻolau Loa's neighborhoods and residential areas.***
- ***Variety of Housing Types. Provide a variety of housing types in order to meet the appropriate housing needs unique to each community and the physical characteristics of potential building sites. Table 3-7 presents density and height guidelines for existing and planned residential developments.***

Discussion: The Resort Residential Units and the Community Housing Units of the Proposed Action will likely consist of some combination of structures with single family, duplex, or low-density multi-family units. The Proposed Action includes a variety of housing types, including luxury, townhome, mid-luxury, mid-, condominium and early single family types. The Proposed Action represents an over 60% decrease in density from what is allowed under current land use entitlements, and the reduced density will help to preserve the relatively rural quality of the region's neighborhoods and residential areas.

Pursuant to the UA, the general architectural character of the Proposed Action will be similar to that of a "*kamaʻaina* estate" – displaying hospitality and elegance, overlaid with fundamental simplicity and timelessness.

RURAL RESIDENTIAL GUIDELINES

Section 3.5.4.2 establishes the following guidelines for rural residential developments.

- ***Establish rural development standards that foster a rural character by limiting building height and lot coverage; reducing current requirements for the paving width of residential streets; eliminating or modifying the requirement for curbs, sidewalks and gutters; and encouraging ample landscaping (Figure 3-2, Rural Residential Development Standards).***

Discussion: The Proposed Action complies with this policy. All buildings proposed will have limited building heights, and the maximum building height will be 90-feet in the hotel-zoned areas, and 50-feet to 60-feet in the residential-zoned areas.

All roadways will be constructed to City and County of Honolulu standards and will include pavement, curbs, gutters, and sidewalks as required by law. Areas not impacted by new building footprints, roadways, sidewalks or parking areas, and those areas surrounding new development, will be landscaped to minimize soil erosion. Future developments on the SEIS lands will continue utilizing appropriate native species in landscaping. The Proposed Action will strive to implement extensive, lush landscaping to enhance the estate-like quality of the low density buildings, and to provide a sense of visual continuity throughout the resort.

- ***Housing development generally should not be sited on areas where the slope exceeds 20 percent. Where this does occur, housing should be developed to avoid adverse visual impacts, potential slope stability problems and increased runoff. Soils engineering and view studies may be necessary to determine the appropriate density and site design for such locations.***

Discussion: There are no slopes in excess of 20 percent on the SEIS Lands.

- ***Building scale, roof form, and the quality of materials for infill and new development, as well as future modifications to existing homes, should be generally compatible with the predominant form of existing homes on adjacent properties and with the neighborhood as a whole. Building heights generally should not exceed two stories, but may vary according to required flood elevation, protection of natural features, slope, and roof form. Modification of zoning standards for residential development, such as provisions for building scale or spacing, roadway widths, or sidewalks, and/or changes in existing zoning district categories, may be necessary to promote rural character.***

Discussion: Existing urban design guidelines will dictate the scale, roof form, and quality of material for new development within the SEIS Lands. Building heights will accommodate the minimum height requirements related to prevailing flood zones. New construction will implement the requirements for rural character and compatibility provided in the Unilateral Agreement.

- ***Sites on level terrain with fewer development constraints may have overall site densities approaching the higher end of the range for Rural Residential use. To achieve higher density while providing an attractive living environment, optional design or rural development standards for clusters and planned unit developments should be promoted in lieu of conventional subdivision provisions.***

Discussion: The Proposed Action will be implemented in a manner that is consistent with design guidelines that were previously adopted by the resort and approved by the City and County of Honolulu. Further, TBR intends to implement CC&Rs against the SEIS Lands so that new development will be in keeping with the region's rural character.

LOW DENSITY APARTMENT GUIDELINES

Section 3.5.4.3 of the Koʻolau Loa SCP establishes the following guidelines relating to low density apartment developments.

- ***Limit building heights to three stories or 40 feet, including roof form, with heights above 40 feet allowed only when necessary due to the required flood elevation, steep slope of the site, or the desire to protect important natural features. Gabled or similar roof forms should be used to reflect a primarily rural residential design character.***

Discussion: The UA terms and conditions of which run with the Turtle Bay Resort property, provides maximum height limits that exceed those provided by this policy. Pursuant to the UA, the general architectural character of the Proposed Action will be similar to that of a "*kamaʻaina* estate" – displaying hospitality and elegance, overlaid with fundamental simplicity and timelessness.

- ***Employ design techniques such as building form and orientation, location of entries and landscape screening, etc., to maintain the existing residential scale and provide greater privacy and individual identity for housing units.***

Discussion: All residential development will be tastefully oriented to maximize the privacy of each unit. Further, in accordance with Condition 9(b) of the UA, the Proposed Action will implement extensive, lush landscaping which will further screen the units.

SPECIAL NEEDS HOUSING

Section 3.5.4.4 of the Koʻolau Loa SCP establishes the following guidelines relating to special needs housing.

- ***In general, apply Low Density Apartment building height and density guidelines to Special Needs Housing sites, as described in Section 3.5.4.3.***

Discussion: The UA terms and conditions of which run with the Turtle Bay Resort property, provides maximum height limits that exceed those provided by this policy. Pursuant to the UA, the general architectural character of the Proposed Action will be similar to that of a "*kamaʻaina* estate" – displaying hospitality and elegance, overlaid with fundamental simplicity and timelessness. The Community Housing Units offered as part of the Proposed Action will exceed the requirement imposed by the UA, yet combined with the planned Resort Residential Units, the Proposed Action in total is sixty-five percent less dense than what is allowed under current entitlements.

- ***Special Needs Housing, as an exception to standard density situations, may have densities up to 30 units per acre if they consist primarily of smaller dwelling units with***

residential scale and character. Special Needs Housing may have congregate living facilities, and are for elderly and/or disabled residents who, for the most part, do not rely on or require personal automobiles for travel.

Discussion: The Proposed Action complies with this policy. The Community Housing Units are planned to be built at either 12.4 or 8.8 units per acre, and will be built in low to medium-density multi-family units.

- ***Whenever possible, locate special needs housing close to public transit, community services and commercial centers.***

Discussion: The Community Housing Units are planned to be constructed on the eastern end of the SEIS Lands, and will be surrounded by the Punahoʻolapa Marsh and the existing Palmer golf course. Both sites planned for Community Housing Units abut Marconi Road, which will be improved to function as an access road for land uses along the eastern parts of the SEIS Lands. As a part of the Proposed Action, TBR is working on the continued cooperation and support of bus stops on site and by future intersections along Kamehameha Highway to facilitate more convenient public transportation.

- ***Allow heights above 40 feet, subject to community and agency review, only when necessary due to the required flood elevation, steep slope of the site, or the desire to protect important natural features. Gabled or similar roof forms should be used to reflect a primarily rural residential design character.***

Discussion: The Proposed Action includes up to a maximum of 160 affordable Community Housing Units on Development Sites RES-1 and RES-2. The maximum height will be three floors/50 feet on Site RES-1 and two floors/40 feet on Site RES-2.

Pursuant to the UA, the general architectural character of the Proposed Action will be similar to that of a "*kamaʻaina* estate" – displaying hospitality and elegance, overlaid with fundamental simplicity and timelessness.

- ***Ensure compatibility of building scale, roof form, and materials with adjacent residential uses.***

Discussion: The Proposed Action will comply with this policy. Pursuant to Condition 9A of the UA, the general architectural character of the resort will be similar to that of a "*kamaʻaina* estate" – displaying hospitality and elegance, overlaid with fundamental simplicity and timelessness.

COMMERCIAL AREAS POLICIES

Section E.3.6 of the Koʻolau Loa SCP establishes the following general policies for commercial areas.

- ***Support the maintenance, redevelopment, or expansion of various types of commercial establishments in the region in keeping with their type and purpose, and appropriateness to the character and needs of the communities they serve.***
- ***Maintain and enhance the rural character of the recognized commercial areas including: Kahuku Country Town, Lāʻie Rural Regional Commercial Center, Hauʻula Rural Community Commercial Center, and various country store sites within the region.***

Discussion: Although these policies are beyond the direct control of the resort, the resort owners are supportive of their intent, because they will benefit the resort's residential and visitor population. The Proposed Action includes limited commercial development (the Gathering Place and the Farmers Market) described in Chapter Three. In both instances, the scale and design of the proposed commercial development will be consistent with the rural character envisioned for the resort.

PLANNING PRINCIPLES AND GUIDELINES FOR ALL COMMERCIAL AREAS

Section 3.6.3 of the Koʻolau Loa SCP establishes the following planning principles and guidelines for all commercial areas.

- ***Architectural Style***
  - ***Utilize building forms and details which reflect the region's rural character and incorporate the style and any desirable distinctive features of buildings in the community in which they are located.***
  - ***Encourage the use of false fronts, sloped roofs, and breaks in the roof line to reduce the apparent scale of large roof plates in commercial buildings with multiple storefronts.***
  - ***Avoid blank façades on portions of buildings visible from a street by using texture, articulation, color, windows, or other openings to create visual interest.***
  - ***Reflect a more residential scale and character in the portions of commercial buildings that are adjacent to or readily visible from residential areas, or screen them from view with landscaping.***
- ***Building Scale and Massing***
  - ***Limit commercial buildings to a maximum 40 feet in height, including roof form. In general, buildings should maintain a low-rise, rural scale.***
  - ***Avoid the use of large, continuous buildings in new commercial developments. Commercial buildings adjacent to residential areas should be designed to recognize the balance between commercial needs and residential concerns. In general, the physical composition of height, size, and massing of commercial buildings in these locations should be compatible with adjacent residential development.***

- ***Site Design and Access***
  - ***Provide for the general visibility from Kamehameha Highway of buildings within commercial centers, and employ adequate and appropriately designed signage at entries.***
  - ***Provide access to parking and loading areas primarily from Kamehameha Highway for the shopping areas in Kahuku and Lāʻie, and exclusively for the Rural Community Commercial Center (Hauʻula) and country store establishments that front the highway.***
  - ***Employ site design practices and provide facilities which promote pedestrian, bicycle and public transit access.***
  - ***Improve bus stops in front of commercial centers, including pull-out bus stop lanes and shelters for waiting passengers.***
  - ***Provide racks for bicycle parking at all commercial centers and locate them where they are secure and visible from entry points or other heavy circulation areas.***

- ***Visual Screening, Lighting and Signage***
  - ***Plant a landscape screen consisting of trees and hedges along streets fronting parking lots.***
  - ***Provide shade trees throughout parking lots.***
  - ***Visually screen service areas from public and residential areas.***
  - ***Require indirect illumination for signage visible from residential areas.***

Discussion: The Proposed action complies with all of these policies. The built component of the Proposed Action's commercial area, called the Gathering Place, will include less than 40,000 square feet of conditioned space, primarily in single story buildings. The outdoor space in the Gathering Place will include raised lanai and porches linking the clustered arrangements of buildings. This community core will feature a small collection of simple and authentic structures drawing inspiration from the *kamaʻaina* architectural heritage of the islands.

The Gathering Place will be accessible from Kamehameha Highway by way of Kuilima Drive, which already exists. There will be ample parking to service the commercial center of the Proposed Action, and TBR will employ site design practices and promote facilities which promote pedestrian, bicycle and public transit access, such as the provision of an extensive pedestrian path system throughout the SEIS Lands.

As is the case with all new developments on the SEIS Lands, TBR will employ lush landscaping with native plants, when possible.

VISITOR FACILITIES POLICIES

Section 3.8.1.1 of the Koʻolau Loa SCP establishes the following general policy relating to Kuilima Resort.

- ***Plans to establish a major resort destination at Kuilima should be maintained. It will provide a major source of jobs for Koʻolau Loa and North Shore residents, significantly improve shoreline access and use opportunities for residents, and include other amenities that can be enjoyed by residents and visitors alike.***

Discussion: The Proposed Action fulfills this policy as described throughout the SEIS. Strengthening the relationship between the resort and the surrounding communities is paramount to the intention of the *Tomorrow's Ahupuaʻa* philosophy described in Appendix A and embodied in the Proposed Action described in Chapter Three.

As disclosed in Chapter Five, Section B.6.c, the Proposed Action will bring both construction jobs and continuing operations jobs, and will significantly increase payrolls in the Koʻolau Loa region. The number of new continuing operations positions at the Turtle Bay Resort will climb to about 753, an increase of 72 percent over current conditions. It is anticipated that the Proposed Project will create a $31 million dollar increase in wages in the Koʻolau Loa region.

At no capital cost to the City and County of Honolulu or to the public, the Proposed Action includes over 73 acres of dedicated public parks at Kawela Bay and Kahuku Point, as well as community access and parking for shoreline use at multiple locations within the Resort. In addition, the Proposed Action includes a generous coastal setback of at least 150 feet from the shoreline, which will increase open space along the coastline by approximately 18 acres. For a comprehensive review of the proposed recreational amenities that will be available to the community, please refer to Section B.5 of Chapter 3 of the SEIS.

VISITOR FACILITIES PLANNING PRINCIPLES

Section 3.8.1.2 of the Koʻolau Loa SCP establishes the following planning principles for the Kuilima Resort.

- ***Design Character. Kuilima Resort is conceived as a destination resort relating to and integrated with the rural North Shore of Oʻahu. It is envisioned as a resort overlaid with the simplicity and timelessness of a* kamaʻina *country estate with characteristic hospitality and elegance.***
- ***Appropriate Scale and Siting. The master plan reflects the estate-like quality in the low density of buildings, the lush and extensive landscaping on all parcels and common areas, and the gracious entry drive servicing the entire property.***

Discussion: The Proposed Action complies with these policies. The general architectural character of the Proposed Action will be similar to that of a "*kamaʻaina* estate" – displaying hospitality and elegance, overlaid with fundamental simplicity and timelessness.

- ***Environmental Compatibility. Kuilima Resort is within a unique environment with several major constraints and guidelines for development, which have been factored***

into the siting for major facilities. New resort facilities should respect constraints of flooding, wetlands, sand dunes, wildlife, and archaeology.

Discussion: The preparation of this SEIS ensures that all environmental disclosures are made. Environmental concerns have been factored into the planning and development of the Proposed Action and TBR respects the constraints of flooding, wetlands, sand dunes, wildlife and archeology. The SEIS examines natural, cultural and social resources and contains reports and studies conducted by specialists who are experts in their field. The SEIS has been prepared in conformance with the State of Hawai'i EIS laws (Chapter 343, Hawai'i Revised Statutes (HRS) and rules (Title 11, Chapter 200, Hawai'i Administrative Rules (HAR)).

- ***Community Integration. The master plan includes dedicated public parks at Kawela Bay and Kahuku Point, as well as community access and parking for shoreline use at multiple locations within the resort.***

Discussion: At no capital cost to the City and County of Honolulu or to the public, the Proposed Action includes over 73 acres of dedicated public parks at Kawela Bay and Kahuku Point, as well as community access and parking for shoreline use at multiple locations within the Resort. In addition, the Proposed Action includes a generous coastal setback of at least 150 feet from the shoreline, which will increase open space along the coastline by approximately 18 acres. For a comprehensive review of the proposed recreational amenities that will be available to the community, please refer to Section B.5 of Chapter 3 of the SEIS.

KUILIMA RESORT GUIDELINES

Section 3.8.1.3 of the Ko'olau Loa SCP establishes the following guidelines for the development of Kuilima Resort.

- ***Built Form.***
  - Express the* kama'aina *architectural themes of the resort through building design.
  - Make building massing and configuration compatible with the intimate character of the resort.
  - Develop projects in multi-structure complexes rather than single monolithic buildings.

Discussion: The Proposed Action will be implemented according to the provisions of the Unilateral Agreement and the existing design guidelines previously approved by the City and County of Honolulu.

- ***Natural Environment. Preserve and enhance existing features of topography, landscape and views unique to the various use zones within the development.***

Discussion: The Proposed Action will be implemented in a manner that is consistent with the 1987 Coastal Views Study prepared for the City and County of Honolulu and discussed in Section A.8.a of Chapter Five.

- ***Shoreline Access. Enhance public access to the shoreline through the creation of two new major shoreline parks. Access through the main resort should also be retained with public parking provided.***

Discussion: A total of four new shoreline parks are included in the Proposed Action together with 12 public shoreline accesses and a combined total of at least 106 new public parking stalls. In addition, it should be noted that the resort owners have revised the existing entry/parking program at the Turtle Bay Hotel removed the entrance security gate and increased the number of shoreline access stalls for the public in the parking lot.

- ***Views and Vistas. Site and landscape buildings in a manner that protects and emphasizes the dramatic coastal views from within the resort.***

Discussion: The Proposed Action includes the reduction of building heights originally envisioned for the resort expansion and creation of new view corridors as depicted in Figure 3-15 of the SEIS.

- ***Landscaping. Provide lush and extensive landscaping on all parcels and common areas, and the entry drive servicing the entire property. Integrate mature trees into the complexes.***

Discussion: The Proposed Action will implement landscaping requirements presented in the Unilateral Agreement.

TRANSPORTATION SYSTEMS GENERAL POLICIES

Section 4.1.2 of the Koʻolau Loa SCP establishes the following general policies relating to transportation systems.

- ***To retain Koʻolau Loa's role as a predominantly rural area with limited future growth, its transportation system should provide:***
  1. ***Adequate access between communities, shopping and recreation areas in Koʻolau Loa.***
  2. ***Roadway improvements, developed in consultation with Koʻolau Loa communities, which emphasize highway safety as the highest priority while providing efficient, pleasant travel experiences.***
  3. ***Adequate capacity for peak travel to and from community centers.***
- ***Reduce reliance on the private passenger vehicle by promoting travel demand management measures (e.g., carpool and vanpool programs) for both commuting and local trips.***
- ***Provide an integrated system of bikeways for work, school, shopping trips, and recreation, including rides to playgrounds, beach parks, and other recreational areas.***

Discussion: As discussed in Chapters Two, Three and Five, the resort is served by a single two-lane highway which is subject to traffic congestion during peak periods and surf-related activities and events. The improvements to the highway envisioned in the Proposed Action are intended to improve highway safety in the vicinity of the resort in the form of new signalized and channelized intersections. However, the provision of a new roadway system within the resort contributes to capacity related issues in the vicinity of Turtle Bay Resort. Once in place, the new internal roadway system will provide resort guests, residents and visitors with an opportunity to travel from one end of the resort to the other without having to utilize Kamehameha Highway. This will help to alleviate some demand from the highway in the vicinity of the resort. As noted in the traffic study presented in the SEIS at Appendix I, the peak hour travel times associated with the resort operations differ significantly from the peak hours experienced at the limits of the study corridor (Kahalu'u and Hale'iwa). The practical result of this is that the resort's peak travel periods do not coincide with those of the region, meaning that resort-generated traffic does not necessarily exacerbate morning and afternoon rush-hour periods. TBR's commitment to providing a fair-share contribution for regional improvements will benefit the entire transportation system. Inclusion of specific measures in the Proposed Action to mitigate traffic-related impacts by providing alternative means of transportation (employee shuttles, expanded bus service, airport vans etc.) is consistent with the above transportation policies. As discussed in Chapter Five, TBR is also exploring opportunities for expanding the region's bikeway system. The development of the shoreline trail along the length of the property will contribute directly to this effort.

TRANSPORTATION SYSTEMS PLANNING PRINCIPLES AND GUIDELINES

Section 4.1.3 of the Ko'olau Loa SCP establishes the following planning principles and guidelines for transportation systems.

- ***Commuter Travel. For commuter trips, the objective is to ensure that travel time and peak periods do not lengthen commensurate with growth in population.***
  1. ***Provide improved services and facilities for express buses, such as more frequent, larger capacity and more comfortable vehicles and park-and-ride facilities.***
  2. ***Promote ridesharing such as carpooling and vanpooling.***

Discussion: The Proposed Action complies with these policies. Chapter Five, Section B.1 of the SEIS summarizes the strategies and incentives that are intended to encourage guests, employees, and community members of the Resort to use public transportation, carpool, or use other alternatives to driving alone when traveling to and from the Resort. In general, travel demand management supports enhanced mobility by using existing transportation systems, boosts economic efficiency of the current transportation infrastructure, improves air quality, saves energy, and reduces traffic congestion.

- ***Local Travel. For local trips, the objective is to promote alternative modes of travel and less automobile travel.***

1. ***Modify right-of-way design in selected areas, particularly along principal pedestrian routes and street crossings, and near bus stops – e.g., change travelway widths, pavement widths or texture, introduce appropriate signage, and more generous landscape planting.***
2. ***Provide more convenient pedestrian paths within commercial and other high-activity areas to encourage people to walk short distances for multi-purpose trips instead of moving the vehicle to another parking facility.***
3. ***Implement traffic calming measures appropriate for residential areas to reduce speeding in excess of posted limits and discourage use of local streets for bypass or shortcut, thereby sustaining overall safety and enjoyment for pedestrians and bicyclists.***
4. ***Design off-street parking facilities more efficiently to encourage joint use of parking and less pavement area dedicated to parking.***
5. ***Provide safe pedestrian walkways on bridges.***

Discussion: In accordance with Condition No. 7 of the Unilateral Agreement (see Appendix J of the SEIS), the following traffic improvements are required at each of the proposed access intersections on Kamehameha Highway, for either the Proposed Action or the Alternatives:

- Widen westbound Kamehameha Highway to provide an exclusive right-turn lane;
- Widen eastbound Kamehameha Highway to provide an exclusive left-turn lane;
- Widen westbound Kamehameha Highway to provide a right-turn acceleration lane;
- Construct separate left-turn and right-turn lanes on side street approaches to Kamehameha Highway;
- Construct a shared left-turn/through lane and an exclusive right-turn lane on Marconi Road at Kamehameha Highway, if and when the future Kahuku Mauka Agricultural Lots road is constructed by others at the time of improvement;
- Construct bus turnouts in both directions on Kamehameha Highway at each intersection; and
- Signalize the intersections of Kamehameha Highway; when warranted, with protected left-turn phases on Kamehameha Highway.

The Proposed Action includes the development of a continuous pathways and trail systems to facilitate pedestrian and bicycle access within the resort and along the entire resort coastline. An established path of this nature will ensure the safety and enjoyment for pedestrians and bicyclists.

WATER ALLOCATION AND SYSTEM DEVELOPMENT POLICIES

Section 4.2.1 of the Koʻolau Loa SCP establishes the following general policies relating to water resources.

- ***Protect and preserve streams, wetlands' natural drainage systems, watershed areas and the shoreline and coastal areas. The high quality of the region's nearshore and coastal water should be maintained to benefit recreation, the economy, and the region's natural biological systems. Buffer zones around streams and wetlands should be provided to protect the ecological integrity of these features.***

Discussion: The Proposed Action complies with the goals of protecting and preserving the natural drainage systems and the shoreline and coastal areas. As disclosed in Chapter Two, Section E.3.d, a 1985 Drainage Plan for Kuilima Resort and an approved 2005 Drainage Master Plan for the Turtle Bay Resort constitute the basis for existing and proposed drainage patterns on the Resort property *makai* of Kamehameha Highway. Figures 2-21 through 2-25 provide detailed, colorful representations of the flood maps of the Turtle Bay Resort. A hydrologic analysis was performed to assess the change in runoff quantities from the Proposed Action's anticipated discharge during a major rain event to each golf course or subsystem, pursuant to the Drainage Master Plan. The Proposed Action will rely upon the golf courses as the principal means of addressing drainage and storm water runoff. For more information, we direct your attention to Section A.6 of Chapter Five.

- ***Retain existing acreage in the State Conservation or the City Preservation Districts to protect watersheds. In addition, important watershed areas which are in designated but unused Agricultural or Urban Districts should be reclassified to the State Conservation or City Preservation Districts, in consultation with affected landowners, community and pertinent resource agencies.***
- ***Integrate management of all potable and nonpotable water sources, including groundwater, stream water, storm water and effluent, following State and City legislative mandates.***
- ***Adopt and implement water conservation practices in the design of new developments and the modification of existing uses, including landscaped areas.***
- ***Where feasible and appropriate, encourage use of nonpotable water for irrigation of landscaping and agricultural lands to conserve the supply of potable water. Consider the use of dual water lines to allow conservation of potable water and the use of nonpotable water for irrigation and other appropriate uses, where practical.***

Discussion: Implementation of the Proposed Action will continue to focus on the integrated management of potable and non-potable water sources. The use of treated effluent from the resort's wastewater treatment plant to supplement irrigation requirements for one of the resort's golf courses in consistent with the above policies. Appendix A presents specific policies and programs that will be implemented at the resort to address water resource conservation.

WATER ALLOCATION AND SYSTEM DEVELOPMENT PLANNING PRINCIPLES AND GUIDELINES

Section 4.2.2 of the Koʻolau Loa SCP establishes the following planning principles and guidelines relating to water resources.

- ***Development and Allocation of Potable Water. While the State CWRM has final authority in all matters regarding administration of the State Water Code, the BWS should coordinate development of potable water sources intended for urban use on Oʻahu. The BWS and other public utilities should certify that adequate potable and nonpotable water is available for a new residential or commercial development to be approved. State and private well development projects should be coordinated and made consistent with City water source development plans.***

Discussion: The existing water supply, transmission, and distribution system is owned and operated by the Board of Water Supply (BWS). The existing infrastructure at the Resort has been constructed in accordance with BWS standards. The State has approved the potable water wells needed to support the Proposed Action, which have been constructed and outfitted for dedication to the City. The developer has funded the development of the potable water system, including wells, reservoirs and transmission lines.

As summarized in Table 22 in Chapter Five of the SEIS, the average daily potable water demand for the Proposed Action, including existing water demands, is 1,201,100 gallons per day. Of this amount, new development on the SEIS Lands will require approximately 856,100 gallons per day. Three wells on the *mauka* side of Kamehameha Highway (the ʻŌpana Wells) have a combined capacity of 1,340,000 gallons per day, and will be more than adequate to meet the anticipated demand created by the Proposed Action.

- ***Water Conservation Measures. Conserve the use of potable water by implementing the following measures, as feasible and appropriate:***
  1. ***Low flush toilets, flow constrictors and other water conserving devices in commercial and residential developments.***
  2. ***Indigenous, drought-tolerant plant material and drip irrigation systems in landscaped areas, and use drip irrigation systems.***
  3. ***The reuse of treated wastewater effluent for the irrigation of golf courses and other landscaped areas where this would not adversely affect potable groundwater supply.***
  4. ***Future water development should not adversely impact stream flow or nearshore water quality.***

Discussion: As discussed in Appendix A of the SEIS, the Proposed Action will utilize advanced best management practices (BMP) to incorporate sustainable principles from conceptual design through the end of construction. These BMPs address aspects water efficiency

and reuse, which will supplement the Turtle Bay Resort's ongoing use of recycled water to irrigate the gold courses will help to offset demand of potable water for irrigation purposes.

WASTEWATER TREATMENT GENERAL POLICIES

Section 4.3.1 of the Koʻolau Loa SCP establishes the following general policies relating to wastewater treatment.

- ***Encourage coordination between public agencies and private landowners in addressing adequacy of wastewater treatment within the region. The planned expansion of the Lāʻie Water Reclamation Facility proposed for existing and future homes in Lāʻie should proceed in accordance with applicable State and Federal regulations and conditions of existing land use approvals.***
- ***Provide collection systems, where practical, to eliminate individual cesspools, to protect aquifers, streams, estuaries and near shore waters from contamination.***
- ***Replace outdated individual cesspools with septic tanks and leaching fields.***
- ***Encourage water recycling at Kahuku Wastewater Treatment Plant.***
- ***Treat and beneficially use, where feasible, reclaimed water for irrigation as a water conservation measure.***

Discussion: The wastewater treatment plant serving the resort was expanded in the early 1990s in anticipation of the resort expansion as allowable under existing land use approvals and has sufficient capacity to address the reduced scale of development envisioned in the Proposed Action. As discussed above, all effluent generated by the resort is treated and used to supplement non-potable wells for the irrigation of the golf course. In the future, the effluent treatment is planned to be improved from R2 to R1 which will enable the treated effluent to be used for irrigation of the resort's second golf course and for common areas to the extent allowable under State regulations.

WASTEWATER TREATMENT PLANNING PRINCIPLES AND GUIDELINES

Section 4.3.2 of the Koʻolau Loa SCP establishes the following planning principles and guidelines relating to wastewater treatment.

- ***Water Reclamation As feasible and appropriate, beneficially use reclaimed water for agriculture and landscaping irrigation, as well as other non-potable water uses.***
- ***Water Use of Buffer Zones and Landscape Elements. Establish and maintain a sufficient separation between wastewater treatment plants and any nearby urban uses to avoid significant adverse odor impacts, and provide sufficient screening which substantially block views of such plants from developed areas, parks and public rights-of-way.***

- ***Water Adjacent Uses. Discourage new residential, commercial, resort, or school uses in close proximity to wastewater treatment plants where odors are present.***

Discussion: The treated effluent from the wastewater treatment plant is stored in the Palmer Golf Course Storage Ponds, where it is blended with non-potable water and used to irrigate the Palmer Golf Course. The wastewater treatment plant is situated *mauka* of Kamehameha Highway, and the stench and operations of the plant will not interfere with the Proposed Action.

ELECTRICAL POWER DEVELOPMENT GENERAL POLICIES

Section 4.4.1 of the Koʻolau Loa SCP establishes the following general policy pertaining to electrical power development.

- ***Locate and design system elements such as renewable electrical power facilities, substations, communication sites, and transmission lines, including consideration of underground transmission lines, to mitigate any potential adverse impacts on scenic and natural resources, as well as public safety considerations.***

Discussion: The resort will continue to rely upon an underground electrical transmission system as the Proposed Action is implemented. Appendix A presents the Proposed Action's renewable energy strategy, which includes adherence to LEED standards. The resort is currently implementing an energy conservation plan that includes energy efficient lighting retrofit, a roof top photovoltaic system, behavioral protocols, and other effective energy saving initiatives.

ELECTRICAL POWER DEVELOPMENT PLANNING PRINCIPLES AND GUIDELINES

Section 4.4.2 of the Koʻolau Loa SCP establishes the following planning principles and guidelines relating to electrical power development.

- ***Facility Routing and Siting Analysis. If any new or relocated electrical power facilities, substations, communication sites, or transmission lines or communication towers are necessary, the selection of the route or site of such facilities should be supported by an analysis demonstrating how potential adverse impacts on scenic and natural resources have been mitigated. Although these facilities are not shown on the Public Facilities Map, their routes and sites are reviewed and permitted by administrative agencies of the City when they are within the Special Management Areas.***

Discussion: The Proposed Action does not include any new or relocated electrical power facilities, substations, communication sites, or transmission lines. Further, the Proposed Action does not require communication towers. However, TBR is supportive of these policies and will comply with them as necessary.

SOLID WASTE HANDLING AND DEVELOPMENT GENERAL POLICIES

Section 4.5.1 of the Koʻolau Loa SCP establishes the following general policies pertaining to solid waste handling and disposal.

- ***Support implementation of the Solid Waste Management Plan.***
- ***While the region is not expected to contribute significantly to future increases in Oʻahu's solid waste management demands and does not contain sites suitable for the processing or disposal of solid waste on an island-wide scale, Koʻolau Loa can and should play a part in the City's efforts toward recycling, waste diversion and more efficient solid waste collection.***

Discussion: Appendix A provides strategies to minimize solid waste generation at the resort resulting from the Proposed Action. Recycling and waste diversion are central to these strategies. Existing Resort operations together with implementation of the Proposed Action will be comply with the Resort's Solid Waste Management Plan.

SOLID WASTE HANDLING AND DEVELOPMENT PLANNING PRINCIPLES AND GUIDELINES

Section 4.5.2 of the Koʻolau Loa SCP establishes the following planning principles and guidelines relating to solid waste handling and disposal.

- ***Recycling Programs and Facilities. Promote the recycling of waste materials by providing expanded collection facilities and services, and public outreach and education programs. Encourage recycling of regional green waste at the City facility and the Lāʻie Water Reclamation Facility composting operation.***
- ***Efficient Solid Waste Collection. Expand the use of automated refuse collection in residential areas.***

Discussion: The Proposed Action supports these policies. Appendix A to the SEIS, "A Cultural Approach to Sustainability" contains recycling protocols, which have the specific purpose of reducing the volume of waste deposited in landfills.

DRAINAGE SYSTEM GENERAL POLICIES

Section 4.6.1 of the Koʻolau Loa SCP establishes the following general policies pertaining to drainage areas.

- ***Emphasize control and minimization of non-point source pollution and the retention of storm water on-site and in wetlands in the design of drainage systems in accordance with existing City, State and Federal regulations while maintaining the existing habitat capability and water quality of streams and near shore waters.***

- ***View storm water, where appropriate, as a potential irregular source of water for recharge of the aquifer that should be retained for absorption rather than quickly moved to coastal waters.***
- ***When drainage ways must be modified for flood control purposes, select approaches and solutions which:***
  1. ***Improve existing habitat capability;***
  2. ***Maintain existing rural and aesthetic qualities;***
  3. ***Avoid degradation of existing coastline and estuarine areas or near shore water quality;***
  4. ***Avoid degradation of the quality of water entering near shore waters;***
  5. ***Avoid increase in the volume or rate of freshwater intrusion into near shore waters.***
- ***Design drainageways for flood control to accommodate a 100-year flood.***
- ***Encourage abutting property owners along streams and/or drainageways to stabilize the banks with vegetation where erosion potential is high.***
- ***Encourage coordination between public agencies and private landowners on needed drainage improvements with community input, and develop a phased plan for improvements.***
- ***Keep drainageways clear of debris to avoid flooding problems.***
- ***The State should assess areas of Kamehameha Highway where the pavement diverts or detains overland flow of storm water runoff causing localized flooding of the highway and* mauka *properties.***

Discussion: Storm water management at the resort will continue to be an important management issue as the Proposed Action is implemented. As described in Chapters Two and Five, the golf courses serve a critical component in the management of runoff. Existing ponds serve as retention basins that help to absorb storm-related runoff and minimize flooding. Improvements recommended to the resort's existing drainage ways (East Main Drain and West Main Drain) will help to improve how the entire system functions. The possible inclusion of retention basins *mauka* of Kamehameha Highway will contribute not only to improved ocean water quality but also to groundwater recharge. Continued improvements to Punahoʻolapa Marsh in keeping with the Unilateral Agreement will ensure its role as an important element in regional flood control on the resort property.

DRAINAGE SYSTEM PLANNING PRINCIPLES AND GUIDELINES

Section 4.6.2 of the Koʻolau Loa SCP establishes the following planning principles and guidelines relating to drainage systems.

- ***Retention and Detention. Emphasize retaining or detaining storm water for gradual release into the ground as an alternative strategy for management of storm water.***

Discussion: While the *mauka* agricultural lands are neither part of the SEIS Lands, nor are they owned by TBR, TBR is working with the owner of the *mauka* agricultural lands to design and construct approximately 30 acres of storm water retention and detention basins. These basins would be intended to intercept storm water runoff during heavy rainfall events and reduce flooding across Kamehameha Highway and into the SEIS Lands. However the proposed improvements to the SEIS lands drainageways are sufficient without these additional improvements to meet all Federal, State and City standards to handle the drainage volumes anticipated.

- ***Stream Channel Improvements. Integrate planned improvements to the drainage system into a regional open space network by creating retention basins, passive recreation areas and recreational access for pedestrians and bicycles. Drainage system design should emphasize control and minimization of non-point source pollution. Where the hardening of stream channels is unavoidable, make the improvements in a manner which maintains and protects natural resources and aesthetic values of the stream, and avoid degradation of coastline and of stream and near-shore water quality, consistent with guidelines expressed in Section 3.1.3.4.***

Discussion: Continued restoration efforts at the marsh will help improve near shore water quality by capturing nutrients that might otherwise make their way to the ocean and improving the capacity of the marsh for storm water retention during flood events. As aforementioned, the golf courses and open space within the SEIS Lands are a crucial part of the Turtle Bay Resort's drainage system.

- ***Floodplain Management. Any future work performed within the 100-year floodplain will have to adhere to the requirements of the Federal Emergency Management Agency (FEMA) and meet all flood-proofing requirements.***

Discussion: The Proposed Action will work in compliance with this policy. TBR will observe County flood hazard ordinances, FEMA and the requirements of the National Flood Insurance Program.

- ***Systematic Approach. Use a comprehensive, systemic approach to addressing local flooding and drainage problems.***

Discussion: As disclosed in Chapter Two, Section E.3.d, a 1985 Drainage Plan for Kuilima Resort and an approved 2005 Drainage Master Plan for the Turtle Bay Resort constitute the basis for existing and proposed drainage patterns on the Resort property *makai* of Kamehameha Highway. Figures 2-21 through 2-25 provide detailed, colorful representations of the flood maps of the Turtle Bay Resort. A hydrologic analysis was performed to assess the change in runoff

quantities from the Proposed Action's anticipated discharge during a major rain event to each golf course or subsystem, pursuant to the Drainage Master Plan. The Proposed Action will rely upon the golf courses as the principal means of addressing drainage and storm water runoff. For more information, we direct your attention to Section A.6 of Chapter Five.

SCHOOL FACILITIES GENERAL POLICIES

Section 4.7.1 of the Koʻolau Loa SCP establishes the following general policies relating to school facilities.

- ***Approve new residential development only after the DOE certifies that adequate school facilities, either at existing schools or at new school sites, will be available when the development is completed.***
- ***Have developers pay their fair share of all costs needed to ensure provision of adequate school facilities for the children living in their developments.***
- ***Support the implementation of the Kahuku High School Master Plan.***

Discussion: Representatives from TBR will work with the State Department of Education as required by law to address any obligations TBR may have with respect to school impact fees. Obligations with respect to school impact fees would encompass potential impacts of the Turtle Bay Resort on public elementary, intermediate and high schools. TBR supports the implementation of the Kahuku High School Master Plan as part of its overall commitment to ensuring that the Proposed Action is compatible with prevailing State policies and plans.

SCHOOL FACILITIES PLANNING PRINCIPLES AND GUIDELINES

Section 4.7.2 of the Koʻolau Loa SCP establishes the following planning principles and guidelines regarding schools.

- ***Shared Facilities. Coordinate the development and use of athletic facilities such as playgrounds, playfields and courts, swimming pools, and gymnasiums with the DOE where the joint use of such facilities would maximize utilization and reduce duplication of functions without compromising the schools' athletic programs. (See also Section 3.3.4.2.)***
- ***Fair Share Contribution. Support the DOE's requests for fair share contributions from developers of residential projects to ensure that adequate school facilities are in place at existing schools to meet the needs of residents.***

Discussion: TBR is supportive of creating shared facilities, though the policy is not directly applicable to the Proposed Action. Representatives from TBR will work with the State Department of Education as required by law to address any obligations TBR may have with respect to school impact fees. Obligations with respect to school impact fees would encompass potential impacts of the Turtle Bay Resort on public elementary, intermediate and high schools.

CIVIC AND PUBLIC SAFETY FACILITIES GENERAL POLICIES

Section 4.8.1 of the Koʻolau Loa SCP establishes the following general policies pertaining to public safety facilities.

- ***Support adequate staffing and facilities to ensure effective and efficient delivery of basic governmental service, emergency and primary medical services, and protection of public safety.***
- ***Support the development of a regional library for Koʻolau Loa.***
- ***Provide emergency shelters in Koʻolau Loa.***

Discussion: These policies are directed to governmental agencies and are therefore beyond the scope of the Proposed Action.

CIVIC AND PUBLIC SAFETY FACILITIES PLANNING PRINCIPLES AND GUIDELINES

Section 4.8.2 of the Koʻolau Loa SCP establishes the following planning principles and guidelines pertaining to public safety facilities.

- ***Satellite City Hall. Consider the establishment of a permanent Satellite City Hall in Koʻolau Loa, using the existing facility in Hauʻula or a new facility in Lāʻie, either of which could serve as a gathering place for activities and services.***
- ***Better Utilization of Facilities. Support the planning and programming of public facilities to create maximum usage flexibility. In addition, encourage interagency coordination in better utilization of existing facilities to provide a more integrated approach to delivering services in the region. Examples could include using school facilities as emergency shelters, requiring that all new public buildings serve a secondary function as an emergency shelter, and establishing satellite city halls as multipurpose facilities with expanded hours and services for area residents.***
- ***Maintain Police and Fire/Ambulance Stations. There is no anticipated need for new locations for either police or fire stations. Accommodate any necessary improvements through renovation or minor expansion of existing facilities for fire/ambulance and police protection. There is a need for a new ambulance facility in Kaʻaʻawa.***
- ***Adequate Police and Fire/Ambulance Protection. Provide adequate staffing and facilities for fire/ambulance and police protection as required to support new developments.***
- ***Emergency and Primary Medical Services. Support adequate staffing and facilities to ensure the continued operation and maintenance of Kahuku Hospital. Allow for the***

possible development of other health related facilities that will support the continued viability of Kahuku Hospital and provide critical complimentary health services for the community.

- ***Creation of Safe Environments. Promote the creation of safe, crime-deterrent public and private environments by encouraging the use of crime-preventive principles in the planning and design of communities, open spaces, circulation networks, and buildings.***
- ***Civil Defense Sirens. Install civil defense sirens as needed to provide advance warning systems for the people residing and working in Koʻolau Loa communities.***

Discussion: These policies are generally directed to governmental agencies and are therefore beyond the scope of the Proposed Action. However, TBR is supportive of policies pertaining to the creation of safe environments within the resort. The provision of private resort security within the result will help to ensure the safety of the resort's visitors and residents.

A. 11. Revised Koʻolau Loa Sustainable Communities Plan

~~In October 2010, the City's Department of Planning and Permitting published a Public Review Draft representing its updating of the Koʻolau Loa Sustainable Communities Plan. At the time of this writing, the DPP is preparing the document for submittal to the Honolulu Planning Commission. Following is a discussion of how the Proposed Action complies with the relevant portions of the Public Review Draft.~~

~~**Sustainability:** The Public Review Draft added a discussion explaining how the concept of sustainability relates to the City's planning system and the Sustainable Communities Plans. It includes the following provisions:~~

> ~~***Use resources so they are not depleted, permanently damaged or destroyed.***~~
>
> ~~***Encourage planning, development and construction technologies that minimize environmental impacts.***~~
>
> ~~***Respect the cultural, social and physical resources that shape residents' sense of community and rural quality of life.***~~
>
> ~~***Honor the process of change. Make no decisions without first understanding the effects such change will have on the land and community resources.***~~
>
> ~~***Strive for balance between economic prosperity, social and community well-being, and environmental stewardship. Adopt a multi-disciplinary approach acknowledging the importance of our community capital in land use and infrastructure planning decisions.***~~
>
> ~~***Consider the long-term effect of our actions and take into account the interests of our future generations when planning for the future***~~

~~***Protect agricultural lands, physical and biological resources, and where desired, open spaces and view planes.***~~

~~**Discussion:** Appendix A of the SEIS presents a detailed discussion of how the proposed expansion plan supports the concepts of sustainability. The Proposed Action is consistent with the Public Review Draft's sustainability policies.~~

~~**Population:** The Public Review Draft incorporates the revised General Plan population objective that allocates 1.4 percent of the island's population to the Koʻolau Loa district.~~

~~**Discussion:** The revised population guidelines include the expansion of the Resort as approved in 1985. The Proposed Action would decrease the number of new residential units from 1000 to 750. The Proposed Action is therefore consistent with the Public Review Draft population policy because it would result in a smaller anticipated residential population than what has been estimated based upon developable land.~~

~~**Planning Horizon:** The Public Review Draft extends the City's planning horizon for Koʻolau Loa from 2020 to 2035.~~

~~**Discussion:** The Proposed Action is consistent with this revision.~~

~~**Importance of** *Ahupuaʻa*~~**:** ~~The Public Review Draft adds language that defines the *ahupuaʻa* and its importance to land use and natural resource management.~~

~~**Discussion:** The Proposed Action is consistent with this revision. Implementation of *Tomorrow's Ahupuaʻa* as discussed in Appendix A of the SEIS will fully implement the policies of the KLSCP pertaining to *ahupuaʻa*.~~

~~**Revised Vision Elements:** The Public Review Draft revised several Vision Elements including, the preservation of agricultural lands; the relabeling of the Rural Community Boundary with Community Growth Boundary; the inclusion of the proposed Malaekahana residential development; the recognition of existing and proposed commercial centers; and the addition of a new Vision Element concerning sustainability.~~

~~**Discussion:** The Proposed Action is consistent with this revision.~~

~~**Modification of Open Space Policies:** The Public Review Draft added/revised language addressing provisions for outdoor lighting; enhancing public shoreline access; additional protection for shoreline areas; acknowledgement of the Koʻolau Loa Watershed Management Plan; the future of the Kahuku Golf Course; the Army's use of the Kahuku Training Area; and provisions for telecommunication antennas.~~

~~**Discussion:** The Proposed Action is consistent with this revision.~~

~~**Agricultural Policies:** The Public Review Draft added/revised policies addressing agriculture including the use of agricultural lands; the leasing of agricultural lands; improvements to infrastructure networks; accessory uses; uses within buffer zones; environmental impacts; and identifying Important Agricultural Lands.~~

~~**Discussion:** While the Proposed Action does not include the Turtle Bay agricultural lands *mauka* of Kamehameha Highway, the policies of the resort owners for those lands are consistent with this revision.~~

~~**Historic and Cultural Resources:** The Public Review Draft updates the description of historic and cultural resources and policies and guidelines related to *kuleana* lands and the treatment of cultural sites.~~

~~**Discussion:** The Proposed Action is consistent with this revision.~~

~~**Residential Uses:** The Public Review Draft adds a description of housing trends, discusses Malaekahana, and addresses density issues and affordable guidelines.~~

~~**Discussion:** Through its provision of affordable housing beyond that which is required by the Unilateral Agreement, and its commitment to maintain the rural character of the resort area, the Proposed Action is consistent with this revision, including the newly added rural residential guidelines.~~

~~**Commercial Areas:** The Public Review Draft adds economic vitality guidelines.~~

~~**Discussion:** The Proposed Action is consistent with this revision.~~

~~**Visitor Industry:** The Public Review Draft updates the description of visitor facilities in the region. It replaces reference to Kuilima with "Turtle Bay Resort"; adds a discussion about the future development of Turtle Bay Resort; deletes references to the resort as a major resort destination; revises policies and guidelines to acknowledge and retain existing resort elements while limiting future resort facilities to within the existing resort destination and encouraging the preservation of undeveloped lands for open space, recreational, and agricultural use.~~

~~**Discussion:** The Proposed Action is consistent with these revisions.~~

~~**Transportation Systems:** The Public Review Draft adds references to Complete Streets and updates discussions about the regional transportation system, including the implementation of transportation demand management strategies and safety improvements along Kamehameha Highway.~~

~~**Discussion:** The Proposed Action is consistent with this revision.~~

~~**Water Allocation:** The Public Review Draft adds reference to the Koʻolau Loa Watershed Management Plan.~~

~~**Discussion:** The Proposed Action is consistent with this revision.~~

As part of the City's ongoing efforts to periodically update the existing Sustainable Communities Plans, an updated Koʻolau Loa SCP has been drafted by the DPP. Following is a discussion of the Proposed Action's relationship to relevant land use policies and guidelines identified in the December 2012 Pre-Final Koʻolau Loa SCP that has been submitted to the Honolulu Planning Commission by the Department of Planning and Permitting.

The proposed revisions to the plan generally take three forms; policies and guidelines have either been deleted, amended, or new policies and guidelines have been added. Using the same format used in the previous section discussing the current 1999 Koʻolau Loa SCP, the section addresses the Pre-Final draft submitted to the Planning Commission. Significant amendments and new policies and guidelines (shown in italics) are discussed below.

LAND USE POLICIES

- ***Recognize traditional* ahupuaʻa *principles and adapt the* ahupuaʻa *where practicable in Koʻolau Loa.***

Discussion: The amendment deletes a reference to *ahupuaʻa* "divisions". The Proposed Action remains consistent with the intent of this amended policy.

- ***Preserve continuous coastal views and scenic views of ridges, valley slopes, and prominent land features.***

Discussion: The Proposed Action remains consistent with the intent of this new policy.

- ***Promote and expand diversified agriculture and aquaculture.***

Discussion: The Proposed Action does not propose any development on agricultural lands, and therefore this policy does not directly apply. Nonetheless, Turtle Bay Resort is committed to the preservation of agriculture on the separately owned *mauka* agricultural lands by supporting the negotiation of a conservation easement as described in the SEIS. The Proposed Action remains consistent with the intent of this amended policy.

- ***Promote access to mountain and shoreline resources for recreational purposes and traditional hunting, fishing, gathering, religious, and cultural practices.***

Discussion: The Proposed Action is consistent with this new policy. In addition to the new public shoreline access ways and public parking provided in the Proposed Action, the SEIS includes a Cultural Impact Assessment that identifies the resort's cultural resources and describes how they will be preserved and protected in the future. Access to mountain areas is available on the *mauka* side of Kamehameha Highway but upland areas are controlled by the federal government. Access to these uplands areas is beyond the scope of the Proposed Action.

- ***Preserve the "country" lifestyle as expressed by rural housing clusters or neighborhoods which are defined by open space and blend into the surrounding landscape with as little disruption as possible to the scenic quality of the area.***

Discussion: The Proposed Action will be implemented in accordance with the Unilateral Agreement which, in part, calls for residential development in the character of a "*kamaʻaina* estate". The resort residential development included in the Proposed Action will be built at low to medium densities with some parcels at approximately two units per acre, which is consistent with the open space character of the policy.

- ***Use rural residential development standards to that new infrastructure and site layout requirements keep with the desired rural character of the region.***

Discussion: The Proposed Action will be required to comply with development standards that are established for resort destination areas, as may be required by regulating agencies. New roadways and pedestrian paths will comply rural residential standards to the extent practicable. The remaining new infrastructure planned for the resort expansion will be located underground, and as a result, will have no impact upon the rural character of the region.

- ***Establish country town design guidelines for commercial and other non-residential use areas so that new development will be in keeping with the region's rural character.***

Discussion: The Proposed Action is obligated to comply with Design Guidelines previously approved for the resort expansion, and with design-related provisions of the Unilateral Agreement.

- ***Limit visitor accommodations and facilities to the existing resort-designated areas at Turtle Bay Resort.***

Discussion: The Proposed Action is consistent with this policy.

OPEN SPACE PRESERVATION POLICIES

- ***Maintain the region's rural character, protect and preserve scenic views and natural resources, provide recreational resources, and promote accessibility to shoreline and* mauka *areas.***

- ***Define clear boundaries and separations between existing rural communities.***
- ***Provide adequate shoreline setbacks that consider shoreline changes resulting from erosion hazards and rising sea levels, based on adopted projections of shoreline erosion rates and sea level rise.***
- ***Allow outdoor lighting at the minimum level necessary for public safety, security and community aesthetics consistent with the goals of energy conservation and environmental protection.***

Discussion: The Proposed Action implements the Open Space policies and principles by reducing the unit density by approximately 60 percent of what is allowable under land use approvals previously granted, increasing shoreline setbacks from the required 100 feet to include an additional 50 feet along most of the resort's coastline and by an additional 200 feet at Kawela Bay, and by implementing the Unilateral Agreement enacted for the resort. As discussed in Chapter Five, the scenic views identified in the 1987 Coastal View Study will not only be protected and preserved, but enhanced by these increased shoreline setbacks and reduced height limits, as well as the provision of a new resort entrance at Kawela Bay which will provide some coastal views from Kamehameha Highway. Inclusion of the five (5) new parks, golf courses, the Equestrian Center, and the shoreline coastal trail in the Proposed Action will ensure that recreational resources continue to be provided at the resort in the future. The eastern boundary of the resort will be clearly defined by Marconi Road. The resort's vegetative palette and a new park at Kawela Bay will define its western boundary. The distinctive landscaping of the Resort Residential Units at Kawela Bay will terminate at the setback boundaries along the residential beach cottages, which are~~n~~ adjacent to Park (P-1) surrounding the western half of Kawela Bay.

The shoreline setbacks incorporated into the Proposed Action take into account projections of erosion rates resulting from sea level rise recently determined by the University of Hawai'i as discussed in Chapter Two Section E.4.b of the SEIS. As discussed in Chapter Five Section A.4.B of the SEIS, outdoor lighting included in the Proposed Action will be shielded wherever necessary to minimize environmental impacts, while still operating at the minimum level necessary for public safety, security and community aesthetics. The Proposed Action will comply with LEED standards as discussed in Appendix A of the SEIS.

SHORELINE AREA GUIDELINES

- ***Preserve rare and sensitive coastal resources including coastal strand vegetation, sand dunes, and anchialine pools. Establish buffer zones around these resources where necessary.***
- ***Identify and protect endangered species habitats and other important ecologically sensitive areas from such threats as fire, alien species, feral animals and inappropriate human activity.***
- ***Maintain and enhance public access to the shoreline and lateral access along the coast including provisions for parking areas. Public access should be provided at***

approximate ½-mile intervals in rural areas, or at closer intervals when justified by public demand, traditional use patterns, the quality of recreational resources, or natural barriers that impede shoreline access.

- ***Establish additional minimum setbacks for structures near the shoreline in erosion hazard areas, and implement other management strategies to protect unstable sandy beach areas that impact Kamehameha Highway along the Ka`a`awa, Punalu`u and Hau`ula shorelines.***
- ***Adopt development standards that require new structures along the shoreline to incorporate structural and design elements compatible with coastal hazards such as coastal erosion, tsunami, and hurricane overwash.***
- ***Evaluate emerging policies relating to climate change and sea level rise.***
- ***Prohibit off-road vehicular and motorcycle use in shoreline areas, including but not limited to the placement of barriers to prevent vehicular access along the beachfront.***
- ***Implement management practices that protect nearshore coral reefs from damaging activities such as soil erosion, non-point source pollution, dredging, and alterations to near-shore water circulation.***
- ***Minimize the adverse effects of artificial lighting on wildlife and human health by balancing the need of outdoor lighting for night utility, security, and desire for reasonable architectural expression with the need to conserve energy and protect the natural environment.***
- ***Adopt outdoor night lighting standards that encourage efforts to minimize glare and stray light, and reinforce the differences between urban and rural communities.***

Discussion: The Proposed Action is consistent with and supportive of all applicable amended and new Shoreline Area guidelines. As described in Chapter Three, the Proposed Action includes setback areas along the shoreline in excess of what is required by the Unilateral Agreement; 300 feet at Kawela Bay and 150 feet along the new expansion areas of the resort coastline. The majority of the sand dunes existing along the shoreline will be contained within this setback area, and as a result, preserved. (It should be noted that some dune areas extend further inland and have been cultivated with turf as part of the Palmer Golf Course approvals when it was constructed in the late 1980s. No changes to these vegetated dunes are contemplated.)

As discussed in Appendix F and Chapter Five of the SEIS, the coastal strand has been identified as a specific vegetation type at the resort and will be preserved as part of the Proposed Action. Because much of the coastal strand will be situated within the expanded shoreline setback areas, the setback areas constitute the type of buffer contemplated in the guidelines.

The SEIS identifies endangered species in the resort area as well as those that utilize the near shore waters and coastal areas under state jurisdiction. The Proposed Action presents specific

measures to preserve and protect these species, their habitats, and other important ecologically sensitive areas -wherever possible.

The Proposed Action includes the provision of 12 new shoreline access ways along the 3.77-mile resort coastline and will comply with the requisite distance standards.

As discussed in Chapters Two, Three and Five, all development associated with the Proposed Action will comply with federal, state and county agency flood-related standards.

As discussed previously, the SEIS specifically addresses the challenges posed by climate change and sea level rise, including coastal erosion, tsunami, and hurricane impacts.

While TBR is not able to control public access on state owned lands *makai* of the certified shoreline, it presently regulates the access of off-road vehicles and motorcycles to the shoreline from the resort property. And the resort's security team will patrol and monitor much of the shoreline. These policies will continue under the proposed action.

Chapter Five Section A.7 specifically addresses the measures to mitigate impacts on coral reefs that pertain to the Proposed Action.

Finally, the resort environmental programs outlined in Appendix A specifically focus on the need to implement a resort lighting plan that will minimize adverse environmental impacts.

WILDLIFE SANCTUARY GUIDELINES

- ***Retain existing preservation zoning in the vicinity of Kahuku's Punahoʻolapa Marsh, Punamano and Kiʻi Pond National Wildlife Refuges.***

Discussion: The Punahoʻolapa Marsh has been preserved at the resort and will continue to be maintained and enhanced as a wildlife refuge in a manner consistent with the Unilateral Agreement. No changes in preservation zoning are proposed.

NATURAL GULCHES, STREAMS, AND DRAINAGEWAY GUIDELINES

- ***Preserve the aesthetic and biological values of natural gulches, streams and drainage ways as part of the open space system. Restore and protect ecologically sensitive areas and ecosystems which should be maintained and enhanced as open space elements. Any activities in the vicinity of these areas need to ensure that the open space system will not be significantly impacted or that biological values will not be significantly degraded.***

Discussion: Due to the extensive development history of the property (ranching, sugar plantation, military), the natural drainage ways at the resort have been modified. As discussed in Chapters Two and Five, TBR supports the restoration of Kawela Stream to its original alignment

that corresponds to the alignment of the existing West Main Drain as a means of improving water quality at Kawela Bay. The existing drainage ways on the SEIS Lands are maintained as open space.

- ***Identify and protect endangered species habitats and other important ecologicially sensitive areas from such threats as fire, alien species, feral animals and incompatible human activity.***

Discussion: As discussed in the SEIS, the wetlands in the SEIS Lands have been, and will continue to be, protected and preserved for the benefit of endangered species that rely upon them. The inclusion of shoreline setbacks in the Proposed Action in excess of those required by law will benefit Hawksbill and green sea turtles, as well as Hawaiian monk seals that frequent the coastal environment. The educational program presented in Chapter Five of the SEIS will further inform visitors, residents, guests, resort employees and the general public about the need to protect endangered species and the actions they can take as individuals to protect endangered species and their habitat.

- ***Minimize soil erosion, runoff of pesticides, fertilizers and other non-point source contaminants into streams, wetlands and marine habitats with strategies such as stream setbacks, erosion control devices, integrated pest management plans, and revegetation of disturbed areas. Incorporate erosion control measures and best management practices, as recommended in the State of Hawai'i Coastal Non-point Pollution Control Program Management Plan, Volume I (June 1996)***, to prevent pollution of wetlands, streams, estuaries, and nearshore waters.

Discussion: The drainage master plan was prepared to comply with City and County Standards. Their Standards have a water quality section that is in compliance with the existing NPDES Permit:

"In compliance with the provisions of the Clean Water Act, as amended, (33 U.S.C. §1251 et. seq.; the 'Act"); Hawaii Revised Statutes, Chapter 342D; and Hawaii Administrative Rules, Department of Health (DOH), State of Hawaii, Chapters 11-54 and 11-55;"

When TBR applies for a U.S. Army Corps Of Engineers Section 404 Permit~~s~~ for the wetland and outlet structures, ~~they~~ TBR will have to be in compliance with the DOH Section 401 Water Quality Control and the CZM Program.

Presently, the intermittent Ho'olapa Stream flows under and over Kamehameha highway into the SEIS Lands and also could carry sediment from the *mauka* agricultural lands, which are not owned by TBR. There is a small ditch that leads to the marsh. Originally, the marsh was the sediment control. To change that situation, sediment would have to be removed as the runoff flows over the golf course fairway or into a golf course water hazard on its way to the marsh. The existing golf courses at the resort are operated in a manner that is consistent with this guideline.

The BMPs and mitigation included in the Proposed Action are intended to not allow sediment loads from construction activities to reach the ocean. There will also be monitoring requirements associated with the construction activities that will document any impacts and provide information for corrective action.

- ***Restrict uses in these areas to conservation uses, compatible recreational uses such as walking and bicycling, traditional and customary rights of Native Hawaiian practitioners, and controlled surface water diversion for agricultural purposes. Avoid development in ecologically sensitive areas; if activities are allowed, minimize impacts and implement mitigative measures that will fully offset any loss of resources.***
- ***Restore and protect and maintain stream habitat values along the entire stream length, from the headwaters through the muliwai (nearshore marine zone created when freshwater streams flow into the marine reef system, to avoid degradation or interruption of habitat for native organisms and to provide for the health of the entire system.***
- ***To the extent possible, limit any modifications to natural gulches and streams, except for measures which are necessary for flood protection. If modifications are needed, they should minimize impacts on biological habitats and natural resources, complement the existing rural character and aesthetic quality, and maintain existing water quality and the rate and volume of freshwater run-off into near-shore waters. Drainageway modifications may include streamside vegetation and rip-rap boulder lining of stream banks; channelization should be a last resort and should be limited to v-shaped bottom channels and/or other appropriate measures that preserve environmental habitat qualities and capabilities to maintain a stream flow during low rainfall.***
- ***Enhance, restore and preserve streams while providing public access for recreational and cultural purposes.***
- ***Develop an implementation schedule with input from community and public agencies to establish permanent instream flow standards that support sound watershed management. The setting of instream flow standards should weigh the benefits of instream and noninstream uses of water resources, including the economic impact of restrictions of such uses.***

Discussion: The guidelines are not directly applicable to the Proposed Action because the only natural streams in the resort area, the Hoʻolapa and ʻŌʻio Streams, are already incorporated into the landscape of the resort and no changes are contemplated.

GOLF COURSE GUIDELINES

- ***Maintain golf courses to minimize environmental impacts such as siltation, pesticide and fertilizer runoff, and disturbance to coastal, riparian and wetland habitats.***
- ***Encourage the use of non-potable water resources for golf course irrigation.***

Discussion: The resort's golf courses are presently designed and operated in a manner that is consistent with these guidelines. The Proposed Action will also comply with these guidelines. As discussed in Chapters Two and Five the golf courses will continue to function as the resort's regional drainage control system. The golf course ponds function as retention basins. As the Palmer Course abuts the Punahoʻolapa Marsh, it was designed and constructed to preserve the integrity of the marsh. The Palmer Golf Course is presently irrigated with treated effluent from the wastewater treatment plant, an activity that will continue under the Proposed Action.

AGRICULTURAL AREA POLICIES

- ***Preserve the availability and crop production potential of agriculture in the Koʻolau Loa Sustainable Communities Plan.***
- ***Protect and preserve agricultural lands from conversion to uses that are primarily residential, industrial or commercial.***
- ***Promote and support the long-term economic viability of the agricultural industry.***
- ***Ensure that agriculture is the primary use of agricultural lands. Prohibit the improper use of agricultural lands, including the development or subdivision of agricultural designated or zoned lands for residential and other non-agricultural uses, unless accessory to agricultural use with a direct connection between those activities and the maintenance of agricultural uses on the same or nearby properties.***
- ***Encourage landowners to offer affordable long-term leases to farmers.***
- ***Protect coastal, riparian and wetland habitats from environmental impacts such as soil erosion, siltation, pesticide and fertilizer runoff, and other nonpoint source contaminants that flow from agricultural lands.***

Discussion: The Proposed Action does not propose any development of Agricultural Zoned Lands and therefore these policies do not apply directly. However, as discussed in the SEIS, a conservation easement covering the agricultural lands *mauka* of Turtle Bay Resort that are owned by TBML, a separate but related entity to TBR, is presently being negotiated. It is the intention of TBML that the easement will preserve those lands for agricultural farming and recreational uses in perpetuity. At the same time, the Farmers Market included in the Proposed Action will strengthen the relationship between the resort and the *mauka* agricultural lands by providing an immediate outlet for the sale of crops and agricultural products produced on the *mauka* lands, and by promoting a farm-to-table program for the resort. TBR and TBML discourages the use of the *mauka* agricultural lands for residential use, but recognizes the need for a continuous presence of on those properties for the purposes of security. As discussed in Chapter Five, the development of flood retention basins in the *mauka* area is presently being considered as a means to further improve near shore water quality.

AGRICULTURAL AREA GUIDELINES

- ***Maintain adequate buffers between agricultural lands and new residential development, with consideration given to prevailing winds and the noise or air-borne emissions associated with the type of agricultural operation. Allow for appropriate economic uses of buffer zones and if the buffer zone must remain vacant, provide for it to be assessed at a lower property tax rate than productive agricultural land.***
- ***Enforce permitted uses on agricultural lands to ensure that the use is contributing to meaningful and credible agricultural production on the same or nearby properties.***
- ***Allow facilities necessary to support intensive cultivation of arable agricultural lands to be located in agricultural areas.***
- ***Allow recreational or educational programs or other activities which provide supplemental income necessary to sustain the primary agricultural activity, as long as they are compatible with the character of the rural agricultural areas and are accessory to the primary agricultural use of the site.***
- ***Use best management practices and conservation procedures to reduce soil erosion, siltation, and nonpoint source runoff.***
- ***Expand the use of alternative and renewable water resources for agricultural use, where appropriate.***
- ***Support conservation initiatives of the Windward O'ahu Soil and Water Conservation District and encourage farmers to apply for, maintain and implement conservation plans.***
- ***Establish economic and tax incentives to provide long-term agricultural leases.***
- ***Identify and protect Important Agricultural Lands in accordance with Act 183 (2005).***
- ***Encourage governmental agencies and landowners to upgrade and maintain adequate agricultural infrastructure, including roadways and irrigation systems.***

Discussion: The Proposed Action does not propose any development of Agricultural Zoned Lands and therefore these guidelines do not apply directly. However, TBML, an affiliate of TBR, is presently negotiating a conservation easement to preserve the agricultural lands *mauka* of Kamehameha Highway. These existing lands constitute a significant cluster of concentrated agricultural activity in the area, and the Proposed Action will not change the character of this use, as these agricultural lands are not part of the SEIS Lands or the Proposed Action.

The Turtle Bay Resort golf courses establish a natural open space buffer between the TBML agricultural lands on the *mauka* side of Kamehameha Highway and the hotel and residential uses in the interior of the SEIS Lands. As the *mauka* agricultural lands has~~ve~~ been in continuous and active use, agricultural operations are well established and no major changes are contemplated that would result in the need for new buildings or operational facilities. The Proposed Action

includes the provision of a Farmers Market on the *makai* side of Kamehameha Highway as a means of concentrating activity in one area, as opposed to it being dispersed through a number of individual produce stands strung along the highway. The new policies appear to be most focused on actions that the City and County of Honolulu can take to support agriculture. The applicant is supportive of these policies. The applicant supports the preparation of a management plan that will govern agricultural uses of the *mauka* lands in a manner consistent with the new policies.

PARKS AND RECREATION AREAS POLICIES

- ***Ensure that the development of park facilities avoids adverse impacts on natural resources or processes in the coastal zone or any other environmentally sensitive area.***
- ***Ensure that park facilities, recreational resources and recreational activities are compatible with surrounding land uses and rural character.***
- ***Provide safe and convenient access to parks and recreation areas.***
- ***Develop an integrated system of bikeways to link parks and recreational areas.***
- ***Expand or provide new community-based parks in areas where there is a lack of sufficient facilities and where recreational needs of residents are not being adequately met.***
- ***Ensure that physical improvements and landscaping features contribute to the ae~~a~~sthetic cultural and/or environmental value of these open space elements.***

Discussion: As discussed in Chapter Three, the Proposed Action includes the development of five new parks within the resort, four of which are required by the Unilateral Agreement. Together with a total of 12 public shoreline access ways, these parks will benefit the resort community as well as the entire region by providing new recreational resources that are secure, accessible, and well-maintained. The proposed parks will be designed in a manner that is consistent with the resort's and city's design standards and landscaping will provide adequate screening from abutting resort uses as necessary. The new shoreline parks will be linked by a continuous pedestrian trail that will extend the length of the resort coastline.

PARK GUIDELINES

- ***Link parks and recreational areas with the surrounding community using connecting roadways, bikeways, walkways and landscape features or architectural design.***
- ***Establish community gardens to expand gardening opportunities for area residents.***
- ***Establish management strategies that minimize overcrowding and prevent the negative consequences of overuse.***
- ***Use generous landscaping or other appropriate visual screens to minimize the visibility of perimeter fencing and maintenance facilities from surrounding areas.***

- ***Provide landscaping along major roadways to serve as linear open space features and create an inviting environment for walking, jogging and biking.***

Discussion: The proposed resort expansion constitutes its own "community", and the provision of five new parks within the 852-acre area will ensure that each new residential area will be developed in relative close proximity to a park. The Proposed Action includes the development of a continuous pedestrian trail to facilitate pedestrian and bicycle access to the entire resort coastline. This trail will link four of the parks together. TBR is presently exploring the possibility of making a portion of the separate *mauka* agricultural lands available for use as a community garden for residents of the resort. As the four shoreline parks are distributed over a coastline extending over three and half miles, park users will likely be distributed along the coastline. TBR recognizes that the park at Kawela Bay will likely become a focal point, and believes that careful management of parking will help to prevent overcrowding. As landscaping is a key element of the resort setting, the Turtle Bay Resort already complies and will continue to comply with the proposed landscaping policies.

HISTORIC AND CULTURAL RESOURCE POLICIES

- ***Encourage all activities within the Koʻolau Loa area to respect traditional and customary rights of Native Hawaiian practitioners in respective ahupua`a.***
- ***Acknowledge the cultural and historic significance of kuleana lots.***
- ***Integrate physical references that emphasize Koʻolau Loa's history and cultural roots into the developed landscape.***
- ***Preserve, protect, and if appropriate, restore historic and cultural resources associated with Native Hawaiian and pre-contact periods.***
- ***Preserve and protect significant post-contact cultural and historic features such as those established during the plantation era.***
- ***Apply appropriate management policies and practices in the treatment of historic and cultural resources. Such practices may range from total preservation to integration with contemporary uses.***
- ***Retain, wherever possible, significant vistas associated with archaeological features and culturally sensitive areas.***

Discussion: As described in Appendix A, TBR is committed to the development and operation of the resort in a culturally sustainable manner. This includes ensuring that resort's employees are well versed in the resort's history and cultural roots. Educational materials, programs, exhibits and signage will also contribute to this effort. The philosophy of *Tomorrow's Ahupuaʻa*, upon which the Proposed Action is inspired, is specifically intended to celebrate the *ahupuʻa* and their respective delineations. As discussed in Chapter Five, a Supplemental Archaeological Inventory Survey has been conducted on the property, and once approved by the State, will provide the basis for implementing archaeological mitigations including data

recovery and site preservation as determined by the regulating authority. Although the property has undergone several phases of occupation (pre-contact, post-contact ranching, plantation, and military uses) and, as a result, cultural resources from the earliest periods have been mostly lost, the educational programs associated with *Tomorrow's Ahupuʻa* will offer visitors, guests, and residents opportunities to learn about the resort property's rich history. Also as discussed in Chapter Two, a cultural impact assessment was conducted for the Proposed Action and its recommendations are presented in the SEIS.

HISTORICAL AND CULTURAL RESOURCE GUIDELINES

- ***Implement in situ preservation and appropriate protection measures for the sites that have high preservation value because of their good condition or unique, historic, cultural and archaeological features, and for which the State Historic Preservation Officer has recommended such treatment in conjunction with the community.***
- ***Consider the particular qualities of a site and its relationship to its physical surroundings when determining the appropriate treatment for a site. Determine the following on a site-by-site basis in consultation with the State Historic Preservation Officer, Oʻahu Burial Council, local Hawaiian cultural organizations, and the owner of the land on which the site is located, and the community:***

  - appropriate preservation methods;

  - appropriate delineation of site boundaries and setbacks;

  - appropriate restrictions on uses and development of adjacent lands; and

  - the appropriateness of public access and interpretation.

Discussion: As discussed in the SEIS, a new Supplemental Archaeological Inventory Survey (SAIS) has been completed for the Proposed Action and has been submitted to the State Historic Preservation Division of the Department of Land and Natural Resources for approval. It includes recommendations for the preservation of archaeological sites identified as significant. The submittal of the SAIS constitutes the continuation of a formal process to ensure that historical and cultural features are preserved and protected in a manner consistent with all legal requirements. As part of this process, representatives of TBR have consulted and will continue to consult with local cultural organizations and community organizations. In addition, TRB has developed a Cultural Management Plan that sets forth defined protocols for operations and development staff and vendors to follow upon disturbance of any areas on the property in accordance with State Historic Preservation Guidelines and best industry practices. The *Tomorrow's Ahupuaʻa* philosophy that inspires the Proposed Action represents an initiative taken by TBR to ensure that the Proposed Action is conducted in a culturally sustainable manner, as expressed in Appendix A of the SEIS.

RESIDENTIAL USES POLICIES

- ***Maintain sufficient inventory within the Community Growth Boundary to accommodate existing and future housing needs of residents within the Koʻolau Loa are***

by supporting limited expansion of residential areas in Kahuku and Lāʻie, and a new community in Malaekahana to meet existing pent-up demand and provide land for affordable work force housing.

- ***Increase housing affordability to Koʻolau Loa residents.***
- ***Maintain the existing inventory of residential land for the communities of Kaʻaʻawa, Hauʻula and Punaluʻu. Future residential needs in these communities will be met through infill residential development.***
- ***Encourage and support the development of affordable housing in the region in order to address existing pent-up demand for housing, and overcrowded housing conditions.***

Discussion: As discussed in Chapter Three, the Proposed Action includes the provision of new affordable housing opportunities in excess of what has been required under the UA. The discussion in the SEIS's socio-economic impact analysis demonstrates that the Community Housing Units generally meets the demand that is anticipated to be result from implementation of the Proposed Action. Design Guidelines already established for the resort will ensure that the future expansion plans will be implemented in a manner that is consistent with the existing UA.

COMMERCIAL AREAS POLICIES

- ***Support the maintenance, redevelopment, or expansion of various types of commercial establishments in the region in keeping with their type and purpose, and appropriateness to the character and needs of the communities they serve.***
- ***Maintain and enhance the rural character of the recognized commercial areas including: Kahuku Country Town, Lāʻie Rural Regional Commercial Center, Hauʻula Rural Community Commercial Center, and various country store sites within the region.***

Discussion: Although these policies are beyond the direct control of the resort, the resort owners are supportive of their intent, because they will benefit the resort's residential and visitor population. The Proposed Action includes limited commercial development (the Gathering Place and the Farmers Market) described in Chapter Three. In both instances, the scale and design of the proposed commercial development will be consistent with the rural character envisioned for the resort.

VISITOR FACILITIES

The Pre-Final Draft presented to the Honolulu Planning Commission includes the following community concerns about the Turtle Bay Resort and Coastline:

- ***Preserving the uninterrupted shoreline and scenic view plane, as well as the cultural and historic significance of the area for future generations.***

Discussion: The Proposed Action complies with this policy by increasing the shoreline setback beyond what is required under the Unilateral Agreement to ensure that shoreline and scenic view places are uninterrupted. The Proposed Action also reduces building height from the allowable building height limit. Incorporation of the *Tomorrow's Ahupua'a* philosophy in the Proposed Action is specifically intended to ensure that the resort operates now, and in the future, in a cultural sensitive and sustainable manner as discussed in Appendix ~~B~~ A of the SEIS.

- ***Providing for appropriate recreational and other uses that are compatible with existing land uses.***

Discussion: The Proposed Action includes five new parks and twelve new shoreline public access ways for the resort. These facilities, together with the coastal pedestrian trail that will extend the length of the resort coast, will provide recreational opportunities for the guests, visitors and residents of the resort as well as the general community. The elements of the Proposed Action will be designed and built in a manner that is compatible with the existing resort.

- ***Maintaining the viability of the existing Turtle Bay Resort, restaurants, condominiums and golf courses as an employment base for the region.***

Discussion: Compliance with this policy will be achieved through attainment of the project's development objectives presented in Chapter Two Section A of the SEIS.

- ***Minimizing the impacts of future development.***

Discussion: The cumulative result of the mitigation measures presented in Chapter Five of the SEIS is to ensure that the impacts of the Proposed Action are minimized.

- ***Providing for appropriate agricultural and other compatible uses within the* mauka *area.***

Discussion: There are no agricultural lands included in the SEIS Lands or as part of the Proposed Action. The *mauka* agricultural lands owned by TBML are proposed for long term preservation through the enactment of a Conservation Easement that is presently being negotiated.

- ***Developing design guidelines for any proposed additional structures to assure their compatibility with the rural character of the region.***

Discussion: The Proposed Action will comply with existing design guidelines that were previously approved by the City and County of Honolulu.

- ***Acknowledging existing land use designations and development approvals that have already been granted.***

Discussion: The Proposed Action is consistent with existing land use designations and represents significantly less development than is currently approved for the SEIS Lands under existing land use permits and approvals previously granted for the resort expansion.

VISITOR FACILITIES POLICIES

- ***This area should be preserved for open space and low impact recreation within the context of existing land use approvals. No further approvals resulting in an expansion of the existing resort beyond what is consistent with the already granted land use approvals should be granted.***

Discussion: The Proposed Action fulfills this policy as described throughout the SEIS. The Proposed Action reduces unit density over 60 percent from what is allowable under existing land use approvals. The Proposed Action contemplates an expansion of the existing resort in a manner that is consistent with existing land use approvals.

RESORT GUIDELINES

- ***Shoreline Access – Preserve public access to the shoreline.***
- ***Natural Environment – Preserve and enhance existing features of topography, landscape and views unique to the area.***
- ***Cultural Resources – Protect cultural resources and practices within the area.***

Discussion: The Proposed Action will not only preserve existing public access, but will expand it by providing 12 public shoreline access ways along the shoreline as well as four new shoreline parks. The inclusion of generous shoreline setbacks will ensure that the area's unique topography, landscape, and coastal views will be preserved. The existing features along the coastline, including the dune system and the coastal strand vegetation will be preserved. The latter will be enhanced by the selective thinning of invasive ironwood trees to allow the native plant understory to recover and flourish. The SEIS includes a cultural impact assessment to document cultural resources and practices within the project area and presents specific measures to mitigate the impacts that may result from the Proposed Action.

TRANSPORTATION SYSTEMS POLICIES

- ***To retain Koʻolau Loa's role as a predominantly rural area with limited future growth, its transportation system should provide:***
  - ***Adequate and safe access between communities, shopping and recreation areas in Koʻolau Loa.***

- ***Highway improvements, developed in consultation with Koʻolau Loa communities, which emphasize highway safety as the highest priority while providing efficient, pleasant travel experiences for all users.***
- ***Adequate capacity for peak travel to and from community centers.***

- ***Promote travel demand management measures (e.g., carpool and vanpool programs) for both commuting and local trips.***
- ***Provide an integrated system of bikeways as a means of transportation to and from work, school, shopping and recreation, including rides to playgrounds and beach parks.***
- ***Support a multi-modal transportation system to reduce automobile dependency. Provide more opportunities and support facilities for convenient and safe alternative modes of transportation, including bus, pedestrian, and bicycle travel, and other modes of personal transportation.***

Discussion: As discussed in Chapters Two, Three and Five of the SEIS, the resort is served by a single two-lane highway which is subject to traffic congestion during peak periods and surf-related activities and events. The improvements to the highway envisioned in the Proposed Action are intended to improve highway safety in the vicinity of the resort in the form of new signalized and channelized intersections. However, the provision of a new roadway system within the resort contributes to capacity related issues in the vicinity of the Turtle Bay Resort. Once in place, the new internal roadway system will provide resort guests, residents and visitors with an opportunity to travel from one end of the resort to the other without having to utilize Kamehameha Highway. This will help to alleviate some demand from the highway in the vicinity of the resort. As noted in the traffic study presented in the SEIS at Appendix I, the peak hour travel times associated with the resort operations differ significantly from the peak hours experienced at the limits of the study corridor (Kahaluʻu and Haleʻiwa). The practical result of this is that the resort's peak travel periods do not coincide with those of the region, meaning that resort-generated traffic does not necessarily exacerbate morning and afternoon rush-hour periods. TBR's commitment to providing a fair-share contribution for regional improvements will benefit the entire transportation system. Inclusion of specific measures in the Proposed Action to mitigate traffic-related impacts by providing alternative means of transportation (employee shuttles, expanded bus service, airport vans etc.) is consistent with the above transportation policies. As discussed in Chapter Five, TBR is also exploring opportunities for expanding the region's bikeway system. The development of the shoreline trail along the length of the property will contribute directly to this effort. TBR has also proposed the implementation of a Traffic Demand Management (TDM) program, which will make vehicular traffic associated with the Resort more efficient. For more detail on the TDM program, please refer to section B.1.b of Chapter Five of the Draft SEIS.

TRANSPORTATION SYSTEM GUIDELINES

- ***Locate public bus stops to be convenient and accessible to residential areas and hubs of community activity. Use architectural design elements that complement the natural setting and generously shelter passengers.***

- ***Promote the use of transportation demand management strategies, including measures such as ridesharing and vanpooling, improved bus service and routes, non-vehicular travel modes (both motorized and non-motorized modes), and modified work hours, as well as work from home options to reduce commutes.***
- ***Provide safety improvements along Kamehameha Highway.***
- ***Identify and establish emergency/secondary access routes to provide for the safe and efficient evacuation of residents and the movement of emergency response personnel (e.g. fire, police, ambulance) in the event that Kamehameha Highway is impassable due to natural disasters or other emergency incidents.***
- ***Work with the responsible State and City agencies and private landowners to develop a regional pedestrian/bikeway system linking parks, schools and commercial areas with residential communities.***

Discussion: The Proposed Action is consistent with and supportive of each of these guidelines. There are presently public bus stops along Kuilima Drive, and new bus stops will be added to the new internal roadway as needed. The SEIS specifically addresses TDM strategies in Chapter Five Section B.1.b. The Proposed Action includes specific highway safety improvements to Kamehameha Highway fronting the resort. The new internal roadway system for the resort, presented as part of the Proposed Action, will create two new intersections with Kamehameha Highway, thereby allowing emergency vehicles to bypass several miles of highway if it becomes impassable. The Proposed Action also includes a pedestrian/bikeway trail extending laterally along the entire coastline of the resort.

WATER ALLOCATION AND SYSTEM DEVELOPMENT POLICIES

- ***Integrate management of all potable and nonpotable water sources, including groundwater, stream water, storm water and effluent, following State and City legislative mandates.***
- ***Adopt and implement water conservation practices in the design of new developments and the modification of existing uses, including landscaped areas.***
- ***Where feasible and appropriate, encourage use of nonpotable water for irrigation of landscaping and agricultural lands to conserve the supply of potable water. Consider the use of dual water lines to allow conservation of potable water and the use of nonpotable water for irrigation and other appropriate uses, where practical.***

Discussion: Implementation of the Proposed Action will continue to focus on the integrated management of potable and non-potable water sources. The resort presently utilizes a dual system, and that system will continue to be used and expanded under the Proposed Action. The use of treated effluent from the wastewater treatment plant to supplement irrigation

requirements for one of the resort's golf courses in consistent with the above policies. Appendix A presents specific policies and programs that will be implemented at the resort to address water resource conservation.

WASTEWATER TREATMENT POLICIES

- ***Encourage coordination between public agencies and private landowners in addressing adequacy of wastewater treatment within the region.***
- ***Support alternative technologies for wastewater treatment that reflect the community's values and rural character.***
- ***Treat and beneficially use, where feasible, reclaimed water for irrigation as a water conservation measure and composted sewage sludge as a soil enhancement.***

Discussion: The wastewater treatment plant serving the resort was expanded in the early 1990s in anticipation of the resort expansion as allowable under existing land use approvals and has sufficient capacity to address the reduced scale of development envisioned in the Proposed Action. As discussed above, all effluent generated by the resort is treated and used to supplement non-potable wells for the irrigation of the golf course. In the future, the effluent treatment is planned to be improved from R2 to R1 which will enable the treated effluent to be used for irrigation of the resort's second golf course and for common areas to the extent allowable under State regulations. The use of composted sewage sludge for soil enhancement will be considered in the future.

ELECTRICAL POWER DEVELOPMENT POLICIES

- ***Provide adequate and reliable electrical service.***
- ***Locate and design system elements such as renewable energy facilities (e.g. wind and solar), electrical substations, communication sites, and transmission lines, including consideration of underground transmission lines, to avoid or mitigate visual impacts on scenic and natural resources, as well as public safety considerations.***
- ***Discourage the use and installation of overhead utility lines and poles. Strong consideration should be given to placing replacement and new transmission lines underground to enhance viewplanes, increase highway safety and improve utility service.***
- ***Encourage the development and use of renewable energy sources and energy conservation measures.***

Discussion: The resort will continue to rely upon an underground electrical transmission system as the Proposed Action is implemented. Appendix A presents the Proposed Action's renewable energy strategy, which includes adherence to basic LEED standards. TBR is currently

implementing an energy conservation plan that includes energy efficient lighting retrofit, installation of energy conditioning and smoothing system, a roof top photovoltaic system, behavioral protocols, and other effective energy saving initiatives.

SOLID WASTE HANDLING AND DEVELOPMENT POLICIES

- ***Support implementation of the Solid Waste Integrated Management Plan Update.***
- ***Provide adequate resources for trash removal, clean up of illegal dumps, and enforcement of antidumping laws.***
- ***Promote recycling and other source reduction programs dedicated to minimizing the amount of solid waste generated.***

Discussion: The Proposed Action supports implementation of the Solid Waste Integrated Management Plan Update. Appendix A provides strategies to minimize solid waste generation at the resort resulting from the Proposed Action. Recycling and waste diversion are central to these strategies.

DRAINAGE SYSTEM POLICIES

- ***Ensure that the maintenance and use of drainage areas are consistent with the Ko`olau Loa Watershed Management Plan.***
- ***Improve drainage systems in the region to provide adequate protection from flooding to protect the quality of nearshore waters.***
- ***Encourage the State to assess areas of Kamehameha Highway where the roadway diverts or detains storm-water runoff causing localized flooding of the highway and abutting properties.***

Discussion: The Proposed Action is consistent with the Koʻolau Loa Watershed Management Plan, as discussed in Chapter Six Section A.7. Storm water management at the resort will continue to be an important management issue as the Proposed Action is implemented. As described in Chapters Two and Five, the golf courses serve a critical component in the management of runoff. Existing ponds serve as retention basins that help to absorb storm-related runoff and minimize flooding. Improvements recommended to the resort's existing drainage ways (East Main Drain and West Main Drain) will help to improve how the entire system functions. Although not included in the Proposed Action, the potential restoration of Kawela Stream to its original alignment discussed in the SEIS will help to improve water quality in Kawela Bay. Likewise, TBR is considering the feasibility of developing retention basins *mauka* of Kamehameha Highway in cooperation with the owner of such lands. If completed, such basins will contribute not only to improved ocean water quality but also to groundwater

recharge. Continued improvements to Punahoʻolapa Marsh in keeping with the Unilateral Agreement will ensure its role as an important element in regional flood control on the resort property.

DRAINAGE SYSTEM GUIDELINES

- ***Maintenance – Regularly maintain and clean drainage ways and flood mitigation structures of debris to ensure that they achieve the purpose for which they were designed.***
- ***Surface Runoff Improvements – Employ best management practices to minimize runoff exiting from conservation and agricultural land uses, and other areas that may generate sediment and debris.***

Discussion: TBR regularly maintains the existing drainage system and will continue to do so under the Proposed Action. As discussed above, the resort is considering the development of retention/detention basins *mauka* of Kamehameha Highway to intercept sediment and debris before it reaches the resort drainage system.

A. 12. ~~Complete Streets~~ North Shore Sustainable Communities Plan

Relationship of the Proposed Action to the North Shore Sustainable Communities Plan (2011)

The North Shore SCP states:

> ***"On a broader scale, there is a need to recognize the connection between the North Shore and its neighboring regions (i.e., Central Oʻahu, Koʻolau Loa and Waiʻanae), and the many ways that events and activities occurring in one region may affect the others." (2011 NSSCP, page 2-12)***

Based upon comments received during the extensive outreach process conducted by TBR during the formulation of the Proposed Action, the principle connections between North Shore and Koʻolau Loa relate to visitor accommodations and traffic. While other connections exist, e.g. shared infrastructure and public facilities, concerns about visitors and traffic were paramount, and are, therefore, the focus of the discussion that follows.

Visitor Accommodations: The North SCP states:

> ***"An increase in the number of visitors seeking affordable vacation opportunities on the North Shore, combined with the limited inventory and absence of moderate-priced, mid-quality overnight accommodations, has resulted in the growth of illegal short term vacation rentals. Many North Shore residents are concerned that using homes as vacation rentals***

> ***results in noise, traffic and parking problems for neighboring homes, and disrupts the stability and character of a community due to the transient nature of the tenants… the community feels strongly that any additional overnight accommodations for visitors in the North Shore Sustainable Communities Plan area should be prohibited until community concerns about illegal vacation rentals are resolved and enforcement mechanisms to eliminate the current illegal operations are in place." (2011 NSSCP, pages 3-62 and 3-63)***

This sentiment encapsulates the dilemma facing the North Shore. In 2012, Hawai'i received over eight million visitors, with the vast majority of them arriving on O'ahu and staying on the island for at least a portion of their visit. The North Shore is one of the most alluring visitor destinations on the island, and as a result thousands of visitors flock to the North Shore on a daily basis. While the winter surf season is a particular attraction, the calm quality of the North Shore beaches and the quaint character of historic Hale'iwa Town draws visitors year round. The lack of overnight accommodations on the North Shore requires that the vast majority of them either rent a car, take a tour bus or van shuttle, or ride TheBus to visit the famed North Shore, resulting in high volumes of visitor-related traffic on Kamehameha Highway.

Although the Proposed Action will accommodate only a very small fraction of North Shore visitor arrivals, it will nonetheless aid in addressing this dilemma. Some visitors will have an opportunity to enjoy overnight accommodations in close proximity to the North Shore. The reduction in density presented in the Proposed Action diminishes this positive contribution over what is allowable under existing land use approvals for the Turtle Bay Resort. Yet, the positive contribution that Turtle Bay Resort makes to the regional transportation issue remains.

Transportation Systems: The North Shore SCP presents the following transportation policies:

- ***Retain both Kamehameha Highway and Farrington Highway as two-lane thoroughfares, to maintain the North Shore's rural character. Provide roadways improvements to promote pedestrian and vehicular safety and traffic efficiency.***
- ***Improve mobility and connectivity between residences, jobs, shopping, and recreation areas on the North Shore.***
- ***Ensure safe and efficient access to adjacent areas, especially Central O'ahu.***
- ***Support a multi-modal transportation system to reduce automobile dependency. Provide more opportunities and support facilities for convenient and safe alternative modes of transportation, including bus, pedestrian and bicycle travel, and other modes of personal transportation.***

- ***Ensure that existing regional roadways are adequate to accommodate proposed development proposals, prior to the construction of such developments. (2011 NSSCP, pages 4-8 and 4-9)***

The Proposed Action is consistent with and supportive of the first four policies. The improvements recommended for Kamehameha Highway in the vicinity of the Turtle Bay Resort, together with TBR's commitment to donate its fair share of the costs for regional roadway improvements, are key components of the Proposed Action. These improvements will help to ensure the safety of travel on Kamehameha Highway. TBR's commitment to providing alternate means of transport to both its employees and its guests help to increase mobility and connectivity on the North Shore, especially between residences, jobs and recreation areas. Together with alternative means of transport, the Proposed Action's inclusion of an extensive pedestrian trail along the resort's shoreline will help to further implement the multi-modal system envisioned in the North Shore SCP.

The Proposed Action may be considered by some to be inconsistent with the last policy that requires concurrency. Since the visitor industry will likely remain the main economic driver of the State's and County's economic policies, and the North Shore is one of O'ahu's principle visitor destinations, travel demand on Kamehameha Highway will put more pressure on its highway capacity. The policy to retain Kamehameha Highway as a two-lane highway ensures that there will be no increase in highway capacity in the foreseeable future. However, while the concurrency policy may be used to promote a limited growth or limited development scenario in the North Shore SCP area, it is inconsistent with the connectivity statement presented in the North Shore SCP because the highway serves three other districts in addition to the North Shore.

A. ~~12~~ 13. Complete Streets

In 2012, the City and County of Honolulu adopted Bill 26 (2012), adopting a Complete Streets policy to guide and direct more comprehensive and balanced planning, design, and construction of City transportation systems. As set forth in the ordinance, the City now encourages the development of transportation facilities or projects that are planned, designed, operated, and maintained to provide safe mobility for all users. The ordinance identifies the following objectives:

(1) Improve safety;
(2) Apply a context sensitive solution process that integrates community context and the surrounding environment, including land use;
(3) Protect and promote accessibility and mobility for all;
(4) Balance the needs and comfort of all modes and users;
(5) Encourage consistent use of national industry best practice guidelines to select complete street design elements;
(6) Improve energy efficiency in travel and mitigate vehicle emissions by providing non-motorized transportation options;

(7) Encourage opportunities for physical activity and recognize the health benefits of an active lifestyle;
(8) Recognize complete streets as a long term investment that can save money over time;
(9) Build partnerships with stakeholders and organizations statewide; and
(10) Incorporate trees and landscaping as integral components of complete streets.

As a visitor destination area, the Resort is committed to ensuring the safety and well-being of everyone who uses its privately owned roadways and pedestrian paths. The resort supports the implementation of the Complete Streets objectives in the implementation of the Proposed Action. As discussed in Appendix A, Complete Street objectives will be included in the planning, design and operation of the proposed vehicular and pedestrian circulation system.

A. ~~13~~ 14. Hawai'i CZM Program and Special Management Area

Enforcement of the federal Coastal Zone Management Act (CZM) of 1972 has been delegated to the State and enacted as HRS Chapter 205A, HRS. The CZM area encompasses the entire State including all marine waters seaward to the extent of the State's police power and management authority, including the 12-mile U.S. territorial sea and all archipelagic waters. A CZM Certificate of Consistency is required for federal applicants, federal permits, or federal activities.

A.~~13~~ 14. a. Coastal Zone Management

The CZM Act is comprised of a number of objectives primarily related to (1) protecting and preserving the coastal zone; (2) improving the quality of coastal scenic and open space resources and ensuring that coastal dependent development such as harbors and ports, and coastal-related development such as visitor industry 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 (3) encouraging research and development of new, innovative technologies for exploring, using, or protecting marine and coastal resources.

Following is a summary of the project's conformance with the ten objectives of the coastal zone management program.

1A: Provide coastal recreation opportunities accessible to the public.

Discussion: The Proposed Action exceeds the public access requirements enacted by ordinance in the 1980s by providing an additional four public access ways along the coastline.

2A: 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.

Discussion: The applicant has imposed an expanded shoreline setback area beyond that which is required by ordinance as a means of ensuring that the coastal dune system (the most likely repository of cultural artifacts) is preserved. In addition, an extensive subsurface testing program was implemented as part of the project's supplemental archaeological inventory survey

to confirm the construction of new structures will not impact archaeological resources. Finally, a cultural impact assessment has been prepared to document the presence of cultural features or activities associated with the SEIS Lands and to ensure that they are not adversely impacted by the proposed development.

3A: Protect, preserve, and, where desirable, restore or improve the quality of coastal scenic and open space resources.

Discussion: The proposed project preserves the rural character and open space qualities of the property by concentrating development around the existing hotel and limiting low-density residential development to outlying areas. The applicant has also imposed a voluntary expansion of the requisite shoreline setback area to increase the amount of open space along the shoreline.

4A: Protect valuable coastal ecosystems, including reefs, from disruption and minimize adverse impacts on all coastal ecosystems.

Discussion: The aforementioned shoreline setback area will ensure that no development encroaches into coastal areas. The applicant also proposes the restoration of Kawela Stream to its original alignment to remove the major source of sediment loading on Kawela Bay in an effort to improve its water quality. Further, the applicant supports the creation of a Marine Life Conservation District at Kawela Bay to help protect the sensitive coastal ecosystem there.

5A: Provide public or private facilities and improvements important to the State's economy in suitable locations.

Discussion: The proposed expansion plan is consistent with the Oahu General Plan, the Koʻolau Loa Sustainable Communities Plan, and zoning ordinances for the property; all of which designate the SEIS lands as a visitor destination area. However, the proposed expansion plan reduces the density of development over that which was previously approved by ordinance.

6A: Reduce hazard to life and property from tsunami, storm waves, stream flooding, erosion, subsidence, and pollution.

Discussion: A tsunami warning system has already been installed along Kamehameha Highway fronting the Resort. The aforementioned expanded setback area will locate structures further inland where they will be built and elevated to meet FEMA flood zone criteria. The Proposed Action also includes provisions to improve flood control on the SEIS lands.

7A: Improve the development review process, communication, and public participation in the management of coastal resources and hazards.

Discussion: While this requirement is largely a function of governmental authority, the applicant is contributing to improved communication and public participation by preparing the SEIS and posting all relevant documents on its public website.

8A: Stimulate public awareness, education, and participation in coastal management.

Discussion: Through the preparation of the SEIS, the applicant hopes to stimulate public awareness about coastal management issues relevant to the Resort.

9A: Protect beaches for public use and recreation.

Discussion: Through the provision of additional public shoreline access ways and the expansion of the shoreline setback area over that which is required by ordinance, the applicant hopes to facilitate greater public access to the Turtle Bay shoreline.

10A: Promote the protection, use, and development of marine and coastal resources to assure heir sustainability.

Discussion: The applicant's support of a Marine Life Conservation District at Kawela Bay will ensure that traditional and customary practices related to fishing and gathering will continue, while limiting those activities, such as jet-skis, boat anchoring, and fish collecting that pose the greatest threat to the marine environment.

~~A.13~~ 14. b. Special Management Area

The State CZM review authority has been, in turn, delegated to the counties through the Special Management Area (SMA) controls for development along the shoreline. In the late 1970s, each county delineated the SMA around its coastline, varying in interior depth from a few hundred feet to several miles inland from the coastline. Within the SEIS lands, the SMA extends from the shoreline to Kamehameha Highway. Following is a discussion of the relationship of the Proposed Action to the guidelines presented in Chapter 205A-26.

(*1*) *All development in the special management area shall be subject to reasonable terms and conditions set by the authority in order to ensure:*

(A) *Adequate access, by dedication or other means, to publicly owned or used beaches, recreation areas, and natural reserves is provided to the extent consistent with sound conservation principles;*

Discussion: The Proposed Action includes the provision of eight public shoreline access ways along the coast of the SEIS lands as required by ordinance, plus an additional four public shoreline access ways to be provided by the applicant.

(B) *Adequate and properly located public recreation areas and wildlife preserves are reserved;*

Discussion: The applicant's provision of an expanded shoreline setback area, additional public shoreline access ways over those required by ordinance, and expanded park areas, together with the preservation of Punahoʻolapa marsh will ensure that adequate and properly located public recreation areas and wildlife preserves are reserved.

(C) *Provisions are made for solid and liquid waste treatment, disposition, and management which will minimize adverse effects upon special management area resources; and*

Discussion: The resort is served by a privately funded and operated wastewater treatment plant. The existing size of the plant is adequate to serve the demand imposed by the proposed resort expansion plan. Solid waste collection and disposal is contracted to a private firm and that arrangement will continue under the proposed expansion plan.

(D) *Alterations to existing land forms and vegetation, except crops, and construction of structures shall cause minimum adverse effect to water resources and scenic and recreational amenities and minimum danger of floods, wind damage, storm surge, landslides, erosion, siltation, or failure in the event of earthquake.*

Discussion: Given the flat character of the existing topography, the proposed project will require no significant alteration to existing land forms. Alterations to vegetation will be limited to the grubbing of development sites in preparation for new construction, selective thinning and removal of invasive ironwood trees and the removal of some vegetation within the marsh in an effort to increase the amount of open water as bird habitat. These activities are not anticipated to have an adverse impact upon water resources, scenic vistas, or recreational amenities. The proposed development will be constructed in compliance with all applicable building and developed regulations to minimize danger from floods, wind damage, storm surge, erosion, siltation, or failure from earthquakes. Given the existing topography, the potential for landslides on the property does not exist.

(2) No development shall be approved unless the authority has first found:

(A) *That the development will not have any substantial adverse environmental or ecological effect, except as such adverse effect is minimized to the extent practicable and clearly outweighed by public health, safety, or compelling public interests. Such adverse effects shall include, but not be limited to, the potential cumulative impact of individual developments, each one of which taken in itself might not have a substantial adverse effect, and the elimination of planning options;*

Discussion: Based upon the findings of the SEIS, the proposed project will not result in a substantial adverse environmental or ecological effect over the long term. While the Proposed Action will result in ecological impacts, these are not anticipated to be long-term significant adverse impacts because they are short-term impacts related to construction. Anticipated beneficial impacts included the restoration of the Kawela Steam alignment as a means to improved water quality in Kawela Bay.

(B) *That the development is consistent with the objectives, policies, and special management area guidelines of this chapter and any guidelines enacted by the legislature; and*

Discussion: Based upon the findings of the SEIS, the proposed project has been found to be consistent with the objectives, policies, and special management area guidelines.

(C) *That the development is consistent with the county general plan and zoning. Such a finding of consistency does not preclude concurrent processing where a general plan or zoning amendment may also be required.*

Discussion: The proposed project is consistent with the Oʻahu General Plan, the Koʻolau Loa Sustainable Communities Plan, and existing zoning.

(3) The authority shall seek to minimize, where reasonable:

(A) *Dredging, filling or otherwise altering any bay, estuary, salt marsh, river mouth, slough or lagoon;*

Discussion: Activities associated with the expansion of open water areas within Punahoʻolapa marsh and the rerouting of existing drainage ways will be conducted in a manner consistent with and in compliance with all application regulations and controls.

(B) *Any development which would reduce the size of any beach or other area usable for public recreation;*

Discussion: The Proposed Action does not result in the reduction in size of any beach or public recreation area.

(C) *Any development which would reduce or impose restrictions upon public access to tidal and submerged lands, beaches, portions of rivers and streams within the special management areas and the mean high tide line where there is no beach;*

Discussion: The Proposed Action will not impose any restriction upon public access to tidal and submerged lands, beaches, portions of rivers, or the mean high tide line.

(D) *Any development which would substantially interfere with or detract from the line of sight toward the sea from the state highway nearest the coast; and*

Discussion: Given the size of the property and its physical proximity to Kamehameha Highway, the Proposed Action is not anticipated to substantively interfere or detract from the line of sight toward the sea.

(E) *Any development which would adversely affect water quality, existing areas of open water free of visible structures, existing and potential fisheries and fishing grounds, wildlife habitats, or potential or existing agricultural uses of land.*

Discussion: Based on the findings of the SEIS, the Proposed Action will not adversely affect water quality, existing areas of open water, existing and potential fisheries and fishing grounds, wildlife habitats, or potential or existing agricultural land uses.

A. ~~14~~ 15. State of Hawai'i Environmental Protection Act (Chapter 343, HRS)

Chapter 343, HRS, Hawai'i's environmental protection act, establishes the procedures by which environmental impacts are disclosed. The rules governing the implementation of Chapter 343 are found in Section 11-200, Hawaii Administrative Rules (HAR). HAR, §11-200-12, establishes thirteen significance criteria which agencies shall use in evaluating an action's impacts. Following is a discussion of how the proposed action relates to the thirteen criteria.

Pursuant to subparagraph 12, ...an action shall be determined to have a significant effect on the environment if it:

(*1*) *Involves an irrevocable commitment to loss or destruction of any natural or cultural resource;*

Discussion: The Proposed Action will impact cultural resources in the region. However, these impacts will be mitigated through ~~the implementation of the~~ a commitment to the philosophy of *Tomorrow's Ahupua'a* ~~concept plan~~ as described in Chapter Two and Appendix A of the SEIS, including ~~. The Plan includes~~ the implementation of a Cultural and Natural Resource Management Plan to guide the management and preservation of cultural resources.

(*2*) *Curtails the range of beneficial uses of the environment:*

Discussion: The range of beneficial uses of the property's environment is guided by the County's General Plan which designates the property as a Visitor Destination Area. The proposed project is consistent with the planned beneficial use of the area. The proposed project increases the range of beneficial uses for the environment by providing additional visitor units at the resort, affordable and market-priced housing units, parks and open space, and increased connectivity with surrounding roads, infrastructure, services, and public facilities.

(*3*) *Conflicts with the state's long-term environmental policies or goals and guidelines as expressed in chapter 344, HRS, and any revisions thereof and amendments thereto, court decisions, or executive orders;*

Discussion: The stated purpose of Chapter 344 is to establish a state policy which will encourage productive and enjoyable harmony between people and their environment, promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of humanity, and enrich the understanding of the ecological systems and natural resources important to the people of Hawai'i. The proposed project complies with the policies, goals and guidelines of Chapter 344. The project proposes to create a master planned resort expansion that will be integrated with regional transportation network and infrastructure

systems, and improve the quality of life for residents by providing affordable housing near employment centers.

(*4*) *Substantially affects the economic or social welfare of the community or State;*

Discussion: The Proposed Action will have a beneficial impact upon the economic and social welfare of surrounding communities, the region and the State. While it will result in increases in traffic along Kamehameha Highway, these increases will be offset, to some degree, but the provision of new long-term employment opportunities and the provision of housing that is affordable to the community; both of which will directly benefit the residents of the region.

(*5*) *Substantially affects public health;*

Discussion: The proposed project is anticipated to have negligible impact on public health. Infrastructure systems will be constructed to comply with applicable State, DOH, and County standards and regulations.

(*6*) *Involves substantial secondary impacts such as population changes or effects on public facilities;*

Discussion: The Proposed Action is not anticipated to have a significant adverse impact upon public facilities. While it will necessitate an increase in some services, e.g. enrollment in public schools for the children of new workers, these increases are not anticipated to be significant and are more than offset by the increased economic benefits that the Proposed Action will bring to the region in terms of new tax revenues and visitor spending.

(*7*) *Involves a substantial degradation of environmental quality*

Discussion: The proposed project will involve extensive ground disturbance, including clearing, grubbing, and grading of portions of the property. The site development activities are necessary for the development. Grading and construction activities will be required to comply with applicable regulations.

(*8*) *Is individually limited but cumulatively has considerable effect upon the environment or involves a commitment for larger actions;*

Discussion: The Proposed Action does not involve a commitment for larger actions. It will result in a beneficial cumulative effect in the form of increased tax revenues and visitor spending in the region. The project's environmental impacts are mostly related to short-term construction impacts that can be mitigated through the implementation of Best Management Practices. Long-term environmental impacts are will be minimized through the implementation of the proposed Cultural and Natural Resources Management Plan.

(*9*) *Substantially affects a rare, threatened, or endangered species, or its habitat;*

Discussion: No rare, threatened or endangered plants ~~or terrestrial animals or birds~~ have been identified on the SEIS Lands. The federally endangered Hawaiian coot (Fulica alai), Hawaiian moorhen (Gallinula chloropus sandvicensis), Hawaiian stilt (Himantopus mexicanus knudseni), and Hawaiian duck (Anas wyvilliana) (collectively referred to as Hawaiian waterbirds) may occur in the vicinity of the project. The SEIS Lands are also frequented by several species of migratory birds that are protected the Migratory Bird Treaty Act (MBTA). The off shore waters are also identified as part of the Humpback Whale Marine Sanctuary. The endangered green sea turtle and Hawaiian monk seal are increasingly present along the resort coastline. (Although no Hawksbill turtles have been documented along the Turtle Bay coastline to date, it is anticipated that they may be present in the future.) However, it is not anticipated that implementation of the Proposed Action will result in a substantial adverse impact to any of these species.

(10) Detrimentally affects air or water quality or ambient noise levels;

Discussion: As discussed in Chapter Five, the Proposed Action will have no significant adverse impact upon water or air quality. A small number of existing homes along Kamehameha Highway west of the resort will be adversely impacted by increased traffic noise associated with the resort expansion. However, increases in noise can be mitigated by the homeowner through the provision of a sound attenuation barrier such as a wall or landscaping, or the installation of air conditioning in those rooms directly exposed to the highway.

(11) Affects or is likely to suffer damage by being located in an environmentally sensitive area such as a flood plain, tsunami zone, beach, erosion-prone area, geologically hazardous land, estuary, fresh water, or coastal waters;

Discussion: The Proposed Action will be implemented in a manner that conforms to prevailing flood control regulations and requirements. The Proposed Action includes shoreline setbacks in excess of what is required by law to ensure that the beach erosion does not impact proposed development sites. While portions of the property are situated within a tsunami evacuation zone, emergency evacuations plans already in place will help to ensure that the resort community can respond appropriately in during emergencies.

(12) Substantially affects scenic vistas and viewplanes identified in county or state plans or studies,

Discussion: The SEIS lands are not identified as scenic vistas or view planes on county or the state plans or studies.

(13) Requires substantial energy consumption.

Discussion: Energy consumption will be increased in relation to the proposed resort development. The project's design will include features to conserve energy and water usage as discussed in Appendix A.

A. 16. Land Use Ordinance (LUO)

The Land Use Ordinance of Honolulu, Chapter 21 Revised Ordinances of Honolulu, establishes the land development rules enforced by the City and County of Honolulu. As discussed in Section B.12 of Chapter Three, Ordinance 86-99, adopted in August 1986, established the current zoning districts for the SEIS Lands. The Proposed Action has been formulated to conform to these zoning districts, as well as to the Unilateral Agreement that was adopted with Ordinance 86-99 (see Appendix B). TBR intends to implement the Proposed Action in a manner that is consistent with the requirements of the LUO, Ordinance 86-99, and the Unilateral Agreement.

B. Contributing to the Regional and Island Economy

Construction of the Proposed Action will involve an estimated 3,263 direct jobs over 11 years. Construction wage impacts resulting from these new jobs will total about $475 million. Construction workers on-site at the resort during that period will number annually about 237 on average.

As presented in the socio-economic impact analysis and discussed in Chapter Five, the number of new continuing operations positions at the resort will climb to about 753, an increase of 72 percent over current conditions.

The Proposed Action will result in a cumulative net benefit – i.e., total benefits minus total costs– for the period 2014 to 2025, estimated as $163.4 million for the State of Hawai‘i and as $45.6 million for the City and County of Honolulu (in 2011 dollars). After full occupancy has been reached, the annual net benefit for the State will amount to $14.6 million, while the net benefit for the City and County will be about $6.6 million yearly.

C. Relationship to Short-Term Uses and Long-Term Productivity

Short-term uses and long-term productivity relate to the short-term construction phases and the long-term socioeconomic benefits that would accrue to the State and the County in the form of an expanded employment center in Ko‘olau Loa and added revenue resulting from economic activity that would otherwise not occur on the property. The Resort expansion project responds to the regional need for new employment opportunities and the State and County's collective vision to strengthen and preserve the visitor industry as a major contributor to the economy.

C. 1. Trade-Offs: Short-Term and Long-Term Gains and Losses

Over the short-term, that is to say the construction period for each of the project elements of the Proposed Action, the on-site population, including guests, residents, and visitors, will experience construction-related impacts that may temporarily air and noise quality. These impacts will be mitigated by the implementation of Best Management Practices. The regional population will experience periodic impacts in the form of increased traffic congestion on public highways due to the movement of construction vehicles the delivery of construction materials.

These construction related impacts are offset by an increase in employment opportunities related to construction, and a corresponding increase in economic benefits in the form of increased income for workers and their families, increased revenue for businesses supplying goods and services related to construction activity, and increased tax revenues related to income and general excise taxes. In the case of the proposed community housing, the short-term construction impacts are off-set by the long-term availability of new homes that are affordable to the community.

From a geographical point of view, the placement of new structures on vacant land constitutes a loss of open space and the rural character associated with it. This loss is offset by the long-term economic benefits of the project in terms of new employment opportunities related to resort operations, revenues derived from the sales of goods and services, increased tax revenues, and new housing that is affordable to the community. These impacts are also offset by the low-density character of the Proposed Action and its open space amenities, including new parks and public shoreline accesses.

From an environmental point of view, the loss of ground cover due to grading and grubbing activities and the temporary loss of habitat for fauna and avifauna as the result of construction activity is temporary in nature. The loss of ground cover is offset by the installation of new landscaping including re-vegetation of portions of the resort property with native plants. The loss of fauna and avifaunal habitat is offset by those displaced animals and birds reestablishing themselves in the area once construction activities have ended.

The development of new parks along the Turtle Bay coast will make the shoreline available to more people, thereby potentially increasing the interaction between people and endangered marine species including sea turtles and Monk seals. However, this impact will be offset by the increased public awareness of the importance of preserving and protecting these species that will result from the resort's proposed public education program.

C. 2. Extent to Which the Proposed Action Forecloses Future Options

The commitment to the property's future as a visitor destination was made in the mid-1980s when the Resort expansion was approved by the State Land Use Commission's Findings of Fact, Conclusions of Law, and Decision and Order; and subsequently by the Change of Zone approved by the Honolulu Planning Commission, the Honolulu City Council, and the Mayor of Honolulu, with a Unilateral Agreement being executed pursuant to the Change of Zone.

Development of the property as an expanded resort community as envisioned under the Proposed Action is consistent with that commitment and with the intent of the Unilateral Agreement. Implementation of the Proposed Action forecloses the achievement of unit counts and population levels allowable under previously granted approvals.

C. 3. How the Proposed Action Narrows the Range of Beneficial Uses

The Proposed Action narrows the range of beneficial uses by reducing the allowable density of the Resort, which will, in turn, reduce the corresponding economic benefits that might otherwise be derived from full build out of the resort expansion as envisioned in the mid-1980s.

C. 4. Long-Term Risks to Health and Safety

No long-term risks to health and safety have been identified. The Resort has been operating for approximately 40 years with no known risks to health and safety. Expansion of the resort as envisioned under the Proposed Action will perpetuate a land use that constitutes no significant adverse impact to the health and safety of the community.

C. 5. Culturally Significant Consequences

Implementation of the Proposed Action includes a commitment to the perpetuation of Hawaiian culture, as expressed by the philosophy of *Tomorrow's Ahupuaʻa* ~~program~~ described in the SEIS. This will result, not only in the perpetuation of sustainable practices for the benefit of the entire community, but will benefit resort guests, visitors, and residents by increasing their understanding of the host culture.

C. 6. Environmentally Significant Consequences

An environmentally significant consequence of the Proposed Action relates to the proposed improvement of water quality in Kawela Bay resulting from the restoration of the original Kawela Stream alignment and continued commitments to the improvement of Punahoʻolapa Marsh.

Implementation of an education program for resort guests, resort visitors, and resort residents and employees related to the protection of endangered marine species, including sea turtles and Monk seals, also represents a beneficial environmental consequence. This, together with the presence of resort employees and volunteers to monitor hauled out seals, is anticipated to help reduce negative interactions and/or disturbances.

Implementation of the *Tomorrow's Ahupuaʻa* concept is intended to contribute to long-term sustainability, which will, in turn, benefit the environment and the communities' opportunity to enjoy it.

C. 7. Potential Harm to the Environment

Development of the Proposed Action is intended to minimize potential harm to the environment through the implementation of measures to mitigate significant adverse impacts. Those impacts are typically associated with the short-term construction related impacts and can be mitigated in most cases through the application of Best Management Practices. In some instances, such as increased traffic noise for existing residences in close proximity to Kamehameha Highway, impacts can be mitigated with the implementation of sound attenuation strategies.

D. Irreversible and the Irretrievable Commitments of Resources

D. 1. Unavoidable Impacts and Probable Adverse Effects

Unavoidable impacts and probable adverse effects resulting from implementation of the Proposed Action can be divided into two categories: short-term construction impacts and long-term operational impacts. Short-term construction impacts include dust generation, construction noise, and short-term construction related traffic impacts. Long-term operational impacts include increased traffic, the redistribution of on-site drainage, on-site water consumption, secondary air quality (related to increased demand for offsite energy production), wastewater treatment, solid waste disposal, increased energy consumption, and increased human activity along the coastline.

Any increases in traffic on Kamehameha Highway, whether the result of the Proposed Action, additional visitors from other resort areas on O'ahu touring the North Shore, or new development projects elsewhere in the region, will have an unavoidable adverse impact on the ability of emergency vehicles to respond to 911 requests for assistance, especially during peak travel periods and congested traffic conditions. This is a consequence of the limitations posed by existing highway capacity for the two lane highway. However, it is not a problem unique to the Ko'olau Loa/North Shore region or other two lane highways in other similar communities. Emergency vehicles having to travel eastbound on H-1 freeway during morning rush hour or westbound on H-1 during afternoon rush hour face the same dilemma. It is a problem common to any congested road on O`ahu.

Adding additional lanes to the highway is not a reasonable or feasible solution because, a) it is unpopular, b) it is costly, and c) in some areas it is not physically possible due to topographic constraints (such as the section of highway fronting Waimea Bay).

Addressing the problem is best solved through improved communication and driver habits; and possibly adding passing or shoulder lanes where possible and practical. First, a method must be devised that alerts drivers to the fact that an emergency vehicle is approaching (and from what direction) even before it can be seen. This would enable drivers *on both sides of the road* to pull their vehicle to the shoulder well in advance of the approaching emergency vehicle, thus opening up a lane along the centerline and allowing the emergency vehicle to maintain a higher rate of speed as it passes. These alerts could be done by setting up permanent driver notification signs along the road, similar to those presently used to alert drivers of construction ahead. In addition, first responders could be given access to the Emergency Alert system presently used by Civil Defense, which interrupts radio broadcasts to provide information. As the technology in cars continues to improve, the Emergency Alert system could be reprogrammed to signal an alert on a vehicle's on-board entertainment/communication system. The funding for any of these communication system upgrades should be borne equally by all tax payers because the need for rapid first responder service is something that we all rely upon.

Second, drivers must be more cooperative. In the absence of an improved communication system, drivers must accept personal responsibility for their direct impact on emergency vehicles

when they are driving on a public roadway. First, they must be willing to obey the law: they must pull as far as possible off the road and stop to wait for the first responder to pass, rather than just slow down and shift a few feet to the right. Second, they must use their turn signal to indicate what they are doing. This not only provides assurance to first responders as they approach, but also alerts the cars behind to the driver's intentions. Third, drivers must resist the temptation to use a passing first responder as an opportunity to gain advantage, especially in a queue of traffic. Fourth, drivers must be more cognizant of their surroundings by either checking their mirrors more often for signs of an approaching first responder, or by opening a window, if possible, to better hear an approaching siren, especially during periods of traffic congestion. Simply put, we could all help the situation by driving with *aloha*.

In some areas that experience frequent traffic congestion, the provision of a passing and/ or shoulder lanes may be appropriate. However, several considerations must first be addressed. Is there adequate room to provide the additional lane within the existing right-of-way? Is the source of congestion caused by pedestrian crossings, in which case, a passing lane would likely exacerbate the problem rather than improve it. Can the lane be added without compromising driver safety?

During times of public emergencies, some or all coastal areas of the region might require evacuation. Again, the ability to evacuate an area is constrained by the roadway capacity serving the area. As presented in the discussion above, this is not a problem unique to the North Shore/Koʻolau Loa region. The Waianae coast, Waikiki, Ewa Beach, and East Honolulu all share the same problem. In these events, the responsibility for coordinating evacuations rests with the Civil Defense Agency and the Honolulu Police Department, who must together make the decision of when to evacuate and how to accomplish it. Given the limited capacity of Kamehameha Highway in the North Shore/Koʻolau Loa region, it will be up to the CDA and HPD to determine if Kamehameha Highway should be converted to one-way traffic flow during critical periods of evacuation.

This unavoidable situation is not caused by the presence of Turtle Bay Resort, its expansion, or any other resident of the area. It is caused by a natural disaster, to which all residents must respond equally. Obeying authorities and following their instructions is the most prudent way of facilitating such an evacuation.

D. 2. Use of Non-Renewable Resources

The construction and operation of the resort expansion will involve the irretrievable commitment of certain natural, human, and fiscal resources. Major resource commitments include the land upon which buildings are constructed, money, construction materials, manpower, water and energy. The impacts of using these resources is, however, offset by the economic benefits to the residents of the region, Hawaiian culture, the City and County of Honolulu, and the State of Hawaiʻi resulting from implementation of the Proposed Action.

D. 3. Curtailment of the Range of Beneficial Uses

The SEIS Lands have been designated for resort expansion since the mid-1980s. Implementation of the Proposed Action is consistent with that intended use and does not prevent or curtail any uses allowable under applicable land use policies or controls.

D. 4. Possibility of Environmental Accidents

The principal environmental accidents that might be associated with the Proposed Action relate to potential impacts upon near shore water quality and/or soils or groundwater resulting from either the accidental release of raw sewage from the resort's privately operated wastewater treatment plant located outside the SEIS Lands or from a break or rupture of a wastewater collection or transmission line with the resort, the accidental spillage of pesticides or herbicides stored and used at the resort's golf courses, or a major traffic accident on Kamehameha Highway near the resort resulting in the spill of a large volume of petro-chemicals. While ~~none of these events~~ a spill at the plant, spillage of pesticides or herbicides, or a major petrochemical spill on the highway has not occurred during the four decades the resort has been in existence, this does not preclude the possibility of such an event in the future. Over the decades, there have been occasional breaks in wastewater collection or transmission lines which have resulted in sewage spills, and it is likely that this could happen again in the future. The potential for these events to occur is offset, to a certain degree, by the continued employment on a day-to-day basis of proper training protocols, best management practices by wastewater treatment plant operators and the golf course superintendent and his/her staff, and the proposed improvements to the resort's intersections with Kamehameha Highway.

D. 5. Loss and/or Destruction of Natural and Cultural Resources

As discussed in Chapter Five, the Proposed Action may impact marine and terrestrial resources, likely due to the increased presence of human activity related to the resort expansion. Some cultural and natural resources, in the form of terrestrial plants, may be destroyed during construction. These impacts will be offset by the mitigation measures discussed in Chapter Five. Specifically, the Proposed Action includes a recommendation for a Cultural and Natural Resource Management Plan, and a protocol for seeking cultural guidance in its implementation.

D. 6. Addressing the Irretrievable and Irreversible Loss of Resources

The Proposed Action constitutes a significant measure to mitigate the loss of resources resulting from expansion of the Resort. It represents an approximate 60 percent reduction in the allowable density of the resort as allowed by previously granted land use approvals. As discussed earlier in the SEIS, taking No Action, that is to say, doing nothing to expand resort facilities and operations at Turtle Bay is contrary to the Oahu General Plan and the State Land Use designations for the property. Therefore, the issue is this: how can the resort expansion be implemented in a manner that will minimize potentially significant adverse impacts. After engaging in a two-year long community outreach process, the owners of the resort believe that the Proposed Action represents the best opportunity to fulfill the goals of the State and County and benefitting the region, while reducing impacts to an acceptable level.

E. Government Policies that Offset Identified Adverse Impacts

The discussion of *An Indication of What Other Interests and Considerations of Government Policies Are Thought to Offset the Adverse Environmental Effects of the Proposed Action* as presented in Part X of the 1985 Revised Final EIS remains generally relevant to the current Proposed Action, and is therefore included by reference as allowed pursuant to Section 11-200-28, HAR.

F. Unresolved Issues

Affordable Housing Program - At the time of the writing of the DSEIS, a specific program has not been prepared that details the manner in which the affordable housing program will be implemented in terms of financing options, restrictions on use, buy-back provisions, etc. Prior to the commencement of the Proposed Action, TBR plans to work with the Department of Planning and Permitting and Hawaii Housing, Finance, and Development Corporation to finalize an acceptable program.

Kuilima Wastewater Treatment Plan Upgrade - At the time of the writing of the DSEIS, TBR plans to upgrade the treatment process to improve the quality of wastewater effluent to R-1 quality so that it may be used within certain portions of the SEIS Lands. Prior to the commencement of the Proposed Action, TBR plans to determine the final feasibility and how beest to implement this upgrade once volume capacity requirements correlate with proximate site development.

Conservation Easement - A conservation easement has been proposed to protect the long term use of the ~~resort's~~ agricultural lands *mauka* of Kamehameha Highway. While these lands are not within the SEIS Lands, they are an integral part of the resort's ~~Comprehensive Plan and the concept of~~ philosophy of *Tomorrow's Ahupuaʻa*. At the time of the writing of the DSEIS, ~~TBR~~ Turtle Bay Mauka Lands, LLC ("TBML") has signed a ~~l~~Letter of ~~i~~Intent with the Trust for Public Lands ("TPL") concerning the creation of a conservation easement relative to certain agricultural lands situated outside the SEIS Lands, on the *mauka* side of Kamehameha Highway; however, there are a number of steps in this process which remain to be completed in order to close this transaction, including obtaining an appropriate appraisal of these *mauka* agricultural lands and finalizing the conservation easement document. ~~TBR~~ TBML hopes to close the conservation easement transaction with TPL by the end of the ~~1st~~ 3rd quarter 2013 and in any event prior to the commencement of the Proposed Action.

Mauka Storm Water Drainage Retention/Detention - At the time of the writing of the DSEIS, TBR is working with its civil engineering team on a long-term storm water management plan including retention and detention strategies on the *mauka* agricultural lands owned by Turtle Bay Mauka, LLC situated on the *mauka* side of Kamehameha Highway. Implementation of this long-term plan is intended to reduce runoff after significant storm events, some of which affect levels of near shore turbidity. However at this time it has not yet been determined whether these proposed plans are technically and or financially feasible or supported by regulatory agencies. Prior to the restoration of Kawela Stream to its West Main Drain alignment as contemplated ~~in the Proposed Action~~, TBR plans to work through design, feasibility, and construction issues related to this long-term plan.

City and County Zoning District Boundary Amendments - At the time of the writing of the DSEIS, it has not been determined whether the implementation of the Proposed Action will require adjustments to be made to the boundary lines of any existing zoning district. If, and to the extent such adjustments do become necessary, TBR will apply for administrative zoning district boundary amendments.

Implementation of a Marine Life Conservation District at Kawela Bay - As presented in the DSEIS, the creation of an advisory council is recommended to assist the resort in addressing issues that will affect users of the coastal resources for recreational purposes. The resort's Unilateral Agreement requires that best efforts be made to promote the creation of a Marine Life Conservation District at Kawela. But to do so will require broad-based input from the community, and TBR believes that an advisory council would be an appropriate method for receiving and addressing that input. Therefore the issues of if and how to implement a MLCD are not yet resolved. TBR plans to encourage and promote the formation of a Advisory Council prior to development of proximate parcels to Kawela Bay.

Critical Habitat for Hawaiian Monk Seals - At the time of the writing of the DSEIS, a proposal to designate all or a portion of waters of the main Hawaiian Islands as a critical habitat is under consideration by the National Marine Fisheries Service. The potential impact that such a designation by the federal government may have upon the Turtle Bay Resort is unknown and, therefore, the matter is unresolved. The NMFS has extended the deadline for comments on the proposal indefinitely and it is not known when the agency may eventually act on the proposal.

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CHAPTER SEVEN: Document Preparation and References

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CHAPTER SEVEN:

DOCUMENT PREPARATION AND REFERENCES

The SEIS was prepared by Lee Sichter of Lee Sichter LLC, 45-024 Malulani Street #1, Kaneʻohe, Hawaiʻi, 96744, with the assistance of the staff of Turtle Bay Resort, LLC and the following consultants and their staff.

Turtle Bay Resort: Mr. Drew Stotesbury, Mr. Scott McCormack, Mr. Ralph Makaiau, Ms. Danna Holck, and Ms. Debbie Graves.

Air Quality Impact Analysis: Mr. Barry D. Neal; B.D. Neal & Associates

Archaeology: Dr. Alan Haun; Alan Haun & Associates

Architectural Design: Mr. Robert Iopa and Mr. Jason Antonio; WCIT Architecture.

Civil Engineering: Mr. Jimmy Yamamoto, P.E.; R.M. Towill & Associates; Ms. Cheryl Palesh, P.E., and Mr. John Chung, P.E.; Belt Collins Hawaii LLC.

Community Outreach: Ms. Dawn Chang, President; Kuiwalu Inc.

Cultural Impact Analysis: Mr. Paul Cleghorn, Ph.D. and Ms. Kimberly Moony; Pacific Legacy, Inc.

Document Format and Editing: Ms. Carole Goodson and Mr. Roger Yu; Goodson+Yu Design.

Flora and Fauna Impact Analyis: Mr. Reginald Davis, Ph.D.; Rana Biological Consulting, Inc.

Graphic Arts: Ms. Diane Yamamoto and Ms. Karon Aoki; Belt Collins Hawaii Ltd.

Marine Resource Impact Analysis: Mr. Robert Bourke; Oceanit Laboratories, Inc.

Market Analysis: Mr. Darius Hatami, MAI; HVS Golf

Noise Impact Analysis: Mr. Yoichi Ebisu, P.E.; Y. Ebisu & Associates

Socio-Economic Impact Analysis: Mr. John Kirkpatrick, Ph.D.; Belt Collins Hawaii Ltd.

Traffic Impact Analysis: Mr. Randall S. Okaneku, P.E.; The Traffic Management Consultant

Transportation System Demand Analysis: Mr. D. Sohrab Rashid, T.E.; Fehr & Peers

Trip Generation Survey: Mr. Hersh Singer; SMS Research

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