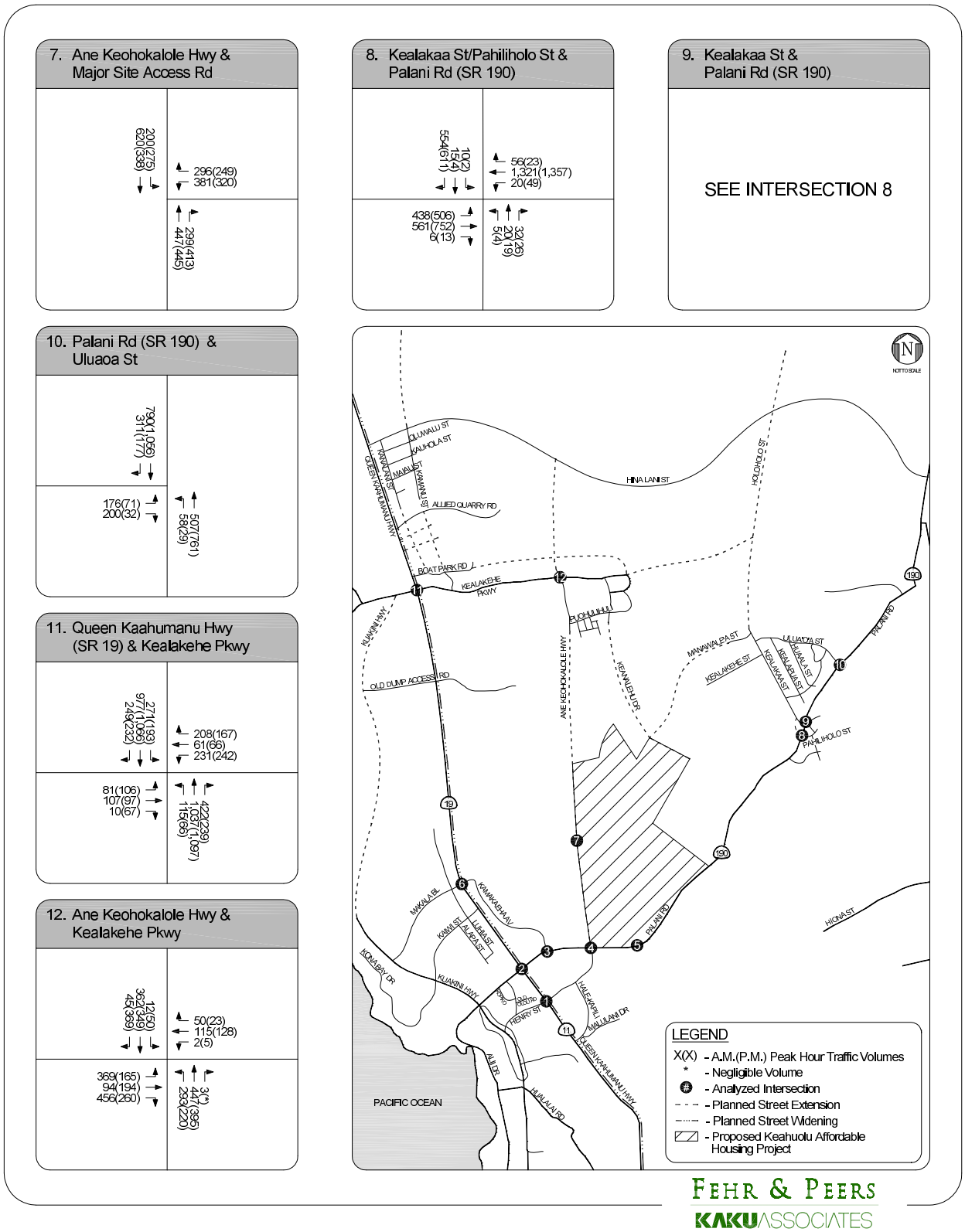

Figure 4-11
CUMULATIVE PLUS PROJECT PEAK HOUR TRAFFIC VOLUMES—CONCEPT B (continued)

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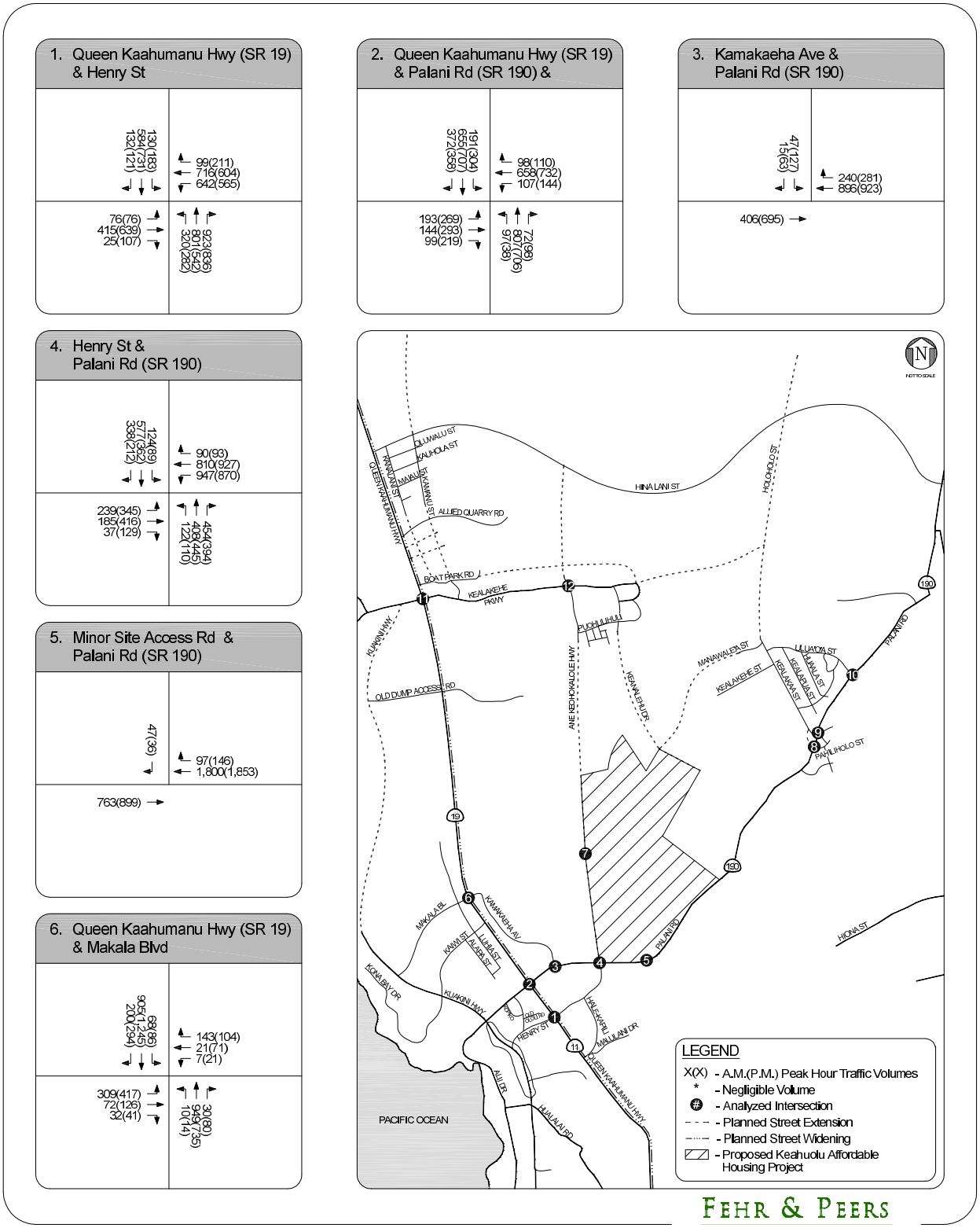

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Figure 4-12
CUMULATIVE PLUS PROJECT PEAK HOUR TRAFFIC VOLUMES—CONCEPT C

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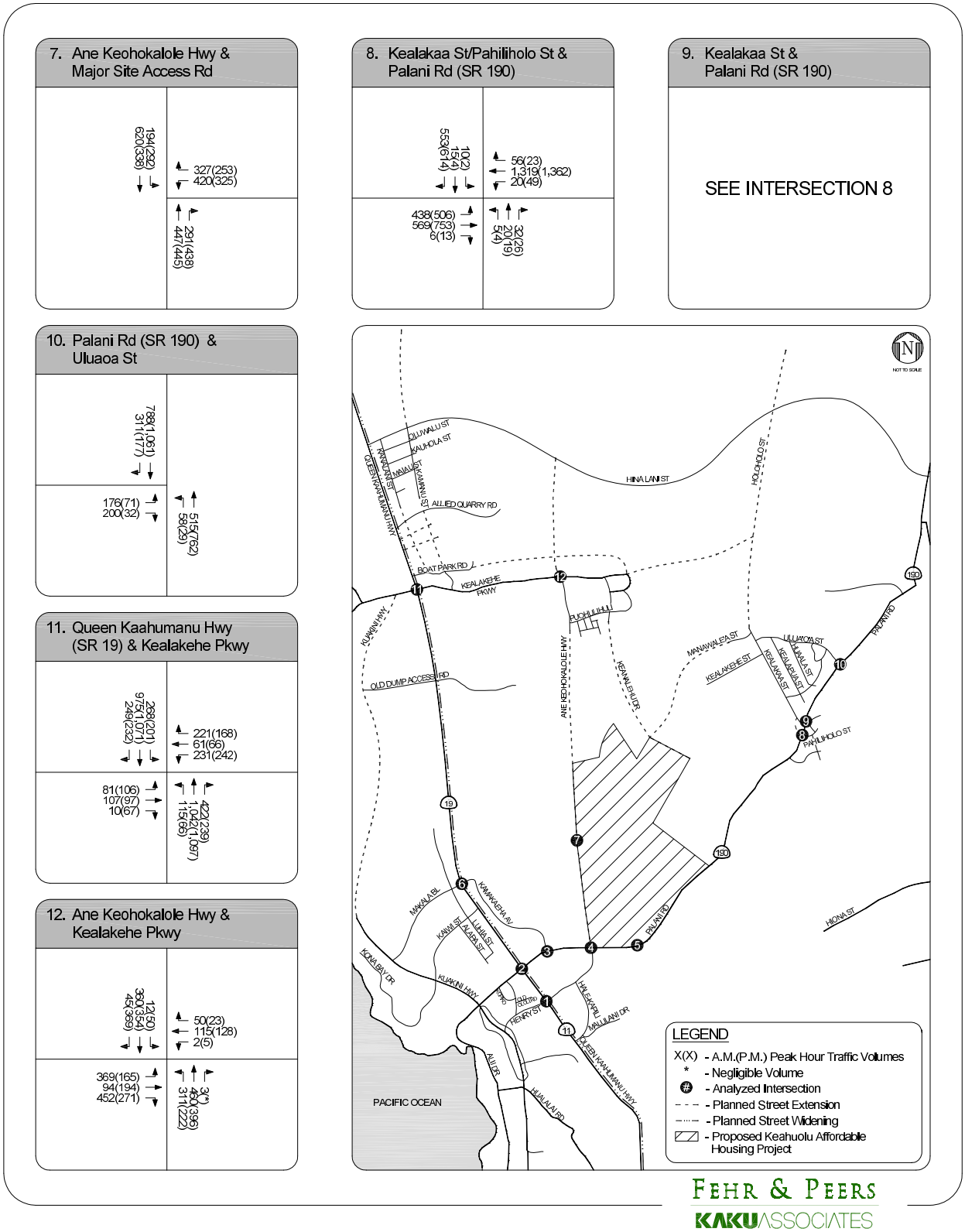

Figure 4-12
CUMULATIVE PLUS PROJECT PEAK HOUR TRAFFIC VOLUMES—CONCEPT C (continued)

4.4.5.4 Summary of Potential Impacts at Study Intersections

This section summarizes the potential traffic conditions in the year 2020 at the study intersections under each of the three housing concept alternatives.

Table 4-13~~Table 4-13~~, Table 4-14~~Table 4-14~~, and Table 4-15~~Table 4-15~~ summarize the results of the traffic analysis. As discussed above, because the ongoing improvements at Intersections 8 and 9 will focus most turning movements at Intersection 8, Intersection 8 is analyzed in the future scenarios. The following five intersections are projected to operate at LOS E or F during one or both peak hours in 2020 in the cumulative base analysis:

Study Intersection:

3. Kamakaeha Avenue & Palani Road (SR 190)
4. Henry Street & Palani Road (SR 190)
8. Palani Road (SR 190) & Kealaka‘a Street/Pahiliholo Street
10. Uluaoa Street & Palani Road (SR 190)
12. Kealakehe Parkway & Ane Keohokalole Highway

The remaining study intersections are expected to continue operating at a desirable LOS (LOS D or better) during both peak hours.

The cumulative plus project peak hour traffic volumes are illustrated in Figure 4-10~~Figure 410~~, Figure 4-11~~Figure 411~~, and Figure 4-12~~Figure 412~~, respectively. These figures show 2020 operating conditions with the addition of project-related traffic from Concepts A, B, and C.

The results of the cumulative plus project analysis, as presented in Table 4-13~~Table 4-13~~, Table 4-14~~Table 4-14~~, and Table 4-15~~Table 4-15~~, show that the proposed project would contribute to cumulative impacts (LOS E or F conditions) during one or both peak hours at five study intersections listed below. However, it should be noted that all of the five intersections are already at LOS E or LOS F, even without the proposed project.

Study Intersection:

3. Kamakaeha Avenue & Palani Road (SR 190)
4. Henry Street & Palani Road (SR 190)
8. Palani Road (SR 190) & Kealaka'a Street/Pahiliholo Street
10. Uluaoa Street & Palani Road (SR 190)
12. Kealakehe Parkway & Ane Keohokalole Highway

In addition, project-specific impacts are identified at two future intersections listed below, as the addition of project-generated traffic there would cause them to ~~opearate~~operate below LOS D in the peak hours:

Study Intersection:

5. Palani Road (SR 190) & Minor Site Access Road
7. Ane Keohokalole Highway & Major Site Access Road

The number of traffic impacts would be the same under Concepts A, B and C; however, the magnitude of those impacts would be greatest under Concept C.

4.4.5.5 Proposed Mitigation Measures at Study Intersections

Proposed mitigation would increase the capacity and/or efficiency of the roadway system at locations where the addition of project-related traffic is projected to cause or contribute to poor operating conditions. In developing mitigation, the primary emphasis was to identify physical and/or operational improvements that could be implemented within the existing or planned roadway ROW. The recommended intersection improvement measures are shown in ~~the illustrations~~ Figure 4-13~~413~~ ~~on the following two pages~~ and in Appendix A of the Traffic Report (see Appendix F). Table 4-13~~Table 4-13~~, Table 4-14~~Table 4-14~~, and Table 4-15~~Table 4-15~~ summarize the projected LOS in 2020 at the impacted intersections with these mitigation measures in place.

INTERSECTION LANE CONFIGURATIONS

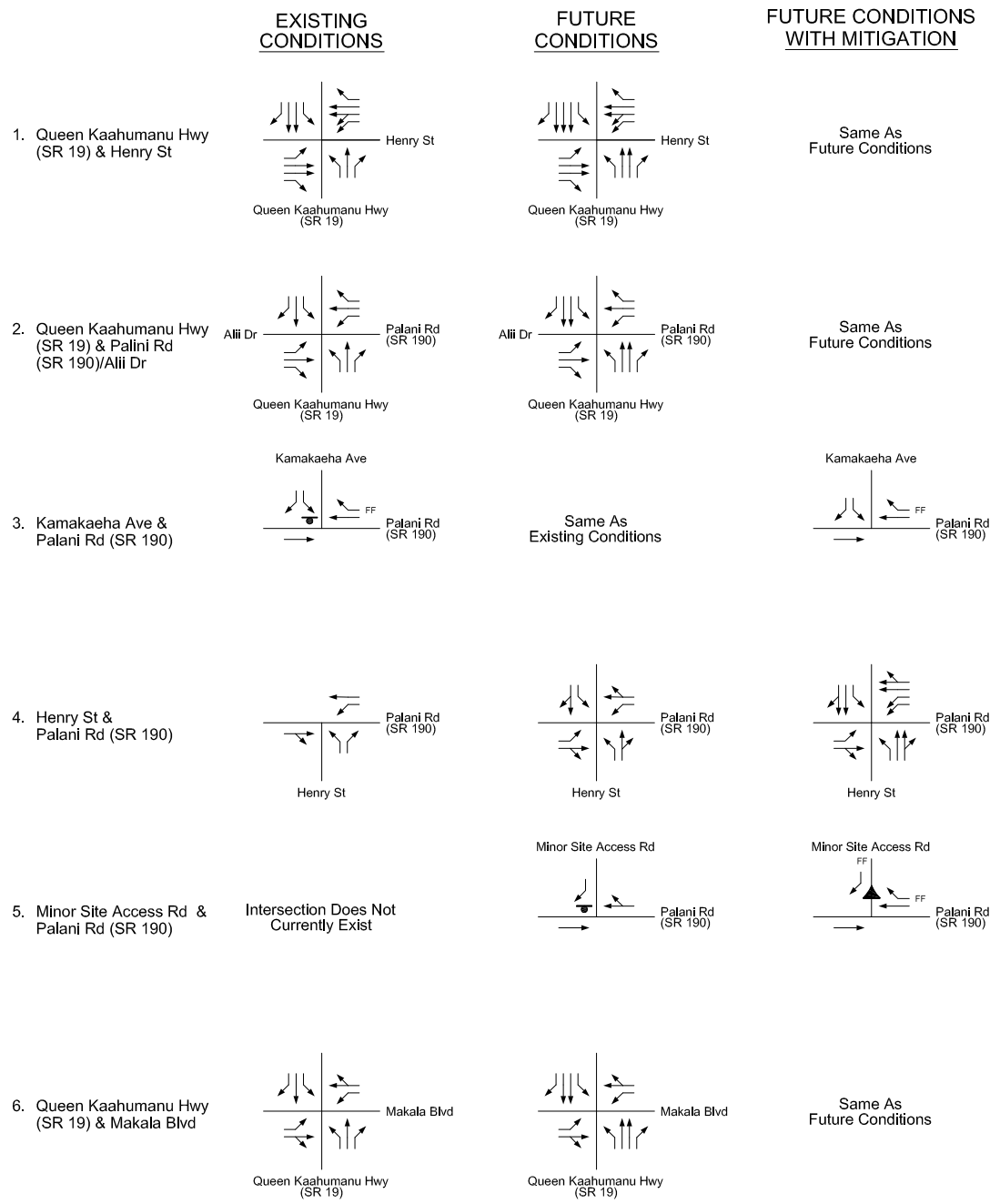

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Figure 4-13
RECOMMENDED INTERSECTION IMPROVEMENT MEASURES

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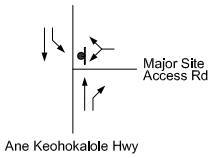
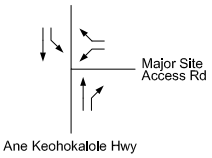
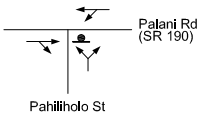
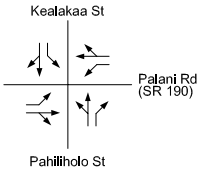
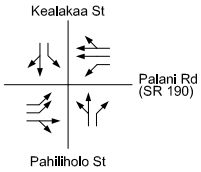
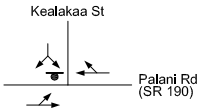
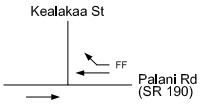
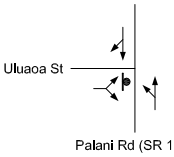
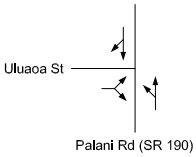
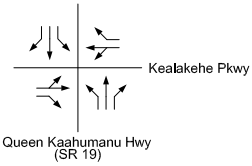
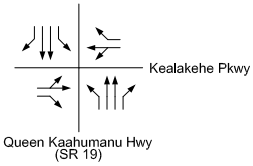
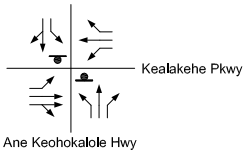
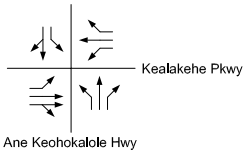
INTERSECTION LANE CONFIGURATIONS

	EXISTING CONDITIONS	FUTURE CONDITIONS	FUTURE CONDITIONS WITH MITIGATION
7. Ane Keohokalole Hwy & Major Site Access Rd	Intersection Does Not Currently Exist		
8. Pahiliholo St & Palani Rd (SR 190)			
9. Kealakaa St & Palani Rd (SR 190)		 See Also Intersection 8	Same As Future Conditions
10. Palani Rd (SR 190) & Uluaoa St		Same As Existing Conditions	
11. Queen Kaahumanu Hwy (SR 19) & Kealakehe Pkwy			Same As Future Conditions
12. Ane Keohokalole Hwy & Kealakehe Pkwy		Same As Existing Conditions	

LEGEND

Stop Controlled

FF Free Flow

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Figure 4-13
RECOMMENDED INTERSECTION IMPROVEMENT MEASURES (continued)

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Table 4-13: Intersection Level of Service Analysis Summary, ~~Keahuolu Affordable Housing Project~~ Future Conditions (2020) - Concept A

	Intersections	Peak Hour	CUMULATIVE BASE (2020)			CUMULATIVE PLUS PROJECT (2020)			LOS D OR BETTER	CUMULATIVE PLUS PROJECT WITH MITIGATION (2020)			LOS D OR BETTER
			V/C	Del/Veh*	LOS	V/C	Del/Veh*	LOS		V/C	Del/Veh*	LOS	
1	Queen Ka'ahumanu Hwy (SR 19) & Henry St	A.M. P.M.	0.813 0.819	26 27	C C	0.885 0.881	29 29	C C	YES YES	No mitigation necessary			YES YES
2	Queen Ka'ahumanu Hwy (SR 19) & Palani Rd (SR 190)/Alii Dr	A.M. P.M.	0.873 0.988	33 40	C D	0.914 1.015	35 43	D D	YES YES	No mitigation necessary			YES YES
3	Kamakaeha Av & Palani Rd (SR 190)	A.M. P.M.	NC NC	23 **	C F	NC NC	29 **	D F	YES NO	0.558 0.652	5 10	A B	YES YES
4	Henry St & Palani Rd (SR 190)	A.M. P.M.	1.099 1.248	81 **	F F	1.677 1.340	** **	F F	NO NO	0.833 0.926	32 33	C C	YES YES
5	Minor Site Access Road & Palani Rd (SR 190) [a]	A.M. P.M.	NC NC	NC NC	NC NC	NC NC	** **	F F	NO NO	- -	- -	A A	YES YES
6	Queen Ka'ahumanu Hwy (SR 19) & Makala Bl	A.M. P.M.	0.653 0.769	22 25	C C	0.661 0.787	22 25	C C	YES YES	No mitigation necessary			YES YES
7	Ane Keohokalole Hwy & Major Site Access Road	A.M. P.M.	NC NC	NC NC	NC NC	NC NC	** **	F F	NO NO	0.579 0.455	16 16	B B	YES YES
8	Kealaka'a St/~~Palihiolo~~ Pahiliholo St & Palani Rd (SR 190) [b]	A.M. P.M.	1.522 1.734	** **	F F	1.638 1.837	** **	F F	NO NO	0.982 1.023	33 41	C D	YES YES
10	Palani Rd (SR 190) & Uluaoa St [a]	A.M. P.M.	NC NC	** **	F F	NC NC	** **	F F	NO NO	0.757 0.725	14 5	B A	YES YES
11	Queen Ka'ahumanu Hwy (SR 19) & Kealakehe Hwy	A.M. P.M.	0.748 0.713	26 24	C C	0.825 0.781	28 25	C C	YES YES	No mitigation necessary			YES YES
12	Ane Keohokalole Hwy & Kealakehe Hwy [a]	A.M. P.M.	NC NC	** **	F F	NC NC	** **	F F	NO NO	0.686 0.583	19 15	B B	YES YES

Note:

* Delay indicates average stopped delay per vehicle in seconds for signalized intersections. The worst case vehicular delay is reported for stop-controlled intersections.

** Indicates oversaturated conditions. Delay cannot be calculated.

NC = Not Calculated

[a] Intersection is controlled by stop signs on the minor approaches.

Table 4-14: Intersection Level of Service Analysis Summary, ~~Keahuolu Affordable Housing Project~~ Future Conditions (2020) - Concept B

	Intersections	Peak Hour	CUMULATIVE BASE (2020)			CUMULATIVE PLUS PROJECT (2020)			LOS D OR BETTER	CUMULATIVE PLUS PROJECT WITH MITIGATION (2020)			LOS D OR BETTER
			V/C	Del/Veh*	LOS	V/C	Del/Veh*	LOS		V/C	Del/Veh*	LOS	
1	Queen Ka'ahumanu Hwy (SR 19) & Henry St	A.M. P.M.	0.813 0.819	26 27	C C	0.890 0.925	29 32	C C	YES YES	No mitigation necessary			YES YES
2	Queen Ka'ahumanu Hwy (SR 19) & Palani Rd (SR 190)/Alii Dr	A.M. P.M.	0.873 0.988	33 40	C D	0.917 1.031	35 46	D D	YES YES	No mitigation necessary			YES YES
3	Kamakaeha Av & Palani Rd (SR 190)	A.M. P.M.	NC NC	23 **	C F	NC NC	31 **	D F	YES NO	0.582 0.669	5 10	A B	YES YES
4	Henry St & Palani Rd (SR 190)	A.M. P.M.	1.099 1.248	81 **	F F	1.691 1.328	** **	F F	NO NO	0.899 1.009	37 41	D D	YES YES
5	Minor Site Access Road & Palani Rd (SR 190) [a]	A.M. P.M.	NC NC	NC NC	NC NC	NC NC	** **	F F	NO NO	- -	- -	A A	YES YES
6	Queen Ka'ahumanu Hwy (SR 19) & Makala Bl	A.M. P.M.	0.653 0.769	22 25	C C	0.666 0.799	22 25	C C	YES YES	No mitigation necessary			YES YES
7	Ane Keohokalole Hwy & Major Site Access Road	A.M. P.M.	NC NC	NC NC	NC NC	NC NC	** **	F F	NO NO	0.687 0.679	21 19	C B	YES YES
8	Kealaka'a St/~~Palihiolo~~Pahiliholo St & Palani Rd (SR 190) [b]	A.M. P.M.	1.522 1.734	** **	F F	1.647 1.905	** **	F F	NO NO	0.984 1.045	34 45	C D	YES YES
10	Palani Rd (SR 190) & Uluaoa St [a]	A.M. P.M.	NC NC	** **	F F	NC NC	** **	F F	NO NO	0.759 0.746	14 5	B A	YES YES
11	Queen Ka'ahumanu Hwy (SR 19) & Kealakehe Hwy	A.M. P.M.	0.748 0.713	26 24	C C	0.834 0.826	28 26	C C	YES YES	No mitigation necessary			YES YES
12	Ane Keohokalole Hwy & Kealakehe Hwy [a]	A.M. P.M.	NC NC	** **	F F	NC NC	** **	F F	NO NO	0.760 0.634	20 16	C B	YES YES

Note:

* Delay indicates average stopped delay per vehicle in seconds for signalized intersections. The worst case vehicular delay is reported for stop-controlled intersections.

** Indicates oversaturated conditions. Delay cannot be calculated.

NC = Not Calculated

[a] Intersection is controlled by stop signs on the minor approaches.

Table 4-15: Intersection Level of Service Analysis Summary, ~~Keahuolu Affordable Housing Project~~ Future Conditions (2020) - Concept C

	Intersections	Peak Hour	CUMULATIVE BASE (2020)			CUMULATIVE PLUS PROJECT (2020)			LOS D OR BETTER	CUMULATIVE PLUS PROJECT WITH MITIGATION (2020)			LOS D OR BETTER
			V/C	Del/Veh*	LOS	V/C	Del/Veh*	LOS		V/C	Del/Veh*	LOS	
1	Queen Ka'ahumanu Hwy (SR 19) & Henry St	A.M. P.M.	0.813 0.819	26 27	C C	0.887 0.931	29 32	C C	YES YES	No mitigation necessary			YES YES
2	Queen Ka'ahumanu Hwy (SR 19) & Palani Rd (SR 190)/Alii Dr	A.M. P.M.	0.873 0.988	33 40	C D	0.915 1.033	35 46	D D	YES YES	No mitigation necessary			YES YES
3	Kamakaeha Av & Palani Rd (SR 190)	A.M. P.M.	NC NC	23 **	C F	NC NC	37 **	E F	NO NO	0.589 0.670	5 10	A B	YES YES
4	Henry St & Palani Rd (SR 190)	A.M. P.M.	1.099 1.248	81 **	F F	1.726 1.326	** **	F F	NO NO	0.923 1.014	39 42	D D	YES YES
5	Minor Site Access Road & Palani Rd (SR 190) [a]	A.M. P.M.	NC NC	NC NC	NC NC	NC NC	** **	F F	NO NO	- -	- -	A A	YES YES
6	Queen Ka'ahumanu Hwy (SR 19) & Makala Bl	A.M. P.M.	0.653 0.769	22 25	C C	0.668 0.801	22 25	C C	YES YES	No mitigation necessary			YES YES
7	Ane Keohokalole Hwy & Major Site Access Road	A.M. P.M.	NC NC	NC NC	NC NC	NC NC	** **	F F	NO NO	0.718 0.706	22 19	C B	YES YES
8	Kealaka'a St/~~Palihiolo~~Pahiliholo St & Palani Rd (SR 190) [b]	A.M. P.M.	1.522 1.734	** **	F F	1.644 1.914	** **	F F	NO NO	0.983 1.048	33 46	C D	YES YES
10	Palani Rd (SR 190) & Uluaoa St [a]	A.M. P.M.	NC NC	** **	F F	NC NC	** **	F F	NO NO	0.758 0.749	14 5	B A	YES YES
11	Queen Ka'ahumanu Hwy (SR 19) & Kealakehe Hwy	A.M. P.M.	0.748 0.713	26 24	C C	0.834 0.832	28 26	C C	YES YES	No mitigation necessary			YES YES
12	Ane Keohokalole Hwy & Kealakehe Hwy [a]	A.M. P.M.	NC NC	** **	F F	NC NC	** **	F F	NO NO	0.779 0.640	21 16	C B	YES YES

Note:

* Delay indicates average stopped delay per vehicle in seconds for signalized intersections. The worst case vehicular delay is reported for stop-controlled intersections.

** Indicates oversaturated conditions. Delay cannot be calculated.

NC = Not Calculated

[a] Intersection is controlled by stop signs on the minor approaches.

The recommended mitigation measures to address the identified traffic impacts at study intersections, both project-related and cumulative, are described below. Except at Intersection #5 and #7, all of the proposed mitigation measures would be recommended even without the proposed project. The only measures necessitated or triggered by project-related impacts are at Intersections #5 and #7, as opposed to cumulative impacts to which the project would contribute. Each of the identified project-related impacts would be fully mitigated i.e., the recommended improvements would result in LOS D or better.

- Intersection 3: Kamakaeha Avenue & Palani Road (SR 190) - The intersection of Kamakaeha Avenue & Palani Road (SR 190) could be fully mitigated by installing a traffic signal with the existing lane configuration. Signal warrant analysis was conducted based on the Peak Hour Warrant found in *Manual on Uniform Traffic Control Devices* (MUTCD) (National Committee on Uniform Traffic Control Devices, 2003) and is included in Appendix E of the Traffic Report. It indicates that a traffic signal at the intersection of Kamakaeha Avenue and Palani Road (SR 190) would be warranted under future plus project conditions. Because this intersection is approximately 750 feet mauka of Queen Ka‘ahumanu Highway and approximately 1,400 feet makai of Henry Street, the proposed traffic signal would need to be coordinated with the existing signals at the two adjacent intersections. With the installation of the traffic signal, the intersection of Kamakaeha Avenue and Palani Road (SR 190) would operate at LOS A.
- Intersection 4: Henry Street & Palani Road (SR 190) – The intersection of Henry Street & Palani Road (SR 190) could be fully mitigated by widening the makai-bound approach to provide two left-turn lanes, one through lane, and one shared through/right-turn lane; widening the northbound approach to provide one left-turn lane, one through lane, and one shared through/right-turn lane; and constructing the southbound approach with one left-turn lane, one through lane, and one shared through/right-turn lane. With this configuration, the intersection of Henry Street and Palani Road (SR 190) would operate at LOS D.
- Intersection 5: Palani Road (SR 190) & Minor Site Access Road – The future intersection of Palani Road & Minor Site Access Road would be approximately 1,250 feet mauka of Henry Street and could be fully mitigated by adding a makai-bound deceleration lane into the project site and a makai-bound acceleration lane out from the project, separated by a raised island to channelize traffic. A second makai-bound lane would be added to receive traffic exiting the project site. With this configuration, the intersection would operate at LOS A.
- Intersection 7: Ane Keohokalole Highway & Major Site Access Road – The intersection of Ane Keohokalole Highway & Major Site Access Road could be fully mitigated by installing a traffic signal. The future lane configuration would provide one left-turn lane and one right-turn lane on the makai-bound approach, one through lane and one right-turn lane on the northbound approach, and one left-turn lane and one through lane on the southbound approach. Signal warrant analysis was conducted based on the Peak Hour

Warrant found in the MUTCD and is included in Appendix E of the Traffic Report. It indicates that a traffic signal installation at the intersection of Ane Keohokalole Highway & Major Site Access Road would be warranted under future plus project conditions. With the installation of a traffic signal, the intersection of Ane Keohokalole Highway & Major Site Access Road would operate at LOS C or better.

- Intersection 8: Kealakaʻa Street/Pahiliholo Street & Palani Road (SR 190) – The intersection of Kealakaʻa Street/Pahiliholo Street & Palani Road (SR 190) is under construction, and the future lane configuration is shown in *Palani Road Safety Improvements* (County of Hawaiʻi, August 2005). With the lane configuration shown in that report, the intersection of Kealakaʻa Street/Pahiliholo Street and Palani Road is projected to operate at LOS F during both peak hours in 2020. A mitigation measure was developed that would widen Palani Road to provide one left-turn lane, one through lane, and one shared through/right-turn lane on the southbound approach and two left-turn lanes and one shared through/right-turn lane on the northbound approach. The southbound departure would also be widened to two lanes, which would merge into a single lane downstream of the intersection. While additional ROW may be needed to implement this measure, it does not appear that existing development would preclude its implementation. With these improvements, the intersection is projected to operate at LOS C during the A.M. peak hour and LOS D during the P.M. peak hour.
- Intersection 10: Uluaoa Street & Palani Road (SR 190) – The intersection of Uluaoa Street & Palani Road could be fully mitigated by installing a traffic signal within the existing lane configuration. Signal warrant analysis was conducted based on the Peak Hour Warrant found in the MUTCD is included in Appendix E of the Traffic Report. It indicates that a traffic signal at the intersection of would be warranted under future plus project conditions. With this improvement, the intersection would operate at LOS B and A during the A.M. and P.M. peak hours, respectively.
- Intersection 12: Kealakehe Parkway & Ane Keohokalole Highway – The intersection of Kealakehe Parkway & Ane Keohokalole Highway could be fully mitigated by installing a traffic signal within the existing lane configuration. Signal warrant analysis was conducted based on the Peak Hour Warrant found in the MUTCD and is included in Appendix E of the Traffic Report. It indicates that a traffic signal at the intersection of would be warranted under future plus project conditions. With this improvement, the intersection would operate at LOS C or better in both peak hours.

4.4.5.6 Street Segment Traffic Impact Analysis

As described in Section 4.4.3, "Existing Roadway System Conditions," the existing peak hour volumes at the following 10 street segments were based on traffic counts conducted at adjacent intersections in August 2007, as well as new 24-hour machine counts. The peak hour traffic volumes on the 10 study street segments under existing conditions are shown in Table 4-16~~Table 4-16~~, Table 4-17~~Table 4-17~~, and Table 4-18~~Table 4-18~~.

Study Segments:

1. Henry Street south of Palani Road (SR 190)
2. Palani Road (SR 190) makai (west) of Henry Street
3. Palani Road (SR 190) mauka (east) of Henry Street
4. Kealakaʻa Street north of Palani Road (SR 190)
5. Uluaoa Street north of Palani Road (SR 190)
6. Queen Kaʻahumanu Highway (SR 19) south of Kealakehe Parkway
7. Kealakehe Parkway makai (west) of Ane Keohokalole Highway
8. Ane Keohokalole Highway south of Kealakehe Parkway
9. Queen Kaʻahumanu Highway (SR 19) north of Kealakehe Parkway
10. Palani Road (SR 190) south of Mamalahoa Highway

The roadway facility types were based on their physical characteristics as defined in the *County of Hawaiʻi General Plan* and as described in Table 4-19~~Table 4-19~~. The capacity of each facility was defined as the maximum hourly rate at which vehicles can reasonably be expected to traverse a point or uniform section of a lane or roadway during a given time period under prevailing roadway, traffic, and control conditions.

Estimates of future peak hour traffic volumes for the 10 street segments were developed by increasing the existing peak hour traffic volumes to reflect the ambient growth and related development projects on the street system in the study area (cumulative base conditions) and then assigning the new project-generated trips using the same geographic distribution pattern described in Section 4.4.5.1 and shown in Figure 4-6~~Figure 46~~. The existing and forecast peak hour street segment traffic volumes are presented in Table 4-16~~Table 4-16~~, Table 4-17~~Table 4-17~~, and Table 4-18~~Table 4-18~~ for Concepts A, B, and C, respectively.

TABLE 4-16 : STREET SEGMENT IMPACT ANALYSIS - CONCEPT A

Segment	Location	Facility Type	Peak Hour	Dir.	EXISTING (2006)			CUMULATIVE BASE (2020)			CUMULATIVE PLUS PROJECT (2020)			LOS D OR BETTER
					Volumes	V/C	LOS	Volumes	V/C	LOS	Volumes	V/C	LOS	
1. Henry Street	south of Palani Road (SR 190)	Secondary Arterial	A.M.	NB	602	0.24	A	891	0.36	A	1,061	0.42	A	YES
				SB	720	0.29	A	1,342	0.54	A	1,489	0.60	A	YES
			P.M.	EB	646	0.26	A	845	0.34	A	992	0.40	A	YES
				WB	670	0.27	A	1,223	0.49	A	1,359	0.54	A	YES
2. Palani Road (SR 190)	makai (west) of Henry Street	Secondary Arterial	A.M.	EB	309	0.25	A	359	0.29	A	473	0.38	A	YES
				WB	636	0.51	A	1,057	0.85	D	1,128	0.90	E	NO
				WB	*With Mitigation (Second Westbound Lane)*						*1,128*	*0.45*	*A*	*YES*
			P.M.	EB	617	0.49	A	639	0.51	A	737	0.59	A	YES
				WB	658	0.53	A	1,133	0.91	E	1,198	0.96	E	NO
				WB	*With Mitigation (Second Westbound Lane)*						*1,198*	*0.48*	*A*	*YES*
3. Palani Road (SR 190)	mauka (east) of Henry Street	Secondary Arterial	A.M.	EB	716	0.57	A	802	0.64	B	857	0.69	B	YES
				WB	1,215	0.97	E	1,815	1.45	F	1,911	1.53	F	NO
				WB	*With Mitigation (Second Westbound Lane)*						*1,911*	*0.76*	*C*	*YES*
			P.M.	EB	982	0.79	C	982	0.79	C	1,032	0.83	D	YES
				WB	949	0.76	C	1,817	1.45	F	1,898	1.52	F	NO
				WB	*With Mitigation (Second Westbound Lane)*						*1,898*	*0.76*	*C*	*YES*
4. Kealakaa Street	north of Palani Road (SR 190)	Local Street (Existing) Secondary Arterial (Future)	A.M.	NB	520	0.87	D	1,034	0.86	D	1,034	0.86	D	YES
				SB	403	0.67	B	949	0.79	C	981	0.82	D	YES
			P.M.	NB	280	0.47	A	828	0.69	B	828	0.69	B	YES
				SB	305	0.51	A	876	0.73	C	903	0.75	C	YES
5. Uluaoa Street	makai (west) of Palani Road (SR 190)	Local Street	A.M.	EB	376	0.63	B	376	0.63	B	376	0.63	B	YES
				WB	301	0.50	A	369	0.62	B	369	0.62	B	YES
			P.M.	EB	113	0.19	A	113	0.19	A	113	0.19	A	YES
				WB	179	0.30	A	217	0.36	A	217	0.36	A	YES
6. Queen Kaahumanu Highway (SR 19)	south of Kealakehe Parkway	Primary Arterial 2 Lanes (Existing) 4 Lanes (Future)	A.M.	NB	1,093	0.64	B	1,545	0.48	A	1,572	0.49	A	YES
				SB	1,124	0.66	B	1,334	0.42	A	1,397	0.44	A	YES
			P.M.	NB	1,013	0.60	A	1,273	0.40	A	1,298	0.41	A	YES
				SB	987	0.58	A	1,376	0.43	A	1,430	0.45	A	YES
7. Kealakehe Parkway	makai (west) of Ane Keohokalole Highway	Secondary Arterial	A.M.	EB	424	0.34	A	707	0.57	A	802	0.64	B	YES
				WB	348	0.28	A	422	0.34	A	504	0.40	A	YES
			P.M.	EB	221	0.18	A	418	0.33	A	499	0.40	A	YES
				WB	382	0.31	A	629	0.50	A	704	0.56	A	YES
8. Ane Keohokalole Highway	south of Kealakehe Parkway	Secondary Arterial	A.M.	NB	241	0.19	A	561	0.45	A	752	0.60	B	YES
				SB	432	0.35	A	744	0.60	A	933	0.75	C	YES
			P.M.	NB	203	0.16	A	511	0.41	A	687	0.55	A	YES
				SB	150	0.12	A	407	0.33	A	570	0.46	A	YES
9. Queen Kaahumanu Highway (SR 19)	north of Kealakehe Parkway	Primary Arterial 2 Lanes (Existing) 4 Lanes (Future)	A.M.	NB	1,093	0.87	D	1,402	0.44	A	1,511	0.47	A	YES
				SB	1,124	0.90	D	1,519	0.47	A	1,677	0.52	A	YES
			P.M.	NB	1,013	0.81	D	1,215	0.38	A	1,315	0.41	A	YES
				SB	987	0.79	C	1,362	0.43	A	1,497	0.47	A	YES
10. Palani Road (SR 190)	south of Mamalahoa Highway	Secondary Arterial	A.M.	NB	541	0.43	A	643	0.51	A	698	0.56	A	YES
				SB	938	0.75	C	1,117	0.89	D	1,180	0.94	E	NO
				SB	*With Mitigation (Second Southbound Lane)*						*1,180*	*0.47*	*A*	*YES*
			P.M.	NB	659	0.53	A	793	0.63	B	843	0.67	B	YES
				SB	929	0.74	C	1,136	0.91	E	1,190	0.95	E	NO
				SB	*With Mitigation (Second Southbound Lane)*						*1,190*	*0.48*	*A*	*YES*

Note: Roadway Capacity for each facility types were assumed in Table 8.

TABLE 4-17 : STREET SEGMENT IMPACT ANALYSIS - CONCEPT B

Segment	Location	Facility Type	Peak Hour	Dir.	EXISTING (2006)			CUMULATIVE BASE (2020)			CUMULATIVE PLUS PROJECT (2020)			LOS D OR BETTER
					Volumes	V/C	LOS	Volumes	V/C	LOS	Volumes	V/C	LOS	
1. Henry Street	south of Palani Road (SR 190)	Secondary Arterial	A.M.	NB	602	0.24	A	891	0.36	A	1,071	0.43	A	YES
				SB	720	0.29	A	1,342	0.54	A	1,570	0.63	B	YES
			P.M.	EB	646	0.26	A	845	0.34	A	1,093	0.44	A	YES
				WB	670	0.27	A	1,223	0.49	A	1,415	0.57	A	YES
2. Palani Road (SR 190)	makai (west) of Henry Street	Secondary Arterial	A.M.	EB	309	0.25	A	359	0.29	A	479	0.38	A	YES
				WB	636	0.51	A	1,057	0.85	D	1,167	0.93	E	NO
				WB	*With Mitigation (Second Westbound Lane)*						*1,167*	*0.47*	*A*	*YES*
			P.M.	EB	617	0.49	A	639	0.51	A	804	0.64	B	YES
				WB	658	0.53	A	1,133	0.91	E	1,225	0.98	E	NO
				WB	*With Mitigation (Second Westbound Lane)*						*1,225*	*0.49*	*A*	*YES*
3. Palani Road (SR 190)	mauka (east) of Henry Street	Secondary Arterial	A.M.	EB	716	0.57	A	802	0.64	B	887	0.71	C	YES
				WB	1,215	0.97	E	1,815	1.45	F	1,915	1.53	F	NO
				WB	*With Mitigation (Second Westbound Lane)*						*1,915*	*0.77*	*C*	*YES*
			P.M.	EB	982	0.79	C	982	0.79	C	1,053	0.84	D	YES
				WB	949	0.76	C	1,817	1.45	F	1,955	1.56	F	NO
				WB	*With Mitigation (Second Westbound Lane)*						*1,955*	*0.78*	*C*	*YES*
4. Kealakaa Street	north of Palani Road (SR 190)	Local Street (Existing) Secondary Arterial (Future)	A.M.	NB	520	0.87	D	1,034	0.86	D	1,034	0.86	D	YES
				SB	403	0.67	B	949	0.79	C	982	0.82	D	YES
			P.M.	NB	280	0.47	A	828	0.69	B	828	0.69	B	YES
				SB	305	0.51	A	876	0.73	C	922	0.77	C	YES
5. Uluaoa Street	makai (west) of Palani Road (SR 190)	Local Street	A.M.	EB	376	0.63	B	376	0.63	B	376	0.63	B	YES
				WB	301	0.50	A	369	0.62	B	369	0.62	B	YES
			P.M.	EB	113	0.19	A	113	0.19	A	113	0.19	A	YES
				WB	179	0.30	A	217	0.36	A	217	0.36	A	YES
6. Queen Kaahumanu Highway (SR 19)	south of Kealakehe Parkway	Primary Arterial 2 Lanes (Existing) 4 Lanes (Future)	A.M.	NB	1,093	0.64	B	1,545	0.48	A	1,587	0.50	A	YES
				SB	1,124	0.66	B	1,334	0.42	A	1,401	0.44	A	YES
			P.M.	NB	1,013	0.60	A	1,273	0.40	A	1,309	0.41	A	YES
				SB	987	0.58	A	1,376	0.43	A	1,468	0.46	A	YES
7. Kealakehe Parkway	makai (west) of Ane Keohokalole Highway	Secondary Arterial	A.M.	EB	424	0.34	A	707	0.57	A	807	0.65	B	YES
				WB	348	0.28	A	422	0.34	A	549	0.44	A	YES
			P.M.	EB	221	0.18	A	418	0.33	A	556	0.44	A	YES
				WB	382	0.31	A	629	0.50	A	736	0.59	A	YES
8. Ane Keohokalole Highway	south of Kealakehe Parkway	Secondary Arterial	A.M.	NB	241	0.19	A	561	0.45	A	857	0.69	B	YES
				SB	432	0.35	A	744	0.60	A	944	0.76	C	YES
			P.M.	NB	203	0.16	A	511	0.41	A	760	0.61	B	YES
				SB	150	0.12	A	407	0.33	A	683	0.55	A	YES
9. Queen Kaahumanu Highway (SR 19)	north of Kealakehe Parkway	Primary Arterial 2 Lanes (Existing) 4 Lanes (Future)	A.M.	NB	1,093	0.87	D	1,402	0.44	A	1,571	0.49	A	YES
				SB	1,124	0.90	D	1,519	0.47	A	1,686	0.53	A	YES
			P.M.	NB	1,013	0.81	D	1,215	0.38	A	1,358	0.42	A	YES
				SB	987	0.79	C	1,362	0.43	A	1,592	0.50	A	YES
10. Palani Road (SR 190)	south of Mamalahoa Highway	Secondary Arterial	A.M.	NB	541	0.43	A	643	0.51	A	728	0.58	A	YES
				SB	938	0.75	C	1,117	0.89	D	1,184	0.95	E	NO
				SB	*With Mitigation (Second Southbound Lane)*						*1,184*	*0.47*	*A*	*YES*
			P.M.	NB	659	0.53	A	793	0.63	B	864	0.69	B	YES
				SB	929	0.74	C	1,136	0.91	E	1,228	0.98	E	NO
				SB	*With Mitigation (Second Southbound Lane)*						*1,228*	*0.49*	*A*	*YES*

Note: Roadway Capacity for each facility types were assumed in Table 8.

TABLE 4- 18 : STREET SEGMENT IMPACT ANALYSIS - CONCEPT C

Segment	Location	Facility Type	Peak Hour	Dir.	EXISTING (2006)			CUMULATIVE BASE (2020)			CUMULATIVE PLUS PROJECT (2020)			LOS D OR BETTER
					Volumes	V/C	LOS	Volumes	V/C	LOS	Volumes	V/C	LOS	
1. Henry Street	south of Palani Road (SR 190)	Secondary Arterial	A.M.	NB	602	0.24	A	891	0.36	A	1,065	0.43	A	YES
				SB	720	0.29	A	1,342	0.54	A	1,594	0.64	B	YES
			P.M.	EB	646	0.26	A	845	0.34	A	1,108	0.44	A	YES
				WB	670	0.27	A	1,223	0.49	A	1,418	0.57	A	YES
2. Palani Road (SR 190)	makai (west) of Henry Street	Secondary Arterial	A.M.	EB	309	0.25	A	359	0.29	A	475	0.38	A	YES
				WB	636	0.51	A	1,057	0.42	A	1,178	0.94	E	NO
				WB	*With Mitigation (Second Westbound Lane)*						*1,178*	*0.47*	*A*	*YES*
			P.M.	EB	617	0.49	A	639	0.51	A	814	0.65	B	YES
				WB	658	0.53	A	1,133	0.45	A	1,227	0.98	E	NO
				WB	*With Mitigation (Second Westbound Lane)*						*1,227*	*0.49*	*A*	*YES*
3. Palani Road (SR 190)	mauka (east) of Henry Street	Secondary Arterial	A.M.	EB	716	0.57	A	802	0.64	B	895	0.72	C	YES
				WB	1,215	0.97	E	1,815	0.73	C	1,912	1.53	F	NO
				WB	*With Mitigation (Second Westbound Lane)*						*1,912*	*0.76*	*C*	*YES*
			P.M.	EB	982	0.79	C	982	0.79	C	1,054	0.84	D	YES
				WB	949	0.76	C	1,817	0.73	C	1,963	1.57	F	NO
				WB	*With Mitigation (Second Westbound Lane)*						*1,963*	*0.79*	*C*	*YES*
4. Kealakaa Street	north of Palani Road (SR 190)	Local Street (Existing) Secondary Arterial (Future)	A.M.	NB	520	0.87	D	1,034	0.83	D	1,034	0.83	D	YES
				SB	403	0.67	B	949	0.76	C	981	0.78	C	YES
			P.M.	NB	280	0.47	A	828	0.66	B	828	0.66	B	YES
				SB	305	0.51	A	876	0.70	C	925	0.74	C	YES
5. Uluaoa Street	makai (west) of Palani Road (SR 190)	Local Street	A.M.	EB	376	0.63	B	376	0.63	B	376	0.63	B	YES
				WB	301	0.50	A	369	0.62	B	369	0.62	B	YES
			P.M.	EB	113	0.19	A	113	0.19	A	113	0.19	A	YES
				WB	179	0.30	A	217	0.36	A	217	0.36	A	YES
6. Queen Kaahumanu Highway (SR 19)	south of Kealakehe Parkway	Primary Arterial 2 Lanes (Existing) 4 Lanes (Future)	A.M.	NB	1,093	0.64	B	1,545	0.48	A	1,592	0.50	A	YES
				SB	1,124	0.66	B	1,334	0.42	A	1,399	0.44	A	YES
			P.M.	NB	1,013	0.60	A	1,273	0.40	A	1,309	0.41	A	YES
				SB	987	0.58	A	1,376	0.43	A	1,473	0.46	A	YES
7. Kealakehe Parkway	makai (west) of Ane Keohokalole Highway	Secondary Arterial	A.M.	EB	424	0.34	A	707	0.57	A	804	0.64	B	YES
				WB	348	0.28	A	422	0.34	A	562	0.45	A	YES
			P.M.	EB	221	0.18	A	418	0.33	A	564	0.45	A	YES
				WB	382	0.31	A	629	0.50	A	737	0.59	A	YES
8. Ane Keohokalole Highway	south of Kealakehe Parkway	Secondary Arterial	A.M.	NB	241	0.19	A	561	0.45	A	888	0.71	C	YES
				SB	432	0.35	A	744	0.60	A	938	0.75	C	YES
			P.M.	NB	203	0.16	A	511	0.41	A	763	0.61	B	YES
				SB	150	0.12	A	407	0.33	A	699	0.56	A	YES
9. Queen Kaahumanu Highway (SR 19)	north of Kealakehe Parkway	Primary Arterial 2 Lanes (Existing) 4 Lanes (Future)	A.M.	NB	1,093	0.87	D	1,402	0.44	A	1,589	0.50	A	YES
				SB	1,124	0.90	D	1,519	0.47	A	1,681	0.53	A	YES
			P.M.	NB	1,013	0.81	D	1,215	0.38	A	1,359	0.42	A	YES
				SB	987	0.79	C	1,362	0.43	A	1,605	0.50	A	YES
10. Palani Road (SR 190)	south of Mamalahoa Highway	Secondary Arterial	A.M.	NB	541	0.43	A	643	0.51	A	736	0.59	A	YES
				SB	938	0.75	C	1,117	0.89	D	1,182	0.95	E	NO
				SB	*With Mitigation (Second Southbound Lane)*						*1,182*	*0.47*	*A*	*YES*
			P.M.	NB	659	0.53	A	793	0.63	B	865	0.69	B	YES
				SB	929	0.74	C	1,136	0.91	E	1,233	0.99	E	NO
				SB	*With Mitigation (Second Southbound Lane)*						*1,233*	*0.49*	*A*	*YES*

Note: Roadway Capacity for each facility types were assumed in Table 8.

Table 4-19: Capacity of Facilities

Facility Type*	Definition*	Capacity per lane per hour**
Primary Arterial	Includes major highways, parkways, and primary arterials that move vehicles in large volumes and at higher speeds from one geographic area to another; highest traffic volumes corridor. Designed as a limited access roadway. Primary arterials shall have a minimum ROW of 120 feet.	1,700
Secondary Arterial	A street of considerable continuity that is primarily a traffic artery between or through large areas; interconnect with and augment primary system. Designed as a limited access roadway. Secondary arterials shall have a minimum ROW of 80 feet.	1,250
Major Collector	Any street supplementary to the arterial street system that is a means of transit between this system and smaller areas; used to some extent for through traffic and to access abutting properties; collect and distribute traffic between neighborhood and arterial system. Major collectors shall have a minimum ROW of 60 feet.	800
Local Streets – Commercial/Industrial	Local streets within commercial and industrial areas shall have a minimum ROW of 60 feet.	600
Minor Collector & Local Street	Minor collectors are used at times as through streets and for access to abutting properties. The principal purpose of a local street is to provide access to property abutting the public ROW.	450

* Source: *County of Hawai'i General Plan* Appendix A (County of Hawai'i, February 2005)

** Capacity is based on HCM 2000 methodology.

The number of traffic impacts would be the same under Concepts A, B, and C; however, the magnitude of those impacts would be greatest under Concept C. The mitigation measures described in Section 4.4.5.~~1~~ 5 for study intersections #~~3~~ 4 and #~~4~~ 5 (Henry Street & Palani Road and Minor Site Access Road & Palani Road) would also fully mitigate the identified impacts at street segments #2 and #3 by constructing an additional makai-bound lane on Palani Road.

The southbound segment of street segment #10 (Palani Road south of Mamalahoa Highway) is projected to operate at LOS E during the P.M. without the proposed project in the future, and both A.M. and P.M. peak hours with the proposed project. As mitigation to address this

cumulative impact, to which the project would contribute, the southbound roadway could be widened to provide two lanes. This improvement could be coordinated with and would complement the proposed widening of southbound Palani Road immediately north of this location (between Hina Lani Street and Mamalahoa Highway), identified in the *Final Environmental Impact Statement for the Kula Nei Project* (Belt Collins Hawaii Ltd., September 2007). This widening could be extended to Hao Kuni Street, a distance of approximately 2,000 feet, where the two lanes would merge into the single existing southbound lane. While additional ROW may be needed to implement this measure, it does not appear that existing development would necessarily preclude its implementation, although it is noted that there are three private driveways on the makai side of Palani Road on this segment. With this improvement, the segment of Palani Road south of Mamalahoa Highway would be fully mitigated.

4.4.6 Summary and Conclusions

Estimated Trips Generated

- Concept A is expected to generate approximately 9,953 weekday daily trips, including 1,178 trips during the weekday morning peak hour and 1,046 trips during the weekday afternoon peak hour. Concept B is expected to generate approximately 16,034 weekday daily trips, including 1,511 trips during the weekday morning peak hour and 1,629 trips during the weekday afternoon peak hour. Concept C is expected to generate approximately 17,617 weekday daily trips, including 1,580 trips during the weekday morning peak hour and 1,695 trips during the weekday afternoon peak hour.

Intersections - Peak Hour Capacity Analysis

- Peak hour capacity analyses were conducted for 10 existing and two future intersections in the vicinity of the project site. Seven of 10 existing intersections currently operate at LOS D or better during the weekday peak hours.
- Analysis of projected year 2020 cumulative base conditions, representing future conditions without the proposed project, indicates that five of the analyzed intersections would operate at LOS E or F during the A.M. peak hour, the P.M. peak hour, or both.

- Analysis of projected year 2020 cumulative base plus project conditions indicates that seven of the analyzed intersections would operate at LOS E or F during one or both peak hours. The project would result in two project-specific traffic impacts and would contribute to five cumulative traffic impacts. The number of traffic impacts would be the same under Concepts A, B and C; however, the magnitude of those impacts would be greatest with Concept C.

Street Segments – Peak Hour Capacity Analysis

- Street segment analysis was conducted for 10 street segments. Nine of 10 segments currently operate at LOS D or better during the weekday peak hours.
- Three of the analyzed directional street segments are projected to operate at LOS E or F under 2020 cumulative base conditions, and the project would contribute to cumulative impacts at these three locations. The other seven segments would adequately accommodate the projected increase in volumes during peak hours.

Mitigation Strategies - Intersections

- Mitigation strategies were developed to address the identified deficiencies at the seven study intersections with projected poor levels of service (LOS E or F). Each of the identified cumulative and project-related impacts could be fully mitigated with the recommended improvements.

Mitigation Strategies – Street Segments

- The mitigation measures proposed to address two study intersections would also fully mitigate the identified impacts on two of the three impacted street segments.
- An additional mitigation measure was developed to mitigate the third location, street segment #10. However, this mitigation measure~~s~~ would be recommended even without the proposed project. With these improvements, the identified cumulative street segment impacts, to which the project would contribute, would be fully mitigated.

The Impacts of the Alternatives on Roadways and Traffic

ALTERNATIVES	NO IMPACTS	POTENTIAL IMPACTS	ADVERSE IMPACTS	COMMENTS/MITIGATION MEASURES
1. No Action		✓		Some improvements to the regional traffic system, such as the mid-level highway, would be required to achieve/maintain the County's desired Level of Service (LOS D) even if the property remains vacant.
2. Alternative A		✓		Development of the project would have significant impacts upon the regional traffic system. To address those impacts, a series of mitigation measures are proposed.
3. Alternative B		✓		Development of the project would have significant impacts upon the regional traffic system. To address those impacts, a series of mitigation measures are proposed.
4. Alternative C		✓		Development of the project would have significant impacts upon the regional traffic system. To address those impacts, a series of mitigation measures are proposed.

4.5 NOISE

Title 11, Chapter 46, of the HAR 11-46 defines maximum permissible sound levels. HAR 11-46 is intended to protect, control, and abate noise pollution from stationary sources and from construction, industrial, and agricultural equipment. It sets maximum permissible sound levels in various zoning districts for excessive noise sources during the day and at night at the property line where the activity occurs, as shown in the following table.

Table 4-20: Maximum Permissible Sound Levels in dBA*

Class	Zoning	Maximum Permissible Sound Level (dBA)	
		Daytime (7:00 AM to 10:00 PM)	Nighttime (10:00 PM to 7:00 AM)
A	Residential, conservation, preservation, public space, open space, or similar type	55	45
B	Multi-family dwellings, apartment, business, commercial, hotel, resort, or similar type	60	50
C	Agriculture, country, industrial, or similar type	70	70

*dBA = A-weighted sound level in decibels
Source: HAR 11-46

Except in Class C zoning, the maximum permissible noise at night is 10 dBA less than during the day. For impulsive noise, the State DOH defines the maximum permissible sound level as 10 dBA above the levels specified in the table. Maximum permissible sound levels are not to be exceeded more than 10 percent of the time in a 20-minute period without a permit or variance.

4.5.1 Existing Conditions

The existing dominant noise sources in the vicinity of the Keahuolu Affordable Housing Pproject site are traffic from the area's roadway system, including Palani Road and Queen Ka'ahumanu Highway. Other noise sources include wind moving through vegetation, birds, and fixed source noise. The latter is primarily associated with light industrial activities at the industrial subdivision. Traffic noise tends to dominate all other noise sources in the project area.

4.5.2 Potential Impacts and Mitigation Measures

Construction Activities. Potential impacts on the ambient noise quality of the project site and surrounding area would include to construction activity associated with the development of the Keahuolu Affordable Housing Pproject. These impacts are not considered significant since they would be temporary, and construction work would be conducted in compliance with applicable DOH noise regulations.

Construction activities will involve grubbing and grading of the site and construction of infrastructure and buildings. Noise levels associated with construction equipment typically range from 80 to 95 dBA at 50 feet from the source. Varying in location and duration, noise levels may be continuous (e.g., generator motors), fluctuating (e.g., crane operations), or impulsive (e.g., metal drill pipes banging together).

Development of the Keahuolu Affordable Housing Pproject will involve site preparation activities, such as excavation and grading, and construction of the new buildings and infrastructure. The dominant noise sources during construction will be earth moving equipment such as bulldozers and trucks. Some area residences may be temporarily impacted by construction noise depending on their proximity to the project site.

Measures to minimize noise impacts may include limiting work to daytime hours, reducing truck/equipment idling when not in use, using manually adjustable or self-adjusting backup alarms, and fitting generators and equipment with manufacturer-approved exhaust mufflers. Noise from construction activity will be short-term and will be required to comply with DOH noise regulations.

Roadway Traffic Noise. The increase in traffic-related noise associated with the Keahuou Affordable Housing Pproject is not anticipated to be significant. To buffer the project from the Ane Keohokalole Highway, the conceptual plans for the project provide for commercial uses along the highway and a wide landscaped greenway between the highway and the project site.

Residential and commercial uses within the Keahuolu project site will be required to conform to DOH rules and regulations for noise, which state maximum allowable noise limits at property lines.

The Impacts of the Alternatives on Noise

ALTERNATIVES	NO IMPACTS	POTENTIAL IMPACTS	ADVERSE IMPACTS	COMMENTS/MITIGATION MEASURES
1. No Action	✓			The No Action Alternative would have no impacts on noise quality.
2. Alternative A		✓		Short-term temporary noise impacts would occur during construction. Construction work will be conducted in compliance with applicable State DOH noise regulations. Long term noise impacts are not anticipated to be significant over the development period of the project.
3. Alternative B		✓		Short-term temporary noise impacts would occur during construction. Construction work will be conducted in compliance with applicable State DOH noise regulations. Long term noise impacts are not anticipated to be significant over the development period of the project.
4. Alternative C		✓		Short-term temporary noise impacts would occur during construction. Construction work will be conducted in compliance with applicable State DOH noise regulations. Long term noise impacts are not anticipated to be significant over the development period of the project.

4.6 AIR QUALITY

4.6.1 Existing Conditions

Regional and local climate together with the amount and type of human activity generally dictate the air quality of a given location. State and national ~~Ambient Air Quality Standards (~~AAQS~~)~~ are established to regulate ambient concentrations of particulate matter, sulfur dioxide, nitrogen dioxide, carbon monoxide, ozone, and lead. In addition, the State has set a standard for hydrogen sulfide. Hawai'i's AAQS for nitrogen dioxide and carbon monoxide are more stringent than the national standards, while the AAQS for the other parameters are comparable.

Except for periodic impacts from volcanic emissions (vog) and possibly localized traffic congestion, air quality in the Keahuolu project area is relatively good. Limited air quality data available from the State DOH indicate that, despite the vog, concentrations are well within state and national air quality standards.

The present air quality in the project area is mostly affected by air pollutants from natural, industrial, agricultural, and/or vehicular sources. Natural sources that may affect the project area, but cannot be accurately quantified, include the ocean (salt spray), plants (aeroallergens), wind-blown dust, and volcanoes. Of these natural sources, volcanoes are the most significant, especially since the latest eruption phase of Kilauea Volcano began in 1983, and still continues. Air pollution emissions from the volcano consist primarily of sulfur dioxide and are carried to the project area by prevailing winds. The volcanic emissions are seen in the form of a vog ~~which~~ that persistently hangs over a majority of the West Hawai'i area.

The major industrial sources of air pollutants in the project area include the Keahole Power Plant, operated by ~~Hawaii Electric Light Company (~~HELCo~~)~~. Air pollution from the power plant consists mostly of sulfur dioxide and oxides of nitrogen.

The State DOH operates a network of air quality monitoring stations, but very limited data are available for the island of Hawai'i, and even less for the Kona area. Monitoring at Kealakekua between 2000 and 2004 showed consistently low concentrations of sulfur dioxide and particulates.

There are no reported measurements of motor ~~vehicle~~ vehicle-related air pollutants in the project vicinity (i.e., lead, ozone, nitrogen dioxide, carbon monoxide). Lead, ozone, and nitrogen dioxide are typically regional-scale problems. Concentrations of lead and nitrogen dioxide have not been found to exceed AAQS elsewhere in the state. However, ozone concentrations at Sand Island on O'ahu have been found at times to exceed state standards.

4.6.2 Potential Impacts and Mitigation Measures

Construction Activities. Short-term direct and indirect impacts on air quality could potentially occur during project construction. Direct impacts could include (1) fugitive dust from vehicle movement and soil excavation, and (2) exhaust emissions from on-site construction equipment. Indirect impacts could also result from slow-moving construction equipment travelling to and from the project site and from a temporary increase in local traffic caused by commuting construction workers.

State of Hawai'i Air Pollution Control regulations prohibit visible emissions of fugitive dust from construction activities at the property line. A dust control program will be developed and followed to control dust from construction activities. Fugitive dust emissions can be controlled to a large extent by watering active work areas, using wind screens, keeping adjacent paved roads clean, and covering open-bodied trucks. Other measures include limiting the area to be disturbed at any given time, mulching or chemically stabilizing inactive areas, or paving and landscaping areas early in the construction schedule. Monitoring dust at the project boundary could be considered to evaluate the effectiveness of the dust control program.

The largest mobile and stationary construction equipment is usually diesel-powered. Nitrogen oxides emissions from diesel engines can be relatively higher than gasoline-powered equipment. However, the standard for nitrogen dioxide is set on an annual basis and is not likely to be violated by short-term construction equipment emissions. Carbon monoxide emissions from diesel engines, on the other hand, are very low and should be relatively insignificant.

Roadway Traffic. Once construction is completed, motor vehicle traffic to and from the Keahuolu project site would result in a long-term increase in vehicular emissions. However, due

to a combination of Hawai'i's weather patterns and tradewinds and the national standards imposed on lowering vehicles' emissions, concentrations are expected to remain well within state and federal ~~Ambient Air Quality standards~~AAQS.

Electrical Demand and Solid Waste Disposal. The proposed project may also result in long-term air quality impacts due to electrical generation required to support the proposed project. The Keahole plant, however, is required to obtain State DOH permits and demonstrate that state and federal air quality standards are met. Therefore, no significant long-term impacts to air quality due to electrical generation are anticipated.

The Impacts of the Alternatives on Air Quality

ALTERNATIVES	NO IMPACTS	POTENTIAL IMPACTS	ADVERSE IMPACTS	COMMENTS/MITIGATION MEASURES
1. No Action	✓			The No Action Alternative would have no impacts on air quality.
2. Alternative A	✓			Short-term potential impacts during construction will be mitigated by following State of Hawai'i Air Pollution Control regulations. Long-term ~~traffic~~ traffic-related potential impacts are not expected to exceed state and national AAQS. Long-term potential impacts associated with indirect air pollution emissions from the project's electrical demand and solid waste disposal demand would be minor.
3. Alternative B	✓			Short-term potential impacts during construction will be mitigated by following State of Hawai'i Air Pollution Control regulations. Long-term ~~traffic~~ traffic-related potential impacts are not expected to exceed state and national AAQS. Long-term potential impacts associated with indirect air pollution emissions from the project's electrical demand and solid waste disposal demand would be minor.
4. Alternative C	✓			Short-term potential impacts during construction will be mitigated by following State of Hawai'i Air Pollution Control regulations. Long-term ~~traffic~~ traffic-related potential impacts are not expected to exceed state and national AAQS. Long-term potential impacts associated with indirect air pollution emissions from the project's electrical demand and solid waste disposal demand would be minor.

4.7 VISUAL RESOURCES

4.7.1 Existing Conditions

The present visual character of the project lands from Queen Ka‘ahumanu Highway looking mauka can be characterized as gently upward sloping land, lava fields with dense stands of kiawe, stands of various grasses, and a backdrop of Hualalai and residential uses bordering the project land. The mauka and makai views across the project lands from the upper elevations at Palani Road are similar with the exception that the Pacific Ocean and Kailua town form the backdrop of the views looking makai. The visual character of the adjacent off-site reservoir location is similar to the project site. The property is presently undeveloped land overgrown with scrub forest that includes trees and dense undergrowth. Views of the project lands from neighboring properties are generally obscured by the existing vegetation. It is not typically possible to see beyond the perimeter of the property to the interior.

4.7.2 Potential Impacts and Mitigation Measures

Development of the project site and the proposed reservoir site will result in the replacement of vegetation land with homes and landscaping, commercial development, and related infrastructure such as internal roadways. The project development will become visible from Palani Road and the existing neighboring developments. The proposed reservoir storage tank would be visible from neighboring properties and from the project site. From vantage points located mauka and makai of the site, the property will appear as a continuation of the development in the Kailua-Kona area.

The visual character of the proposed project will be determined by the final development scheme of the selected developer. In general, the project may be comprised of a mix of low-rise and mid-rise residential, mixed-use and commercial development. No mitigation measures are proposed at this time.

The Impacts of the Alternatives on Visual Resources

ALTERNATIVES	NO IMPACTS	POTENTIAL IMPACTS	ADVERSE IMPACTS	COMMENTS/MITIGATION MEASURES
1. No Action	✓			The No Action Alternative would have no impacts on visual resources.
2. Alternative A		✓		The visual character of the project will be determined by the final development scheme of the selected developer. No mitigation is proposed at this time.
3. Alternative B		✓		The visual character of the project will be determined by the final development scheme of the selected developer. No mitigation is proposed at this time.
4. Alternative C		✓		The visual character of the project will be determined by the final development scheme of the selected developer. No mitigation is proposed at this time.

4.8 INFRASTRUCTURE AND UTILITIES

Belt Collins Hawaii prepared a civil infrastructure report and related cost estimates for the Keahuolu Affordable Housing Pproject. The report is summarized in the following sections. All costs presented are in 2007 dollars. The complete report is included in Appendix G.

This section discusses the infrastructure requirements for the three alternative development concepts, which provide a variety of medium and high density multi-family units and low density single-family units. The residential units are located on approximately 162 acres in all three concepts. Residential floor areas are anticipated to range for single-family units from 1,000 to 2,000 square feet, and for multi-family units from 400 to 1,500 square feet in size.

The land use elements of the alternative development concepts that have been assessed for this section include: affordable housing units, market housing units, commercial area, a school site, a community park, roadways, and preservation of archaeological and cultural sites. Infrastructure facilities required to support the development include roads, drainage facilities, a ~~potable~~ drinking water system, a wastewater collection system, an electrical system, a telephone system, and a cable television system. The three alternative development concepts with varying dwelling unit densities and the projected timelines are summarized in Table 4-21, Table 4-22, and Table 4-23. Table 4-24 provides a breakdown of the units and densities.

Table 4-21: Alternative Concept Plan A

Year	Land Use		
	Residential Units (multifamily/single family)	Commercial/Retail (SF)	School (SF)
2010	200 / 100		
2011	200 / 100		
2012	200 / 100		
2013	20 / 100		8,700
2014			
2015			
2016			
2017			
2018		100,000	
2019			
2020		97,000	
Total	**1,020**	**197,000**	**8,700**

Table 4-22: Alternative Concept Plan B

Year	Land Use		
	Residential Units (multifamily/single family)	Commercial/Retail (SF)	School (SF)
2010	200 / 100		
2011	200 / 100		
2012	200 / 100		
2013	200 / 100		8,700
2014	200 / 100		
2015	200 / 100		
2016	40 / 0		
2017			
2018		100,000	
2019			
2020		97,000	
Total	**1,840**	**197,000**	**8,700**

Table 4-23: Alternative Concept Plan C

Year	Land Use		
	Residential Units (multifamily)	Commercial/Retail (SF)	School (SF)
2010	300		
2011	300		
2012	300		
2013	300		8,700
2014	300		
2015	300		
2016	300		
2017	230		
2018		100,000	
2019			
2020		97,000	
Total	**2,330**	**197,000**	**8,700**

Table 4-24: Alternative Concepts – Units and Densities

	Alternative Concepts		
	A	B	C
Residential Units			
High density – multi-family	400	800	800
Medium density – multi-family	220	440	1,530
Low density – single-family	400	600	0
Total	**1,020**	**1,840**	**2,330**
Density (dwelling units per acre)			
High density – multi-family	12	24	24
Medium density – multi-family	8	16	12
Low density – single-family	4	6	n/a
Commercial/retail	**197,000 SF**	**197,000 SF**	**197,000 SF**

Infrastructure for the proposed project would be built over an approximately 12-year period as the project site is developed. Construction is anticipated to begin in 2008/2009 and provide the required infrastructure for the initial stages of development in 2010. From 2010 until 2020, the infrastructure would be expanded to accommodate the entire project. Construction of the proposed development is anticipated to be completed by 2020.

4.8.1 Roadway System

4.8.1.1 Existing Conditions

Palani Road is the only existing road bordering the project, along the southern boundary. The proposed Ane Keohokalole Highway would border the project along the makai boundary, and the proposed Keanalehu Drive would border the project along the mauka boundary. Keanalehu Drive and Manawale‘a Street, along the northern-mauka tip of the project, are currently under construction with a projected completion date of late 2008.

4.8.1.2 Proposed Roadway System, Potential Impacts, and Mitigation Measures

Off-Site Roadway System

The County’s proposed Ane Keohokalole Highway is key to full buildout of the Keahuolu project. Without Ane Keohokalole Highway, vehicular access to the site would be limited to Keanalehu Drive and one possible connection to Palani Road. (See Figure 4-14414).

Ane Keohokalole Highway would be a minor arterial with a 120-foot-wide ROW and posted speed limit of 35 miles per hour. Two lanes are proposed in each direction. The County plans to designate the highway as a bus transit corridor. A regional bus transit stop at the Ane Keohokalole Highway/Makala Boulevard intersection fronting the Keahuolu project is proposed. Bus stops are also proposed on Ane Keohokalole Highway for local circulators serving the mauka and makai neighborhoods.

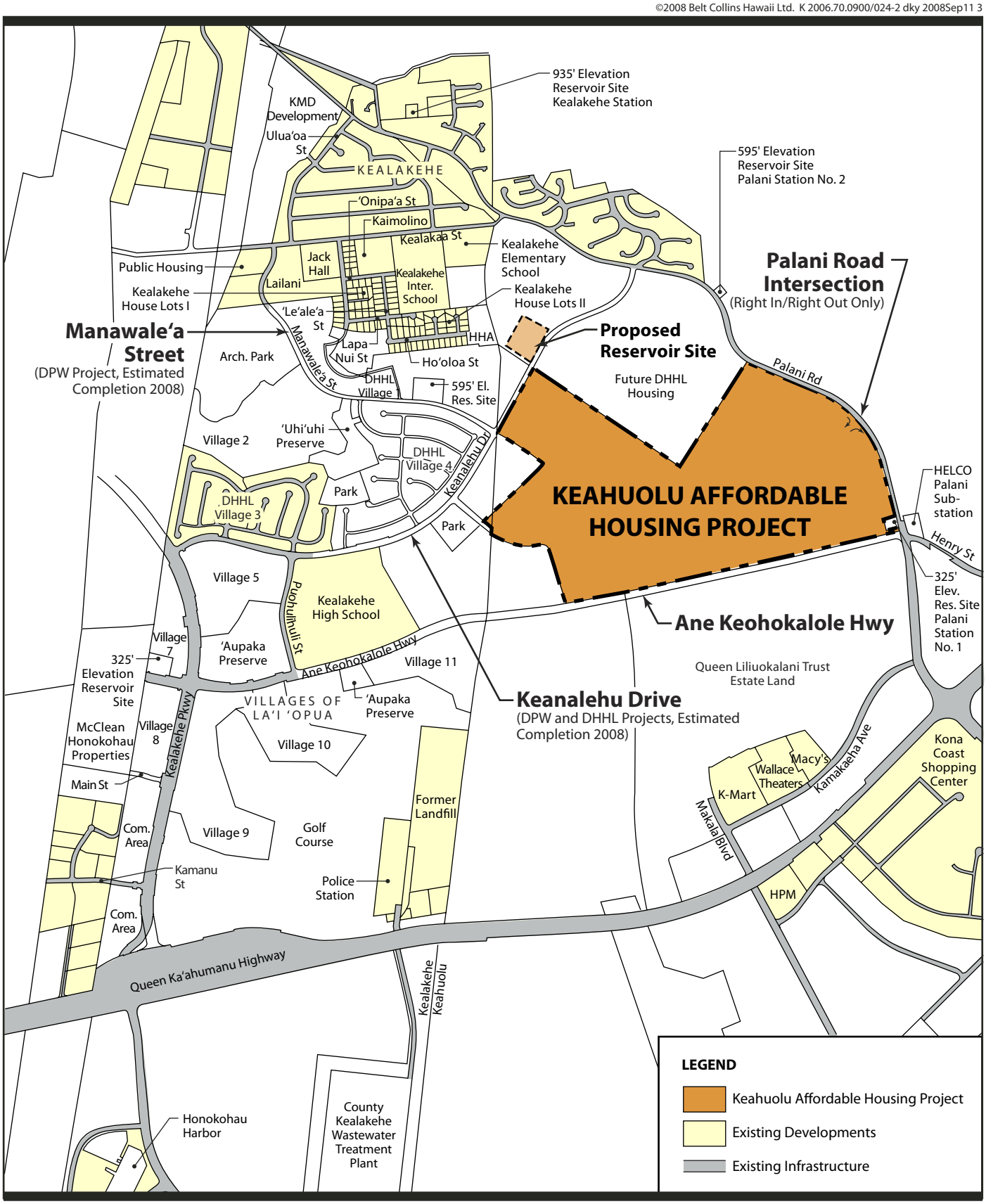

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Figure 4-14
ROAD SYSTEM

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Landowners with frontage to Ane Keohokalole Highway would be expected to share in the cost of constructing the highway. The projected order-of-magnitude cost of the portion fronting the project property, including one lane in each direction plus a middle turn lane with drainage but excluding other utilities, would be $13,633,000. For planning purposes, the project would be allocated responsibility for half of this off-site road improvement cost, or $6,816,500. This estimate would be the same for Concepts A, B, and C. For details on the road cost, see the civil infrastructure report in Appendix G.

A right-in/right-out intersection is proposed along Palani Road. To minimize impacts on traffic along Palani Road, the intersection would include deceleration and acceleration lanes and a raised median to prevent vehicles from attempting to make left turn movements. The order-of-magnitude cost for the Palani Road intersection would be $1,306,000.

Internal Road System

Keahuolu's internal roadways would be ~~pedestrian~~ pedestrian-friendly streets, which accommodate cars, bicycles, and pedestrians. The roadways would be designed to County DPW standards for dedication to the County. The layout of the internal roads would be determined by the developer to coordinate with the development concept. Based on the concept plan, an order-of-magnitude cost for the internal roadways, including water, sewer, drainage, electric, telephone and cable television utilities is $122,725,000.

Potential Short-Term and Long-Term Impacts and Mitigative Measures

No significant short-term environmental impacts are anticipated from the development of the roadways associated with this project. Construction will be carried out in compliance with applicable regulations to minimize impacts, including best management practices. The long-term impacts of the proposed roads would not be significant. The traffic impacts associated with the Keahuolu Affordable Housing P~~p~~roject are assessed in Section 4.4 of this document.

Table 4-25: Estimated Project Roadway Improvement Costs

Concept	Ane Keohokalole Hwy	Palani Road Intersection	Internal Roadways	Total Roadways Costs
A	$6,816,500 *	$1,306,000	$122,725,000	$130,847,500
B	$6,816,500 *	$1,306,000	$122,725,000	$130,847,500
C	$6,816,500 *	$1,306,000	$122,725,000	$130,847,500

* Assumes a 50 percent share in the cost of off-site road improvements of Ane Keohokalole Highway along the project site's frontage. All costs in 2007 dollars.

4.8.2 Drainage Facilities

4.8.2.1 Existing Conditions

There are currently no existing drainage facilities and no defined natural drainage ways on-site. The high permeability of the existing soils is evident by the absence of any natural storm water channels or gullies in the project area.

4.8.2.2 Proposed Drainage System, Potential Impacts, and Mitigation Measures

Storm water runoff from the site would be collected through swales, ditches, gutters, inlets, and catch basins, and transported through pipes to dry wells, seepage wells, or infiltration areas for disposal. Infiltration areas, seepage wells, and dry wells would be located in open spaces and parking lots, where practical. Dry wells would be located within the roadway ~~right-of-way~~ROW as needed. A UIC permit is required by the State DOH to construct and operate the dry wells. It is recommended that BMPs be included in the design of the drainage system, such as vegetated swales, bioretention areas, and storm drain filtration devices to capture sediments and prevent pollutants from entering the groundwater.

Potential Short-Term Impacts and Mitigation Measures

During grading activities, portions of the site would be disturbed and the potential for site erosion would increase. The contractor would be required to comply with Chapter 10 – Erosion

and Sedimentation Control - of the County Code, the DPW Storm Drainage Standard, and the NPDES permit requirements, including the BMPs plan to contain and control site erosion and to prevent the discharge of sediment from the site. Based on the requirement for construction activities to comply with the County requirements and the approved NPDES permit, the short-term environmental impacts from grading activities would be mitigated and insignificant. After completion of the project construction, ground surfaces would be stabilized with landscape and hardscape, and the potential for erosion would be minimal.

Potential Long-Term Impacts and Mitigation Measures

The increase of impermeable surfaces resulting from site development would have the effect of increasing storm water runoff quantities on the site. To comply with the County's Storm Drainage Standard, runoff flow rates and volume would not be increased from the site. The runoff would be collected and discharged to on-site seepage areas, seepage wells, and drywells for percolation into the ground. Thus, precipitation falling on the site would discharge into the ground as it does under pre-development conditions, and off-site runoff would not increase as a result of the proposed development. It is recommended that the drainage systems also include storm drain filtration devices to mitigate potential impacts from potential pollutants. Filtration devices may include vegetated swales, bioretention areas, sand, or organic filtering systems or commercially available proprietary products such as catch basin inserts and hydrodynamic devices. The method of filtration would be determined based on available technology and integrated with the system design. The developer would provide educational materials and programs to residents regarding how they can control and prevent non-point source pollution, including but not limited to, vehicular maintenance and proper disposal of vehicle fluids, the impacts of washing cars on the street, potential impacts of fertilizer and pesticides on the environment, and alternatives to fertilizers and pesticides. The developer would also establish community association covenants to include landscape management and vehicle maintenance controls. Landscape management controls would include the use of fertilizers, pesticides and herbicides, a listing of approved fertilizers, pesticides and herbicides, and a listing of preferred landscape plant species including native plant species and those thought to have a low risk of becoming invasive. Vehicle maintenance controls would include vehicle washing and

maintenance. The developer would also provide the County Department of Parks and the State Department of Education information on the landscape management controls and vehicle maintenance controls to be used within the Keahuolu site. Long-term impacts of the project on drainage and erosion are not anticipated to be significant.

4.8.3 Water Supply and Storage Facilities

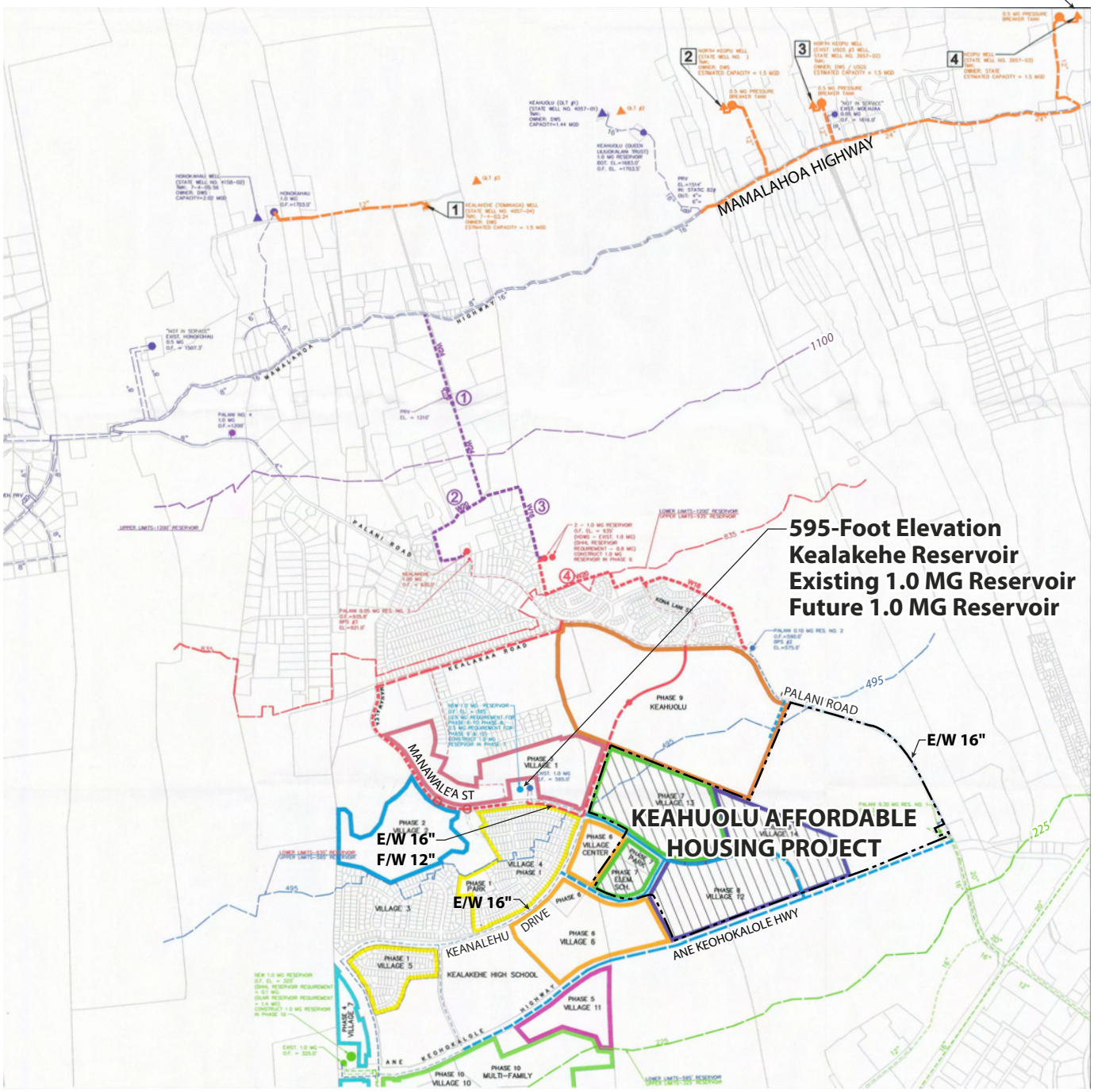
4.8.3.1 Existing Conditions

~~No potable water is available from the County for new developments in the Kona area.~~There are no existing water commitments for the Keahuolu project site and the existing water system infrastructure cannot support the development. New source well(s) would be required to support the project. There is no existing water system within the project site.

The majority of the project site is within the 595-foot-elevation Kealakehe High School reservoir's service zone, which extends from the 495-foot elevation to the 225-foot elevation. A portion of the site, along the extension of Keanalehu Drive, above the 495-foot elevation, would have to be serviced from the 935-foot reservoir system to provide adequate water pressure~~.~~ (s~~S~~ee Figure 4-15~~415~~).

Existing water system infrastructure around the project area connects to existing well sites above Mamalahoa Highway. An existing 16-inch water line in Manawale'a Street from the 595-foot-elevation Kealakehe High School reservoir stubs out to the project site and services the 495- to 225-foot-elevation water service pressure zone. A 12-inch water line is under construction in Manawale'a Street as part of the road construction project to provide water service above the 495-foot elevation. There is an existing 16-inch water line in Palani Road along the project site.

A 1.0-million-gallon (MG) reservoir exists at the Kealakehe High School reservoir site. The site is designed for a second 1.0-MG reservoir. The *Villages of La'i 'Opua Water Master Plan* (approved October 26, 2006 by the DWS), prepared by Akinaka & Associates, Ltd. for the DHHL, allocated 472,800 gallons from the two 1.0-MG reservoirs to the Keahuolu Affordable Housing P~~p~~roject.



Source: Akinaka & Associates, Ltd. Villages of La'i 'Ōpua Water Master Plan. October 26, 2006.

BeltCollins

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Figure 4-15
WATER SUPPLY

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4.8.3.2 Proposed Water System Design

The proposed water system would be developed in accordance with the 2002 State of Hawai'i Water System Standards, Rules and Regulations, and revisions to the standards per discussions with DWS staff. For details of the water system criteria, see the civil infrastructure report in Appendix G. The design and construction of the proposed off-site water system and on-site water system within the road ROW would meet County Standards for dedication to the DWS.

The projected average water daily demand generated by the proposed development plan concepts and reservoir storage requirements are summarized in Table 4-26~~Table 4-26~~. Water system calculations are provided in the civil infrastructure report (see Appendix G).

Table 4-26: Water Requirements

Alternative Development Plan	Average Daily Demand (gallons per day [gpd])	Reservoir* (MG)
Concept A	745,820	1.0
Concept B	1,158,680	1.5
Concept C	1,114,680	1.5

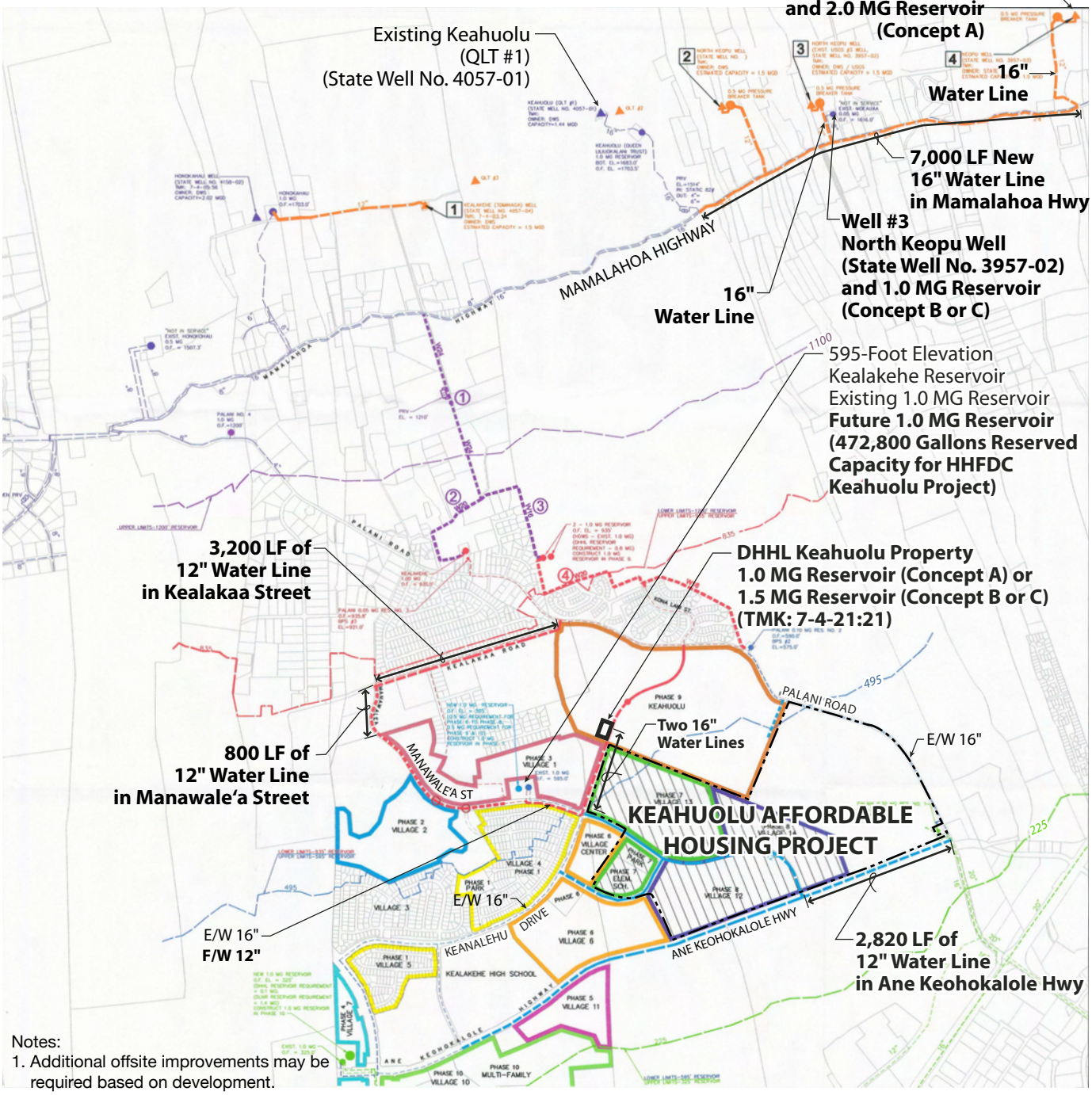
* Reservoir calculations utilized 472,800 gallons of capacity in the Kealakehe High School reservoir site allocates for the project parcels in the existing and proposed 1.0 MG reservoirs.

Proposed Off-Site ~~Facilities~~Water System

Proposed Off-Site Wells

Two source wells, numbered 3 and 4 in the *Villages of La'i 'Opua Water Master Plan* (October 26, 2006), have been identified for the project (Figure 4-16~~Figure 416~~). HHFDC and DHHL have discussed HHFDC's development of well 3 and well 4 to provide source water for the project. The proposed wells are within the Keauhou aquifer system.

~~The DWS allows a project~~The DWS has no existing policy allocating the percentage yield of a well to a project that develops the well. For planning purposes, the DWS indicated that a project is allowed 50 percent of the yield for one developed well and 67 percent of the yield for two developed wells. Well number 4, with a projected 2.0 million gallon per day (mgd) anticipated yield, could provide the Keahuolu project with 1.0 mgd of water to meet the requirements for



Notes:
1. Additional offsite improvements may be required based on development.
2. Onsite water system will follow the roadway network. Roadway network may not be as shown.

Source: Akinaka & Associates, Ltd. Villages of La'i 'Ōpua Water Master Plan. October 26, 2006.

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Figure 4-16
OFF-SITE WATER SYSTEM

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Concept A, which is 0.7 mgd (see Table 4-27). Well number 4 alone would not be able to support development Concepts B and C water demands, which exceed 1.0 mgd. Development of well number 3, in addition to well number 4, would be required to support Concepts B and C.

The projected yield for well number 3 would be 1.0 mgd. With the development of the two wells 3 and 4, the total anticipated yield would be 3.0 mgd. The project would be allowed 67-percent of the 3.0 mgd, or 2.0 mgd to meet the requirements for Concepts B and C, which are 1.2 and 1.1 mgd, respectively.

Well number 4 would be required for Concepts A, B, and C. Well number 3 would be required in addition to well number 4 for Concepts B and C.

Table 4-27: Off-Site Wells

Concept Plan	Well No. 4 (mgd) 50% or 67% of yield	Well No. 3 (mgd) 67% of yield	Potential Total Supply(MGD)	Average Daily Demand (gpd)
Concept A	1.0		1.0	745,820
Concept B	1.34	0.67	2.0	1,158,680
Concept C	1.34	0.67	2.0	1,114,680

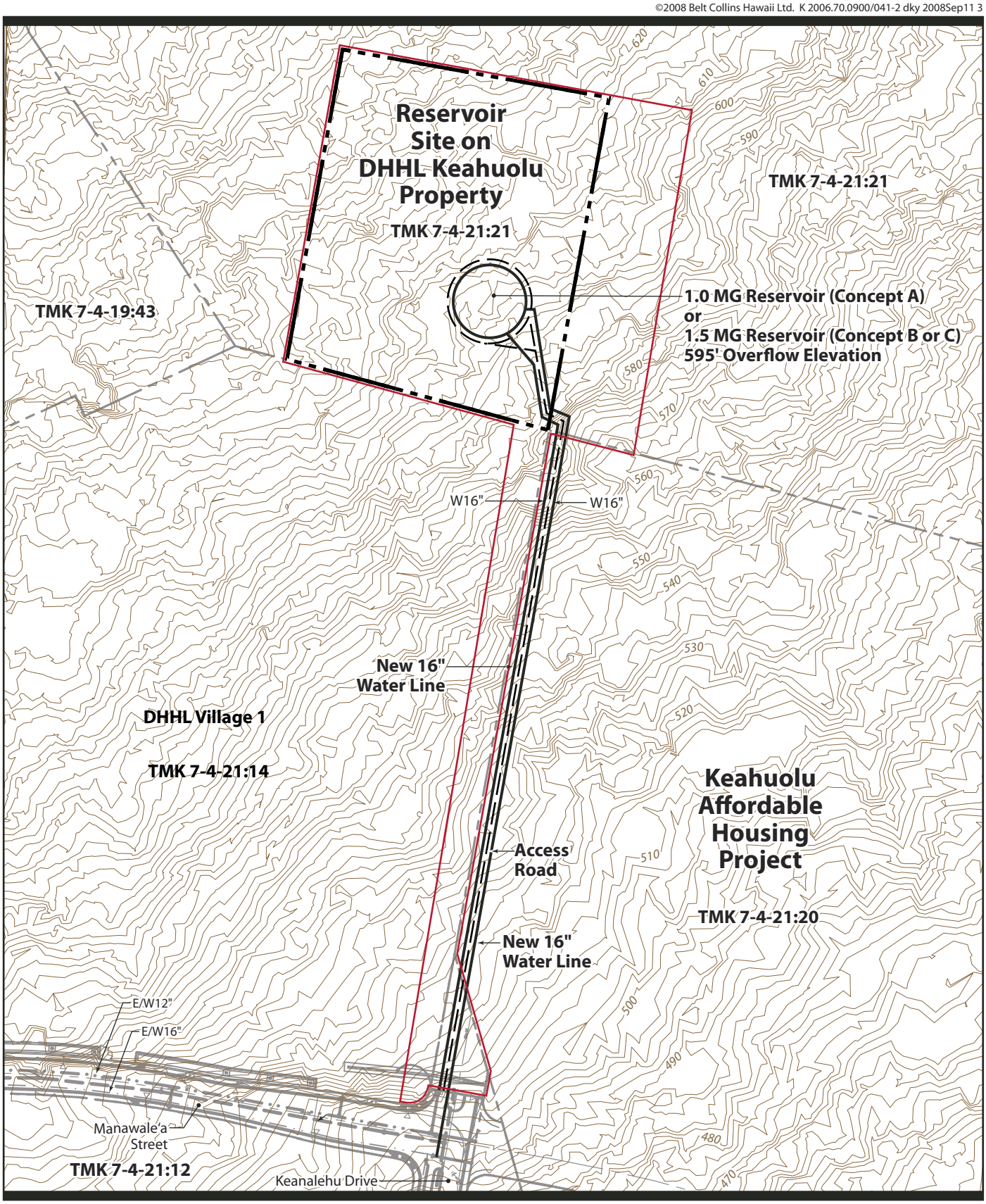
Development of well site number 4 would require outfitting the well with a pump and sensors to monitor the aquifer, installation of a well control building with a chlorination system and backup generator, a reservoir, and appurtenant structures. The reservoir would be sized to the average daily production rate of the well, or 2 ~~million gallons (~~MG~~)~~ based on the anticipated yield for the well. A new access road would be required from Mamalahoa Highway to the well, well control building and reservoir. A new 16-inch water line would extend from the new reservoir to Mamalahoa Highway and extend approximately 7,000 linear feet north along Mamalahoa Highway to the existing Keahuolu (QLT #1) State Well No. 4057-01 well site.

Development of well site number 3 would require drilling of a new production well, installation of a pump and sensors to monitor the aquifer, testing of the well for quality and capacity,

installation of a well control building with chlorination system and backup generator, a reservoir, and appurtenant structures. However, well site number 3 does not currently have sufficient land area to accommodate all the structures required for a well site. Additional adjacent private lands would have to be obtained to operate the well. A new 1.0 MG reservoir would be required for the well. A 1.0 MG reservoir is approximately 95 feet in diameter. A new access road would be required from Mamalahoa Highway to the well, well control building and reservoir. A new 16-inch water line would extend from the reservoir to Mamalahoa Highway and connect to the new 16-inch water line between well site number 4 and the existing QLT well site. The well site(s), reservoir(s), water lines, and appurtenant structures would be dedicated to the DWS. Construction of the well site(s) would require well permits, pump installation permits, grading permits, NPDES general permit coverage authorizing discharges of storm water associated with construction activities, and building permits for the structures. An engineering report, including chemical analysis, would be required by the State DOH Safe Drinking Water Branch in the permitting process for the production wells. If dry wells are constructed at the sites, a UIC permit would also be required for the project.

Proposed Off-Site Reservoir on DHHL Property

Either a new 1.0-MG reservoir for Concept A or 1.5-MG reservoir for Concepts B or C would be required for project water storage, in addition to the 472,800-gallon reserve capacity within the existing Kealakehe reservoir site (Table 4-28). HHFDC and DHHL have discussed construction of a new 595-foot-elevation reservoir site located on the DHHL Keahuolu property at TMK: 7-4-21: portion of 21 (Figure 4-17~~417~~). The site would be situated off the future extension of Keanalehu Drive, and a temporary access road with two 16-inch water lines would be required within the Keanalehu Drive ROW until Keanalehu Drive is built out. The access road would be located in TMK: 7-4-21: portions of 20 and 21, and grading for the access road would occur on TMK: 7-4-21: portion of 21.



LEGEND

- Proposed Reservoir Site
- Access Road
- 16" Water Line (W16")
- Limits of Archaeological and Botanical Surveys

Belt Collins

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Figure 4-17
PROPOSED RESERVOIR ON DHHL KEAHUOLU PROPERTY

HHFDC Keahuolu Affordable Housing Project
Environmental Impact Statement
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Table 4-28: Projected Off-Site Reservoir Requirements

Development Plan	Reservoir * (MG)
Concept A	1.0
Concept B	1.5
Concept C	1.5

Construction of the reservoir site would require a grading permit, NPDES general permit coverage authorizing discharges of storm water associated with construction activities, and building permits for the reservoir structure. If dry wells are constructed at the reservoir site, a UIC permit would also be required for the reservoir construction.

Proposed Off-Site Water Lines

The *Villages of La'i 'Opua Water Master Plan* identified transmission deficiencies in the off-site water system. Approximately 3,200 linear feet of 8-inch water line in Kealaka'a Street, from Palani Road to Manawale'a Street, would require upsizing to a 12-inch water line. Approximately 800 linear feet of new 12-inch water line would be required in the existing Manawale'a Street. Approximately 2,820 linear feet of 12-inch water line would also be required in Ane Keohokalole Highway, between Palani Road and Makala Boulevard. The water line improvements are shown in Figure 4-16~~Figure 416~~~~Figure 4-15~~. Upon finalization of the development concept, the DWS has requested that the developer update the *Villages of La'i 'Opua Water Master Plan* to determine whether there are any other system deficiencies and required improvements.

Proposed Off-Site Water System Costs

Order-of-magnitude costs for the off-site water system improvements would be as ~~follows~~ ~~(~~described in Table 4-29~~)~~. For details on the water system costs, see the civil infrastructure report in Appendix G. Additional off-site water system improvements or water line size upgrades may be required with the update of the *Villages of La'i 'Opua Water Master Plan.*

Table 4-29: Off-Site Water System Costs

Off-Site Water System	Concept A	Concept B	Concept C
Off-Site Wells and Appurtenances *			
Well Site Number 4	$11,296,000	$11,296,000	$11,296,000
Well Site Number 3		$7,175,000	$7,175,000
Off-Site Reservoir on DHHL Property **			
1.0 million gallon	$7,403,000		
~~15.~~1.5 million gallon		$8,385,000	$8,385,000
Off-Site Water Lines ***			
3,200 linear foot of 12-inch in Kealaka'a Street	$873,000	$873,000	$873,000
800 linear foot of 12-inch in Manawale'a Street	$287,000	$287,000	$287,000
2,820 linear foot of 12-inch in Ane Keohokalole Hwy	$798,000	$798,000	$798,000
TOTAL Estimated Water System Costs**	**$20,657,000**	**$28,814,000**	**$28,814,000**

* Well Site Number 4 required for all concepts. Well Site Number 3 required in addition to Well Site Number 4 for Concepts B or C.

** One reservoir would be required.

*** Upgrades required for all concepts.

**** Additional water system improvements may be required.

Proposed On-Site Water System

The on-site water system would consist of water lines within the roadway network. The system would be connected to the existing water system at Keanalehu Drive and Manawale'a Street and at Palani Road and Ane Keohokalole Highway, forming a looped water system. The Keahuolu water system network would have a minimum pipe size of 8 inches in diameter and a maximum pipe size of 16 inches in diameter, based on the proposed roadway layout and development layout and densities. The water lines would be sized to meet the maximum daily demand plus

fire flow, with a residual pressure of 20 pounds per square inch (psi) at the critical fire hydrant or a residual pressure of 40 psi to meet peak hour demand.

Potential Short-Term Impacts to Surface Waters

There are no surface water bodies on or near the project site. The developer would be required to comply with the NPDES permit requirements, including the BMP plan, and Chapter 10 – Erosion and Sedimentation Control - of the County Code during construction, and prevent the discharge of sediment from the site. As areas of the site are developed, drainage systems would collect runoff and discharge it to the subsurface. The project would be designed to comply with the County's Storm Drainage Standard such that runoff volumes and rates would not increase as a result of site development. The project would have no significant short-term effects on surface waters because there would be no increase of runoff from the site.

Potential Short-Term Impacts to Groundwater

Precipitation on the site currently percolates to the underlying groundwater. This would continue to be the case during and after site development. The NPDES permit requirements, including the BMP plan, would require the contractor to manage materials to prevent the discharge of pollutants to the ground. ~~It is recommended that~~ Dduring and after development, landscape management practices and community association covenants would be applied in public and private areas to minimize the use of fertilizers ~~and~~, pesticides and herbicides that could potentially enter the groundwater. The developer and its contractor would be required to conform with the NPDES permit requirements during construction. BMPs, such as storm drainage filtration devices, are recommended to mitigate pollutants from entering the groundwater. With these measures, short-term impacts upon local groundwater quality at the Keahuolu site would not be significant. One potential short-term impact of the development would be the lowering of water levels in the vicinity of the project's wells.

Potential Short-Term Impacts to Water Supply

Water supply infrastructure, including source wells, storage reservoirs, and distribution lines, would be constructed as required and approved by the County DWS. Short-term localized water

system shut-downs and road closures may be required as the new water infrastructure is connected to the existing water system. No short-term detrimental impacts on the existing water supply system are anticipated as a result of the proposed project.

Potential Long-Term Impacts to Surface Waters

Rainfall runoff from the developed site would be collected in the drainage systems and percolated into the ground in the on-site seepage areas, seepage wells, and dry wells. Runoff volumes and rates would not increase as a result of site development, in compliance with the County's Storm Drainage Standard, and the project would have no significant long-term effects on surface waters.

Potential Long-Term Impacts to Groundwater

The source wells would draw the high-level groundwater from the Keauhou aquifer system. The projected sustainable yield from the Keauhou aquifer is 38 mgd, while the projected 2018 demand is 4.98749 mgd. The project would add approximately 0.7 to 1.2 mgd demand on the aquifer, which is ~~its the~~ within the sustainable yield of the aquifer.

The full build-out water demands of the Keauhou aquifer based on the Hawai'i County General Plan is 170.8 mgd without agricultural demands and 245.4 mgd with agricultural demands. Based on the County Zoning, the full build-out water demands of the Keauhou aquifer is 39.1 mgd without agricultural demands and 111.6 MGD with agricultural demands. In the long-term, water demands in the Keauhou aquifer would exceed the sustainable yield of the aquifer, and alternate water resource enhancement measures would be required to meet the water demands. Alternative water resource enhancement measures that have been identified in the *Draft Report Hawaii County Water Use and Development Plan Update* (December 2006) by Fukunaga and Associates~~,~~ would include rainwater catchment systems in the areas mauka of Mamalahoa Highway, wastewater reclamation for use within close proximity of the wastewater treatment facilities, and desalination from brackish wells between Queen Ka'ahumanu Highway and Mamalahoa Highway. These water resource enhancement measures could be counterproductive to protecting discharge of ground water to the coastal ecosystems and marine waters. Future

reduction in development density, development of water conservation programs by the DWS, and continued monitoring of the aquifer have also been identified in the *Draft Report Hawaii County Water Use and Development Plan Update* to mitigate long-term impacts on the Keauhou aquifer.

Water conservation measures which the developer would implement on the Keahuolu project would include installing low flow toilets and showerheads, waterless urinals in public restrooms, plant drought tolerant native landscaping and providing residents with information on the importance of water conservation.

To reduce the amount of pollutants from entering the groundwater, the developer would provide educational materials and programs to residents, establish community association covenants and implement BMPs. Educational materials and programs, and community association covenants would include, but not limited to, landscape management and vehicular maintenance controls, BMPs would include ~~It is recommended that the developer implement measures to reduce the amount of pollutants from entering the groundwater by including BMPs such as~~ vegetative swales, bioretention areas, storm drain filtration devices, ground stabilization with landscape and hardscape, educational warning signs on the drainage systems with wording such as "DUMP NO WASTES. GOES TO GROUNDWATER AND OCEAN. HELP PROTECT HAWAI'I'S ENVIRONMENT," and coordinating environmental educational programs for project area residents with the DOH Clean Water Branch.

Potential Long-Term Impacts to Water Supply

The long-term impacts of the project on the DWS water source, storage, and transmission system would be an improvement of the existing system. The additional source well(s) for the project would increase water available to the region, as DWS only allocates a portion of the well yield to the project. As previously noted, DWS allows a project 50 percent of the yield for one developed well and 67 percent of the yield for two developed wells for a project. The project would add storage reservoirs and improve the area water transmission system, as required to provide water service from the source well(s) down to the site. No long-term detrimental impacts on the existing water supply system are anticipated as a result of the project.

4.8.4 Wastewater Collection, Treatment, and Disposal Facilities

4.8.4.1 Existing Conditions

Hawai‘i County’s Kealakehe ~~Sewage Treatment Plant (STP)~~WWTP is located makai of Queen Ka‘ahumanu Highway. There is no sewer service in the immediate project area. Regional sewer in the area connects to an existing 30-inch sewer line ~~which~~ that crosses Queen Ka‘ahumanu Highway near the police station. The County has reserved 431,360 gpd capacity at the Kealakehe ~~STP~~ WWTP for the Keahuolu Affordable Housing P~~p~~roject.

4.8.4.2 Proposed Wastewater System Design

The proposed sewer system would be developed in accordance with the Hawai‘i County Department of Environmental Management criteria. For details of the sewer system criteria, see Appendix G. Design and construction of the proposed off-site and on-site sewer systems would meet County Standards for dedication to the County Department of Environmental Management. The projected sewer flows, presented in Table 4-30, are summarized in Appendix G.

Table 4-30: Sewer Requirements

Development Plan	Design Average Flow (gpd)	Design Peak Flow (gpd)
Concept A	430,598	1,915,899
Concept B	665,436	2,568,875
Concept C	720,856	2,710,213

The project has reserved 431,360 gpd capacity at the Kealakehe ~~STP~~WWTP. Additional capacity at the ~~STP~~ WWTP would be required to accommodate Concepts B and C, which are projected to exceed the reserved capacity. The Department of Environmental Management would have to expand the ~~STP~~ WWTP and ~~are~~ is currently undertaking a master plan to review options to upgrade the ~~STP~~WWTP. Two improvement projects to the ~~STP~~ WWTP are planned: (1) sludge removal $4,600,000 (County of Hawai‘i FY 07-08 budget), and (2) aeration upgrade ~~$1,500,000~~ $6,450,000 (County of Hawai‘i FY 07-08 budget). The two improvement projects will allow the ~~STP~~ WWTP to continue to operate at the present capacity and allow for future capacity upgrades.

R-~~2~~ 3 Water (undisinfected secondary recycled water) from the Kealakehe ~~STP~~ WWTP is discharged to a pond in the lava fields makai of Queen Ka‘ahumanu Highway in the DHHL/Villages of La‘i ‘Opua. R-~~2~~ 3 Water is not suitable for irrigation use for the project. The County would have to further treat the effluent to R-1 Water (significant reduction in viral and bacterial pathogens) before the effluent would be suitable for irrigation use on the project site. The County has plans to upgrade the WWTP to produce R-1 Water in FY 10-11. In addition, a pump system, and storage and transmission lines for the recycled effluent system would be required, ~~. The County has no plans to upgrade the STP to produce R-1 Water.~~ but there are no detailed plans by the County for a system to the project area.

Potential Off-Site Wastewater System Alignments

Sewer lines from the project site to the ~~STP~~ WWTP would be routed either through QLT lands or through DHHL/Villages of La‘i ‘Opua lands. Figure 4-18~~418Figure 4-17~~ and Figure 4-19~~419Figure 4-18~~ show the QLT route for the off-site sewer system for development C~~c~~oncept A and C~~c~~oncepts B and C, respectively. Figure 4-20~~420Figure 4-19~~ and Figure 4-21~~421Figure 4-20~~ show the La‘i ‘Opua route for the off-site sewer system for Concept A and Concepts B and C, respectively. Sewer lines would be sized to accommodate sewer flows from the project site, lands immediately mauka of the project, and the makai lands adjacent to the sewer line alignment. The sewer line alignment and sizes are subject to change based on the final development concept.

Based on the design flows, a new 30-inch sewer line would be required for either route to convey sewer flows from the project site, across Queen Ka‘ahumanu Highway, to the ~~STP~~WWTP. A sewer line through the QLT route can convey wastewater flows from the entire project site to the ~~STP~~WWTP. A sewer line through the Villages of La‘i ‘Opua route can convey the majority of the flows from the site. A low-elevation portion, approximately 40 acres of the project parcel near Palani Road, could be developed with activities not requiring sewer service, such as parking lots, open spaces, preserve areas, and playfields and parks with restroom facilities located outside the low area. If sewer service is required for the low area, either a pump station would be required or a sewer line would have to be constructed through QLT land to convey flows from

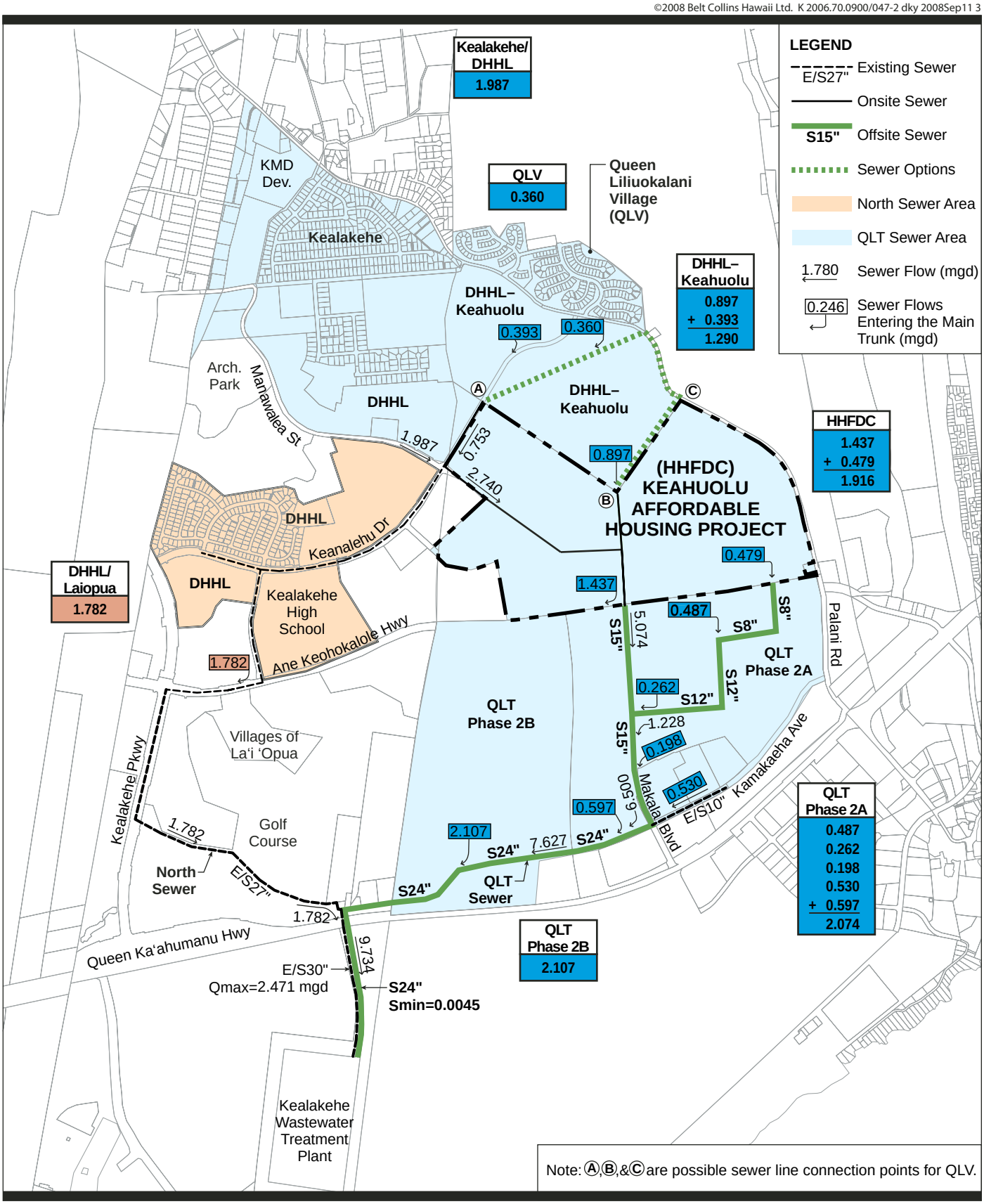

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Figure 4-18
OFF-SITE SEWER SYSTEM CONCEPT A—QLT ROUTE

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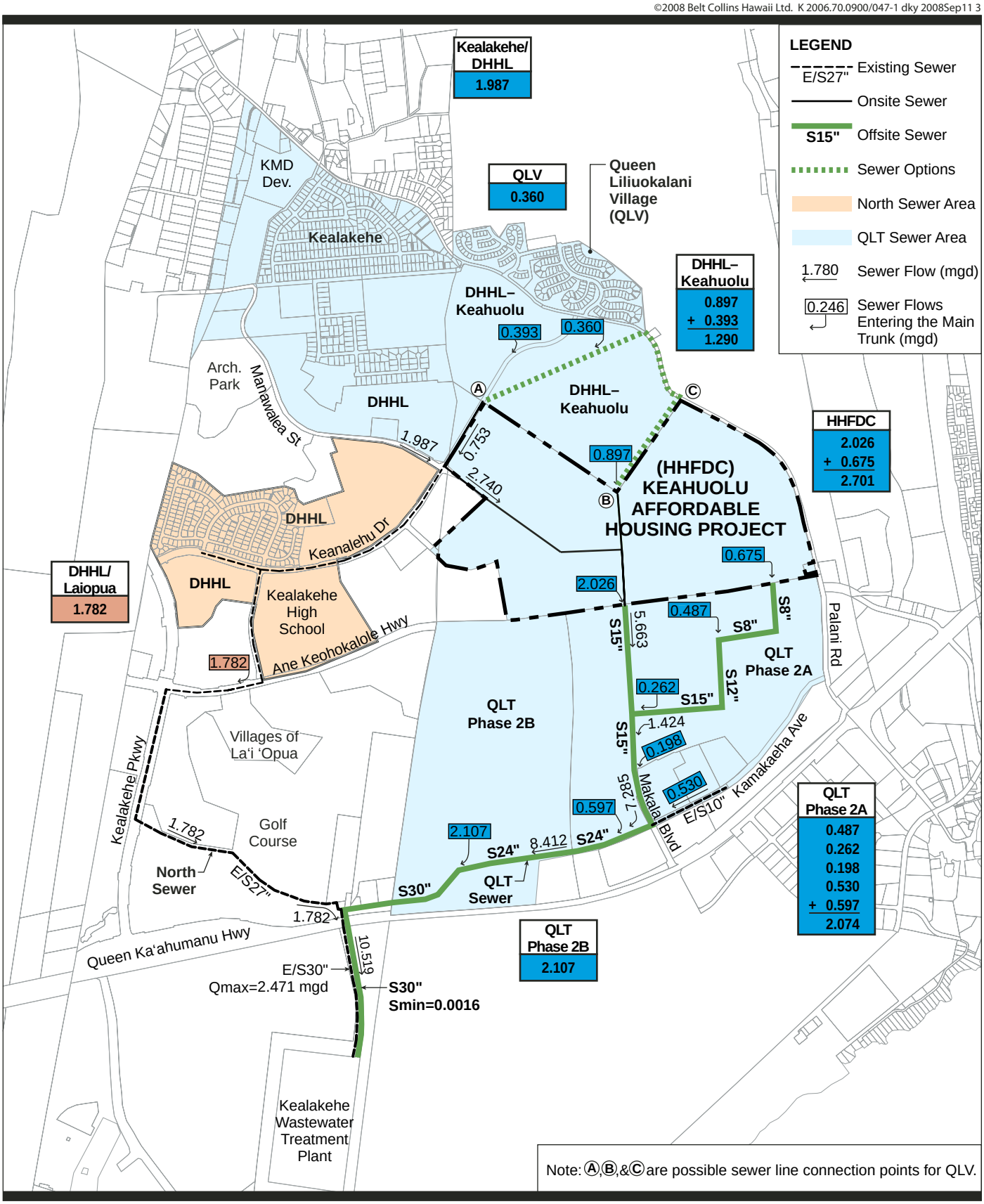

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Figure 4-19
OFF-SITE SEWER SYSTEM CONCEPTS B & C—QLT ROUTE

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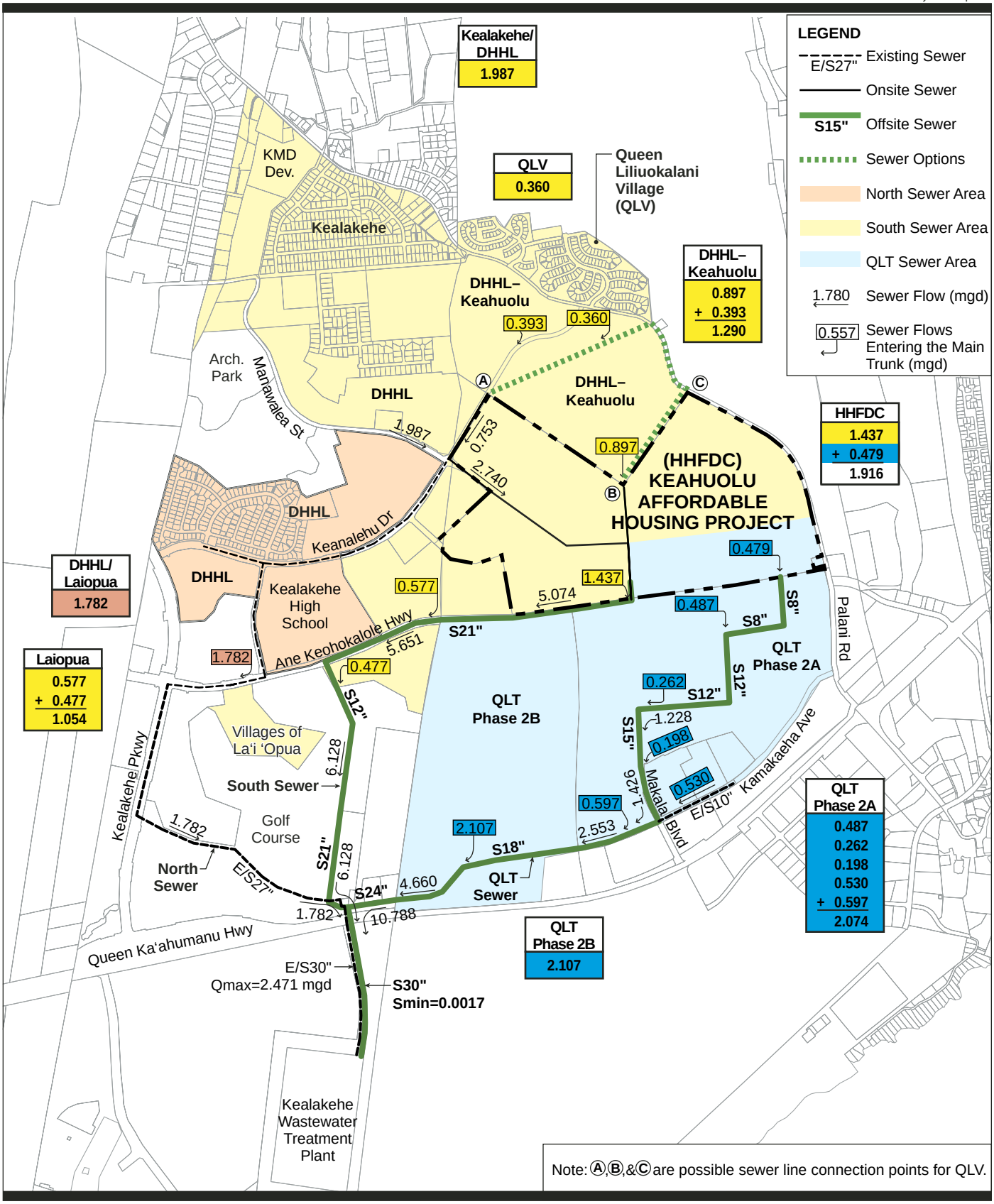

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Figure 4-20
OFF-SITE SEWER SYSTEM CONCEPT A—LA'I 'OPUA ROUTE

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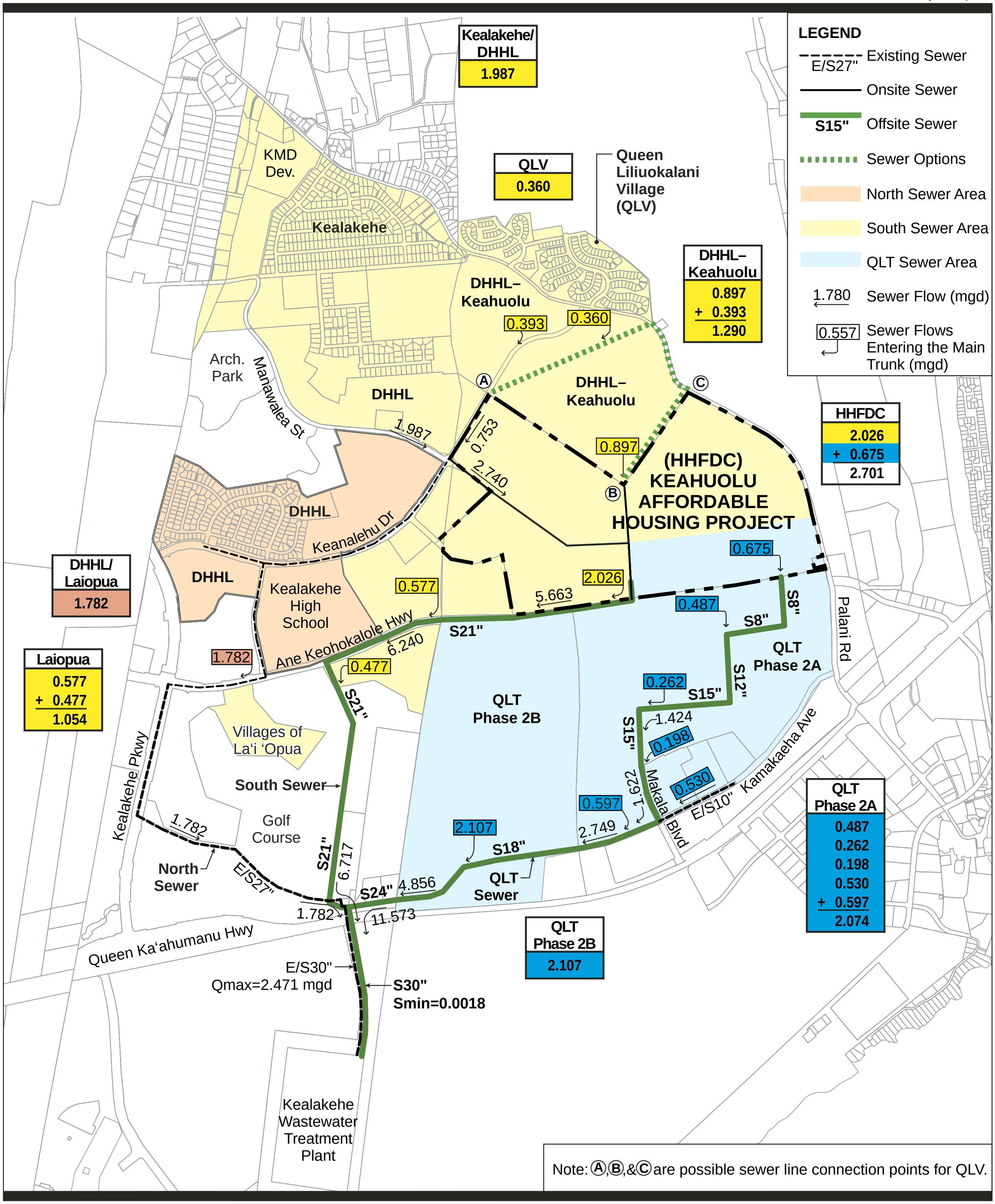

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Figure 4-21
OFF-SITE SEWER SYSTEM CONCEPTS B & C—LA'I 'OPUA ROUTE

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the low area. Figure 4-18~~418~~ and Figure 4-19~~419~~ show the proposed sewer line to service this low area through the QLT lands.

The order-of-magnitude costs in Table 4-31 for sewer system construction assume that the low area would be developed with sewage-generating facilities. For details on the sewer system costs, see Appendix G. These cost estimates are based on the best available information on DHHL and QLT plans for future development of their properties. QLT is in preliminary planning, and actual routing and sewer flows may change.

Table 4-31: Off-Site Wastewater System Costs

Off-Site Water System	Concept A	Concept B	Concept C
Through QLT Lands	$6,381,000	$6,663,000	$6,663,000
Through DHHL / Villages of La‘i ‘Opua			
Through La‘i ‘Opua	$5,983,000	$5,983,000	$5,983,000
Through QLT Lands	$4,297,000	$4,543,000	$4,543,000
Subtotal	$10,280,000	10,526,000	10,526,000

Proposed On-Site Wastewater System

The on-site sewer system would consist of sewer lines within the roadway network. The system would connect to sewer line routed through either the DHHL/Villages of La‘i ‘Opua lands or the QLT lands. The sewer system would have a minimum pipe size of 8 inches in diameter and a maximum pipe size of 21 inches in diameter for the DHHL/Villages of La‘i ‘Opua route or 15 inches in diameter for the QLT route. The sewer lines would be sized to convey the design peak flow from the upstream tributary areas.

4.8.4.3 Potential Impacts and Mitigation Measures

Potential Short-Term Impacts

Extension of the sewer system to serve the proposed development would not have significant short-term impacts on the environment. Construction activities would be required to conform to

the applicable environmental requirements for storm water protection and mitigation of potential noise and dust impacts. County fees associated with permission to connect would be applied by the County to upgrade the existing treatment and disposal facilities on an as-needed basis.

Potential Long-Term Impacts

The long-term impacts of the project on the sewer system would be the construction of new sewer lines through either the DHHL/Villages of La‘i ‘Opua lands or the QLT lands to the Kealakehe ~~STP~~WWTP. The impact would be an increase in daily flows to the ~~STP~~ WWTP of 430,598 gpd, 665,436 gpd, or 720,856 gpd for Concepts A, B or C, respectively. Concepts B or C would require the County to upgrade the Kealakehe ~~STP~~WWTP.

The new sewer lines makai of the project would also allow the potential development of the DHHL/Villages of La‘i ‘Opua lands or the QLT lands adjacent to the new sewer line, depending on the ultimate route of the new line. The construction of new sewer lines through the Keahuolu project would also provide potential sewer service to lands mauka of the project site. No long-term detrimental impacts on the existing sewer lines are anticipated as a result of the project, since all new sewer lines from the project site to the ~~STP~~ WWTP would be constructed.

Adequate treatment and disposal capacity has been reserved at the Kealakehe ~~STP~~ WWTP for project Concept A, and no long-term detrimental impacts to the ~~STP~~ WWTP are anticipated. Concepts B and C would require the County to upgrade the ~~STP~~ WWTP to handle the added sewage flows and to mitigate any long-term detrimental impacts to the ~~STP~~WWTP. The Department of Environmental Management is undertaking a master plan for the ~~STP~~ WWTP to determine the appropriate system upgrades to increase the ~~STP~~ WWTP capacity. Until the master plan assessment is completed, the County does not know the type and costs of the ~~STP~~ WWTP upgrades.

4.8.5 Solid Waste

4.8.5.1 Existing Conditions

No solid waste service is currently required as the site is vacant.

4.8.5.2 Potential Impacts and Mitigation Measures

The County requires all solid waste to be removed from all buildings and premises and disposed of at an approved solid waste disposal facility. All solid waste generated from the project would be taken to the West Hawai'i Landfill in Pu'uanahulu, a County transfer station, or recycled.

Quantities of solid waste were estimated for both construction and occupancy phases of the Keahuolu project. The construction phase of development is anticipated to begin in 2008/2009 with construction of approximately 300 housing units per year. The school facilities, with 550 students and 70 faculty and staff, are projected for construction between 2011 and 2012. The commercial/retail spaces are projected for approximately 100,000 square feet of construction in 2016 and 2017, and 97,000 square feet of construction in 2018 and 2019.

The occupancy phase of development refers to the time at which the facilities have been constructed and are open for use. The construction and occupancy phases are expected to overlap, as construction of later portions of the Keahuolu project would continue while earlier portions are completed and occupied. The project is estimated to be completed and occupied in 2020. The average amounts of solid waste generated by construction activities and occupancy are summarized in Table 4-32~~Table 4-32~~. A preliminary solid waste management plan is provided in Appendix G.

Table 4-32: Solid Waste Generated by Construction Activities and Occupancy

Year	Concept A		Concept B		Concept C	
	Construction Waste (tons/year)	Occupancy Waste (tons/year)	Construction Waste (tons/year)	Occupancy Waste (tons/year)	Construction Waste (tons/year)	Occupancy Waste (tons/year)
2008	525 - 910	0	525 – 910	0	450 – 780	0
2009	1,050 – 1,820	0	1,050 – 1,820	0	900 – 1,560	0
2010	1,050 – 1,820	1,086	1,050 – 1,820	1,086	900 – 1,560	950
2011	658 – 1,141	2,172	1,063 – 1,843	2,172	913 – 1,583	1,901
2012	358 – 621	3,259	1,063 – 1,843	3,259	913 – 1,583	2,851
2013	0	4,069	1,050 – 1,820	4,639	900 – 1,560	4,096
2014	0	4,069	585 – 1,014	5,725	900 – 1,560	5,046
2015	0	4,069	60 – 104	6,812	795 – 1,378	5,997
2016	150 – 260	4,069	150 – 260	6,938	495 – 858	6,947
2017	150 – 260	4,069	150 – 260	6,938	150 – 260	7,676
2018	146 – 252	4,730	146 – 252	7,599	146 – 252	8,337
2019	146 – 252	4,730	146 – 252	7,599	146 – 252	8,337

Year	Concept A		Concept B		Concept C	
	Construction Waste (tons/year)	Occupancy Waste (tons/year)	Construction Waste (tons/year)	Occupancy Waste (tons/year)	Construction Waste (tons/year)	Occupancy Waste (tons/year)
2020 and Beyond	0	5,370	0	8,240	0	8,977

Potential Short-Term Impacts

Emphasis for the management of solid wastes generated by the Keahuolu project would be placed on waste diversion and recycling. Solid wastes would be managed in conformance with the applicable DOH and County requirements. The landfill nearest to the Keahuolu project is the West Hawai‘i Landfill at Pu‘uanahulu.

Since the County of Hawai‘i does not provide waste collection services, recycle and disposal of construction and occupancy waste would be hauled by private contractors or individuals. Specific arrangements for construction and occupancy wastes would be made closer to the project beginning. Recyclables and wastes would be managed in either a centralized system or by private individuals, and hauled directly to recycling centers, transfer stations, and the landfill. The average amounts of solid waste diverted through minimization and recycling, and landfilled are summarized in Table 4-33~~Table 4-33~~.

Table 4-33: Summary of Solid Waste Diverted and Landfilled

Year	Concept A		Concept B		Concept C	
	Diverted Waste (tons/year)	Landfilled Waste (tons/year)	Diverted Waste (tons/year)	Landfilled Waste (tons/year)	Diverted Waste (tons/year)	Landfilled Waste (tons/year)
2008	263-455	262-455	263-455	262-455	225-390	225-390
2009	525-910	525-910	525-910	525-910	450-780	450-780
2010	805-1,190	1,331-1,716	805-1,190	1,331-1,716	695-1,025	1,155-1,485
2011	889-1,131	1,941-2,182	1,092-1,482	2,143-2,533	947-1,282	1,867-2,202
2012	1,020-1,152	2,597-2,728	1,373-1,763	2,949-3,339	1,193-1,528	2,571-2,906
2013	1,050	3,019	1,722-2,107	3,967-4,352	1,507-1,837	3,489-3,819
2014	1,050	3,019	1,770-1,984	4,540-4,755	1,752-2,082	4,194-4,524

Year	Concept A		Concept B		Concept C	
	Diverted Waste (tons/year)	Landfilled Waste (tons/year)	Diverted Waste (tons/year)	Landfilled Waste (tons/year)	Diverted Waste (tons/year)	Landfilled Waste (tons/year)
2015	1,050	3,019	1,787-1,809	5,085-5,107	1,945-2,236	4,847-5,139
2016	1,125-1,180	3,094-3,149	1,865-1,920	5,223-5,278	2,040-2,221	5,402-5,584
2017	1,125-1,180	3,094-3,149	1,865-1,920	5,223-5,278	2,055-2,110	5,771-5,826
2018	1,293-1,346	3,583-3,636	2,034-2,087	5,711-5,764	2,224-2,277	6,259-6,312
2019	1,293-1,346	3,583-3,636	2,034-2,087	5,711-5,764	2,224-2,277	6,259-6,312
2020 and Beyond	1,385	3,985	2,126	6,114	2,316	6,661

Potential Long-Term Impacts

Emphasis for the management of solid wastes generated by the Keahuolu project would be placed on waste diversion and recycling. The developer would provide educational materials and information on recycling programs to residents to minimize and divert wastes. According to the 2002 Updated Integrated Solid Waste Management Plan for the County, the Pu‘uanahulu Landfill is estimated to have 12 million cubic yards of air space, which is enough to accommodate the waste generated by West Hawai‘i for approximately the next 40 years. The plan also notes that the County is ~~also~~ looking into waste reduction facilities for the island, using either a waste-to-energy incinerator, a thermal gasification plant (produces heat from waste), or an anaerobic digestion plant (breaks refuse into its molecular components).

At full-build-out, the projects’ share of annual landfill waste disposal at the West Hawai‘i Landfill is estimated to be 4.43 percent, 6.79 percent, or 7.40 percent for Concepts A, B, ~~or~~ and C, respectively. The project’s waste stream is a small fraction of the waste that would go to the landfill. No significant short-term or long-term impacts on the existing solid waste collection and disposal systems are anticipated as a result of the proposed development.

4.8.6 Electrical Service, Cable TV, and Telephone

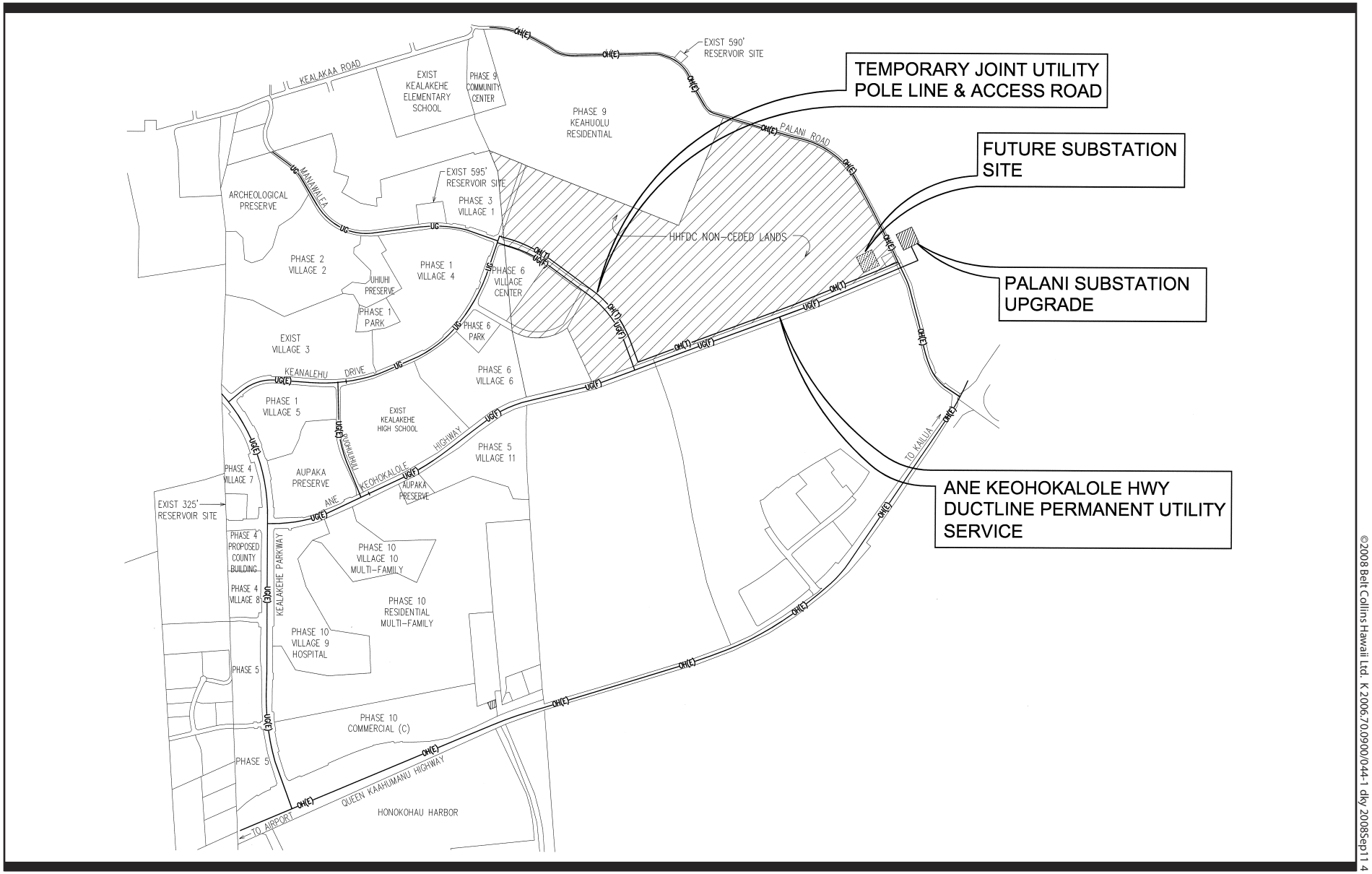
4.8.6.1 Existing Conditions

Electrical Power

The ~~Hawaii Electric Light Company (~~HELCo~~)~~ provides electrical service to the Kailua-Kona area from a substation on Kaiwi Street. This substation has reached its designed capacity. Plans call for a new substation on QLT land near the Palani Road/Henry Street intersection. The proposed Palani substation was expected to accommodate future development by HHFDC, QLT, DHHL, and others in the area. However, anticipated loads from partial buildout of the Villages of La‘i ‘Opua coupled with those from QLT’s ongoing Makalapua development are projected to exceed the capacity of the Palani substation. With the projected load from residential units proposed under Concept A of the HHFDC project, an additional substation would be required.

Expanding the existing Kealakehe substation at the police station parcel on Queen Ka‘ahumanu Highway was considered, but given requirements for additional state and county approvals, siting a new substation on HHFDC land is the preferred option. The site for the second substation is in the vicinity of the County reservoir near the Palani Road/Ane Keohokalole Highway intersection. Consistent with HELCo policy, both proposed substations would provide service to the entire Kailua-Kona area. Figure 4-22~~422Figure 4-21~~ shows the off-site electrical concept plan for this project.

Initial phases of HHFDC’s development may occur close to the end of the County’s Keanalehu Drive extension project. Although HELCo will be extending cables through the underground duct system in Keanalehu Drive, available capacity in HELCo’s distribution system will likely be used by DHHL’s La‘i ‘Opua Village 4 and 5 developments. A temporary overhead line will need to be extended from the Palani Road/Henry Street intersection to serve HHFDC’s initial increment. It is proposed that the overhead line follow the alignment of Ane Keohokalole Highway and the Manawalea Drive extension. The temporary overhead line would be replaced by a permanent underground system. An underground duct system in Ane Keohokalole Highway would link the HHFDC project to the Palani substation.



Source: Ronald Ho and Associates, Inc.

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Figure 4-22
OFF-SITE ELECTRICAL CONCEPT PLAN (HELCO)

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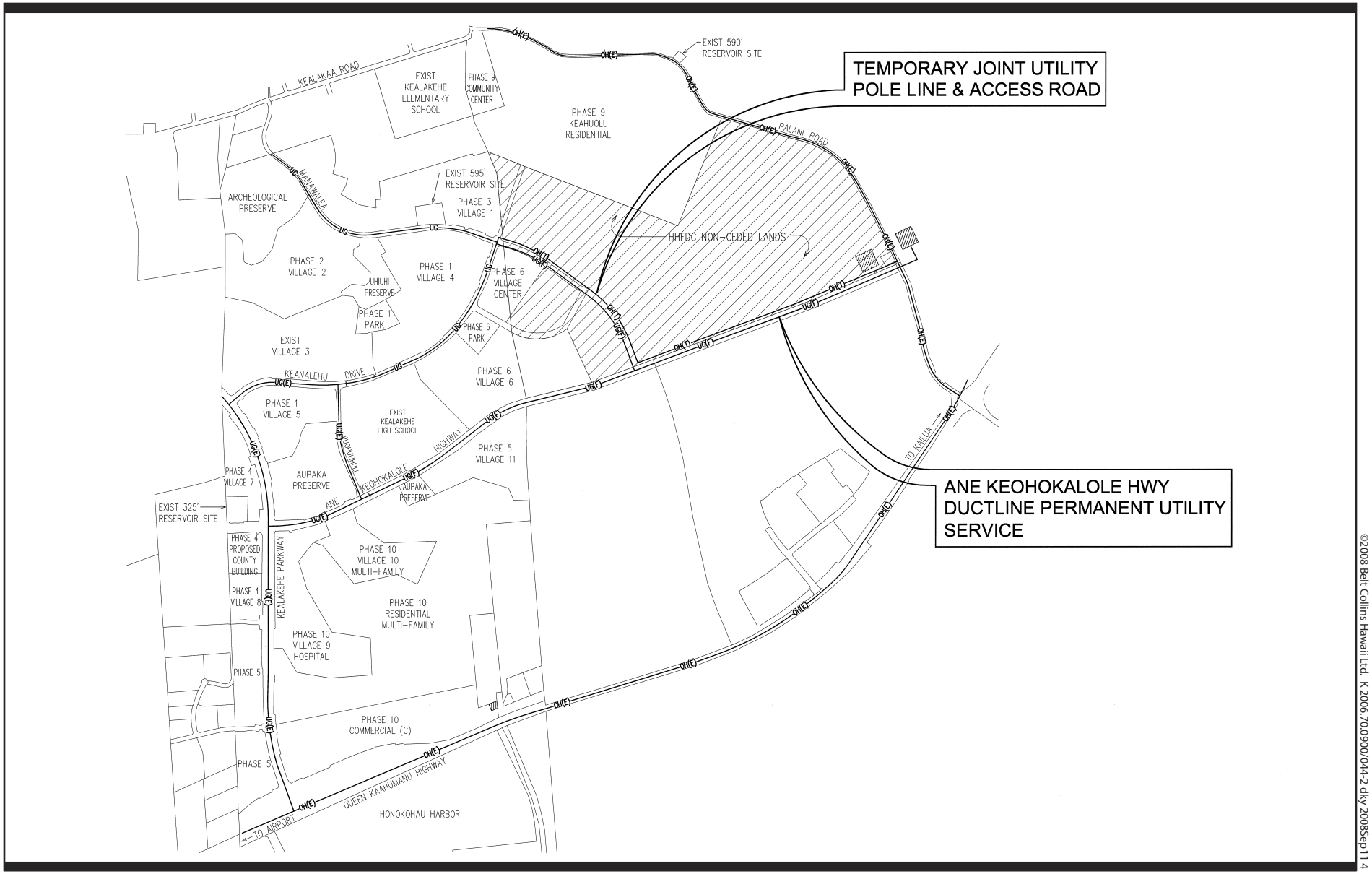
Telephone and Cable Television

Hawaiian Telcom (HTCo) and Oceanic Time Warner (Oceanic) facilities are located on an overhead pole line along Palani Road and in underground duct systems in the Villages of La‘i ‘Opua. Existing ductlines terminate at the intersection of Puohulihuli Street/Keanalehu Drive and Puohulihuli Street/Ane Keohokalole Highway.

Discussions with HTCo and Oceanic indicate that although the preferred point of connection for the Keahuolu project is from the existing end of either Keanalehu Drive or Ane Keohokalole Highway, it would also be feasible to temporarily serve the HHFDC development from the existing pole line at the Palani Road/Henry Street intersection. Sufficient cable capacity could be extended on a temporary pole constructed for the HELCo service extension (described above) to support the initial phases of the Keahuolu development. Permanent service would be relocated to the new underground duct system and connected to the Ane Keohokalole Highway infrastructure once the Ane Keohokalole Highway extension is completed. Figure 4-23~~423Figure 4-22~~ and Figure 4-24~~424Figure 4-23~~ illustrate the proposed off-site communication concept plans for HTCo and Oceanic, respectively.



Source: Ronald Ho and Associates, Inc.

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Figure 4-23
OFF-SITE COMMUNICATIONS CONCEPT PLAN (HTCO)

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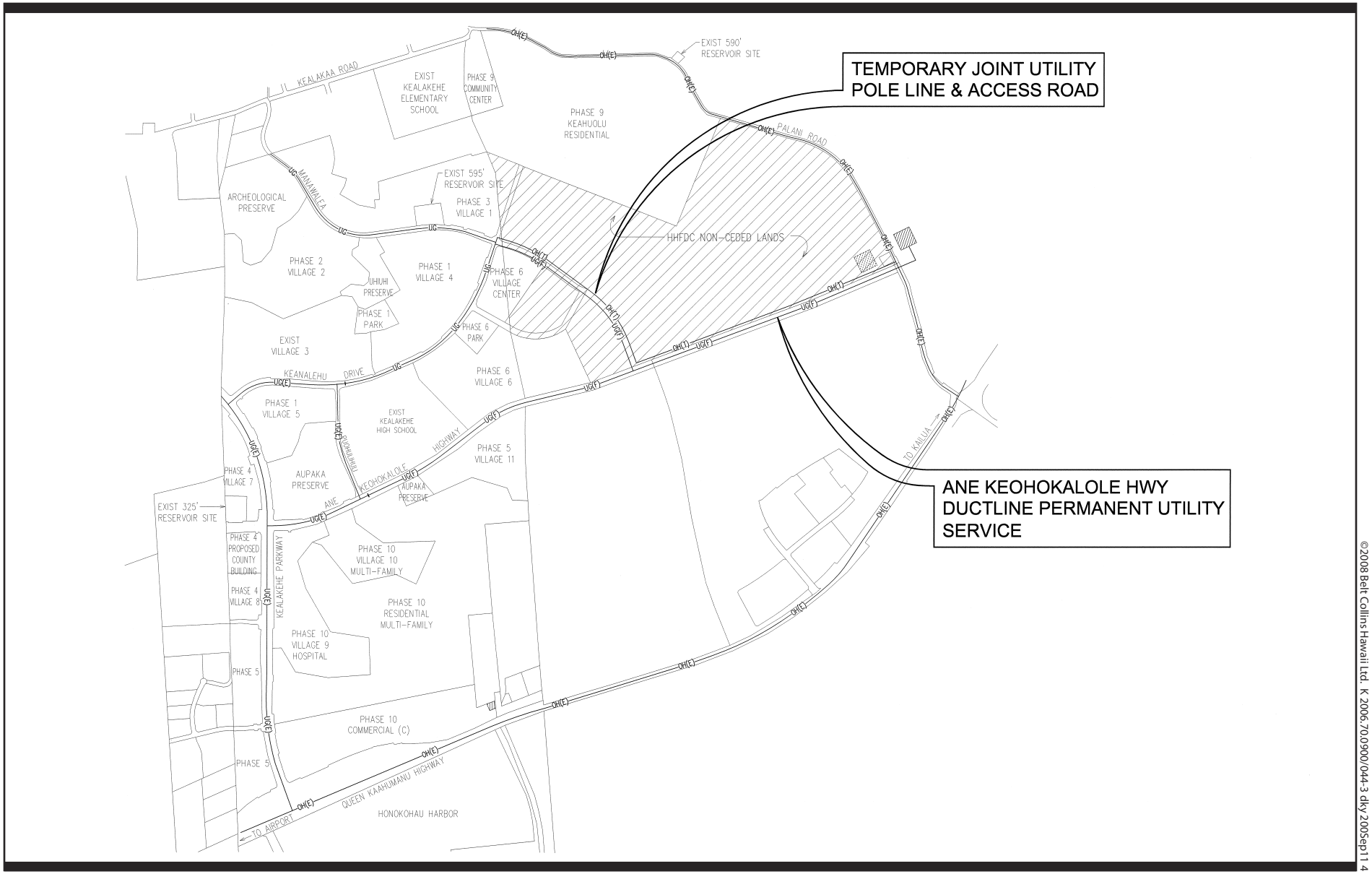

Source: Ronald Ho and Associates, Inc.

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Figure 4-24
OFF-SITE COMMUNICATIONS CONCEPT PLAN (OCEANIC)

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Order-of-magnitude costs for the off-site electrical and communications system improvements to support the project are as follows. See Appendix G for cost details.

Palani substation upgrade (HELCo)	$1,500,000
Temporary overhead utility line and access road:	
Hawaii Electric Light Co.	$650,000
Hawaiian Telcom	$550,000
Oceanic Time Warner	$150,000
Graded and graveled access road	$575,000
Subtotal	$1,925,000
Ane Keohokalole Highway permanent utility service:	
Hawaii Electric Light Co. ductline and charges*	$2,225,000
Hawaiian Telcom ductline**	$1,200,000
Oceanic Time Warner ductline**	$400,000
Subtotal	$3,825,000
Total Electrical and Communications Off-Ssite Costs	$7,250,000

*The HELCo ductline construction budget and utility charges are prorated between QLT, DHHL, and HHFDC. The HELCo budget figure also includes prorated costs for the Ane Keohokalole street light system and other ancillary items.

**The HTCo and Oceanic ductline budgets are prorated between QLT and HHFDC only, as DHHL will not contribute for these costs. Typically, unless specialized services are requested by the developer, HTCo and Oceanic do not charge for their initial installation of permanent service cables.

4.8.6.2 Potential Impacts and Mitigation Measures

The proposed project will require upgrades and/or extensions of the existing utility systems serving the region. With the projected load from residential units proposed under Concept A of the HHFDC project, an additional substation would be required. The proposed site for the second substation is on HHFDC land in the vicinity of the county reservoir near the Palani Road/Ane Keohokalole Highway intersection. Consistent with HELCo policy, new substations would provide service to the entire Kailua-Kona area.

4.8.7 Summary of Off-Site Infrastructure Costs

Table 4-34~~Table 4-34~~ summarizes off-site infrastructure requirements for Concepts A, B, and C in 2007 dollars.

Table 4-34: Summary of Off-Site Costs by Concept (2007 dollars)

	Concept A	Concept B	Concept C
Ane Keohokalole Highway (@50% of total)	$6,816,500	$6,816,500	$6,816,500
Palani Road Intersection	$1,306,000	$1,306,000	$1,306,000
Offsite Wells and Appurtenances *			
Well Site Number 4	$11,296,000	$11,296,000	$11,296,000
Well Site Number 3		$7,175,000	$7,175,000
Off-Site Reservoir on DHHL Property **			
1.0 million gallon	$7,403,000		
1.5 million gallon		$8,385,000	$8,385,000
Off-Site Water Lines ***			
3,200 linear foot of 12-inch in Kealakaʻa Street	$873,000	$873,000	$873,000
800 linear foot of 12-inch in Manawalea Street	$287,000	$287,000	$287,000
2,820 linear foot of 12-inch in Ane Keohokalole Hwy	$798,000	$798,000	$798,000
Offsite Sewer line			
Option 1: Through QLT Lands	$6,381,000	$6,663,000	$6,663,000
Option 2: Thru QLT and DHHL Villages of Laʻi ʻOpua	$10,280,000	$10,526,000	$10,526,000
Expansion of Kealakehe STP	Reserved capacity of 431,360 gpd	Unknown	Unknown
Electrical System	$4,950,000	$4,950,000	$4,950,000
Telephone System	$1,750,000	$1,750,000	$1,750,000
Cable Television System	$550,000	$550,000	$550,000
Total – Option 1 Sewer line route	**$42,410,500**	**$50,849,500**	**$50,849,500**
Total – Option 2 Sewer line route	**$46,309,500**	**$54,712,500**	**$54,712,500**

***** Well Site Number 4 required for all concepts. Well Site Number 3 required in addition to Well Site Number 4 for Concepts B or C

****** One reservoir would be required.

******* Upgrades required for all concepts.

4.9 SOCIO-ECONOMIC CONDITIONS

The HHFDC Keahuolu project is planned as a response to the regional needs for housing and the desire to reduce congestion on regional highways due to residents traveling long distances between home and work. Future residents of Keahuolu are likely to come from West Hawai'i, ranging from Ocean View in Ka'u to North Kohala.[1] Figure 4-25~~425Figure 4-24~~ shows the region, district, and zip code areas for West Hawai'i.

In this section (1) socio-economic conditions and trends in Hawai'i County and the West Hawai'i region are identified; (2) existing conditions in the immediate area near the project site – Census Tract 215.01, Block Group 3 – are discussed; and (3) community issues and concerns are documented.

4.9.1 North Kona Existing Socio-Economic Conditions

4.9.1.1 Overview

For much of the 20th century, West Hawai'i was an agricultural area, with coffee (from South Kona), sugar (from North Kohala), and cattle (from the uplands of South Kohala) as major commodities. Major public facilities for West Hawai'i, such as the hospital and the area's first high school, were located in Kealakekua in the South Kona district.

The visitor industry in North Kona grew after statehood, and the district received the majority of the island's visitor units (as shown for 1980, in Table 4-35~~Table 4-35~~). By 1990, however, the South Kohala coastal resorts had become important destinations. As the coastal resorts expanded, West Hawai'i became more dependent on tourism. Kailua-Kona is now a regional center with commercial, industrial, and resort facilities. The North Kona district has seen continuing increases in population, visitor numbers, and commercial areas. As of 2002, Kailua-Kona had 165 retail establishments with gross sales of $410 million, 24 percent of the island total. The retail workforce in Kailua numbered 2,174.

[1] Hawai'i County is divided into nine judicial districts. North Kohala, South Kohala, North Kona and South Kona are commonly identified as West Hawai'i. However, the Ocean View area in Ka'u is home to many resort workers, and it is given attention here as a potential source for future Keahuolu residents.

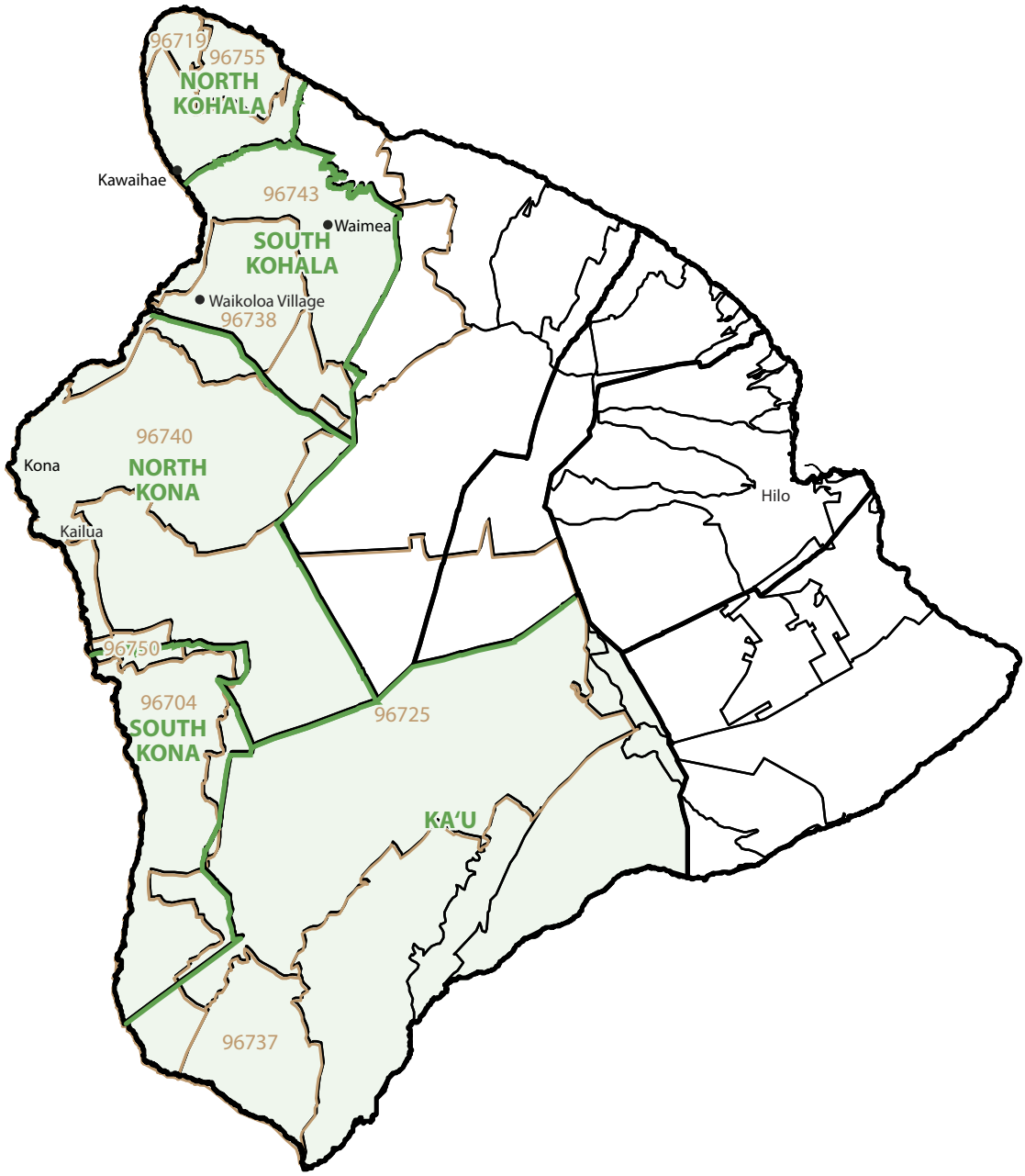

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Figure 4-25
REGION, DISTRICT, AND ZIP CODES FOR WEST HAWAI'I

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Table 4-35: Hawai'i County and North Kona Socio-Economic Indicators

	1980	1990	2000	2005
Hawaii County				
Resident population	92,053	120,317	148,677	167,293
Jobcount	37,150	49,000	56,000	64,500
Unemployment rate	6.3%	3.5%	4.8%	3.3%
Average visitor census				
Island	7,195	16,698	21,891	27,579
West Hawaii		13,502	17,784	21,940
Visitor units	6,299	8,952	9,774	11,351
Hotel occupancy rate	51.0%	61.7%	72.8%	72.2%
North Kona district				
Resident population	13,748	22,284	28,543	NA
Share of county	14.9%	18.5%	19.2%	NA
Visitor units	3,774	4,096	4,295	5,053
Share of county	59.9%	45.8%	43.9%	44.5%
Hotel occupancy rate	59.0%	66.8%	72.6%	NA

SOURCES: Hawaii State Data Book, 1985 and 2005; historical and current statistics posted by Hawaii State Department of Labor and Industrial Relations, available at www.hiwi.org.; Visitor Plant Inventory conducted by Hawaii Visitors Bureau, and later by DBEDT.

Island wide, the ratio of visitors to residents in Hawai'i County is about 1 to 6. In West Hawai'i, the ratio is about 1 to 3. In 2000, West Hawai'i had 56,301 residents and an average visitor census of 17,784.

In 2000, approximately 10,000 people worked in Kailua-Kona. Of this number, 70 percent commuted from other places on the island.[2] Data for West Hawai'i zip code areas from 2000 clearly show that the length of commutes typically increases the farther a home area is from the job centers of Kailua-Kona and the South Kohala coast (see Table 4-36). With a mean travel time to work of an hour, Ocean View workers endured a much longer commute than others.

[2] This Census calculation is for the Kailua-Kona Census Designated Place (CDP). Residents of the subdivisions to the north of Kailua-Kona such as Kona Palisades would count as "commuters" to Kailua-Kona along with residents of more distant areas (US Census data calculated by DBEDT, available at http://www.hawaii.gov/dbedt/info/census/Folder.2005-10-13.2927/DaytimePop).

Table 4-36: Mean Commute Times ~~By~~ by Zip Code Area, West Hawai'i, 2000

Town	Zip Code	District	Population	Workers 16+	Work at home	Mean commute time
Ocean View	96737	Kau	2,112	697	47	60.2
Captain Cook	96704	South Kona	6,617	3,212	352	28.9
Kealakekua	96750	South Kona	2,629	1,227	101	22.5
Holualoa	96725	North Kona	2,956	1,441	107	23.5
Kailua-Kona	96740	North Kona	25,132	12,899	648	20.2
Waikoloa	96738	South Kohala	5,269	2,680	115	24.4
Kamuela	96743	South Kohala	8,546	4,047	234	24.8
Hawi	96719	North Kohala	2,615	959	56	29.4
Kapaau	96755	North Kohala	2,973	1,216	52	31.6

Source: 2000 Census, as reported in American Factfinder, www.census.gov.

In all the districts of West Hawai'i, incomes tended to be above the county average in 1999. South Kohala had the highest average income. The share of the population with incomes below poverty level was low in both North Kona and South Kohala, as shown in Table 4-37~~Table 4-37~~. This information can be interpreted in two ways: it indicates local prosperity, but also shows that local prosperity has generated such high housing costs that families with modest incomes can find homes only in outlying areas.

Table 4-37: Income and Poverty Characteristics, ~~From~~ from 2000 Census, Hawai'i County and West Hawai'i Districts

	Hawaii County	Ka'u	South Kona	North Kona	South Kohala	North Kohala
INCOME AND POVERTY						
Household income in 1999						
Under $25,000	30.9%	43.7%	29.3%	22.2%	17.5%	25.3%
$25,000 to $49,999	29.8%	31.1%	28.3%	30.8%	30.7%	26.9%
$50,000 to $74,999	18.4%	14.2%	18.2%	20.0%	22.7%	24.1%
$75,000 to $99,999	10.4%	5.6%	12.8%	11.6%	15.1%	11.8%
$100,000 to $199,999	8.7%	5.2%	9.2%	12.2%	10.8%	10.2%
$200,000 and above	1.8%	0.3%	2.2%	3.3%	3.2%	2.2%
Median Household income	$39,805	$29,466	$42,058	$47,610	$51,379	$47,733
Poverty Status						
Persons below poverty line	22,821	1,376	1,084	2,756	1,100	641
Share of total population below poverty line	15.7%	23.9%	12.7%	9.7%	8.5%	12.1%
Age distribution, persons below poverty line						
0 to 17 years	35.9%	34.4%	31.8%	32.7%	41.9%	27.3%
18 to 64 years	58.0%	56.9%	62.4%	60.9%	53.5%	61.9%
65 to 74 years	3.2%	4.0%	3.0%	3.6%	3.1%	3.0%
75 years and over	2.9%	4.7%	2.9%	2.9%	1.5%	7.8%

SOURCE: 2000 US Census, SF3: data from a sample of households

4.9.1.2 Population Levels and Composition

The population of the county has been growing for decades, but the rate of growth has been slowing. North Kona has seen a faster rate of increase than the island as a whole, although Puna's and South Kohala's populations have increased at even faster rates. Table 4-38~~Table 4-38~~ illustrates both historical and projected population by district.

Table 4-38: Historical and Projected Population, Hawai'i County and Districts, to 2030

	Historical			*Projected*		
	1980	**1990**	**2000**	**2010**	**2020**	**2030**
Puna	11,751	20,781	31,335	40,873	50,665	60,457
South Hilo	42,278	44,639	47,386	49,876	52,430	54,984
North Hilo	1,679	1,541	1,720	1,688	1,708	1,729
Hamakua	5,128	5,545	6,108	6,574	7,064	7,554
North Kohala	3,249	4,291	6,038	7,315	8,710	10,104
South Kohala	4,607	9,140	13,131	17,483	21,745	26,007
North Kona	13,748	22,284	28,543	36,320	43,718	51,115
South Kona	5,914	7,658	8,589	10,062	11,400	12,737
Ka'u	3,699	4,438	5,827	6,783	7,847	8,911
Hawaii County	92,053	120,317	148,677	176,973	205,285	233,597
Average Annual Rate of Change		**1980s**	**1990s**	**2000s**	**2010s**	**2020s**
Puna		5.9%	4.2%	2.7%	2.2%	1.8%
South Hilo		0.5%	0.6%	0.5%	0.5%	0.5%
North Hilo		-0.9%	1.1%	-0.2%	0.1%	0.1%
Hamakua		0.8%	1.0%	0.7%	0.7%	0.7%
North Kohala		2.8%	3.5%	1.9%	1.8%	1.5%
South Kohala		7.1%	3.7%	2.9%	2.2%	1.8%
North Kona		4.9%	2.5%	2.4%	1.9%	1.6%
South Kona		2.6%	1.2%	1.6%	1.3%	1.1%
Ka'u		1.8%	2.8%	1.5%	1.5%	1.3%
Hawaii County		2.7%	2.1%	1.8%	1.5%	1.3%

Notes: District projections were obtained by extending linear trends from historical (1980-2000) ones. The result was a total slightly larger than the official State population projection. All district population estimates were then adjusted downward (by 1.67 percent for 2030) so that the total population for the districts equals the County total.

Source: DBEDT, 2004, adapted by Belt Collins Hawaii.

If historical trends continue, the North Kona population will exceed 43,700 in 2020.[3] The populations of North Kona and South Kohala include a larger share of recent U.S. mainland in-migrants than the island population. The ethnic distribution reported from these districts includes a larger share of Caucasians compared to island-wide statistics and other West Hawai'i districts.

Table 4-39: Residential Stability and In-migration, Hawai'i County and West Hawai'i Districts, from 2000 Census

	North Kona District	Kalaoa CT 215.01	Kalaoa 215.01 BG 1	Kalaoa 215.01 BG 2	Kalaoa 215.01 BG 3	Hualalai CT 215.02	Kailua-Kona CT 216.01	Holualoa CT 216.02	Kahaluu-Keauhou CT 215.03
Residence in 1995 for Persons 5 and Older (2)									
Same house	13,341	4,575	1,501	1,689	1,385	1,956	2,594	2,300	1,916
Different house, same county	7,705	2,548	794	660	1,094	953	1,870	1,417	917
Different county in HI	941	421	95	150	176	102	160	182	76
Different state	3,874	971	291	579	101	407	772	919	805
Outside the US	879	226	60	61	105	96	261	173	123
Percentages									
Same house	49.9%	52.3%	54.8%	53.8%	48.4%	55.7%	45.9%	46.1%	49.9%
Different house, same county	28.8%	29.1%	29.0%	21.0%	38.2%	27.1%	33.1%	28.4%	23.9%
Different county in HI	3.5%	4.8%	3.5%	4.8%	6.2%	2.9%	2.8%	3.6%	2.0%
Different state	14.5%	11.1%	10.6%	18.4%	3.5%	11.6%	13.6%	18.4%	21.0%
Outside the US	3.3%	2.6%	2.2%	1.9%	3.7%	2.7%	4.6%	3.5%	3.2%

Table 4-40: Demographic Characteristics, Hawai'i County and West Hawai'i Districts, from 2000 Census

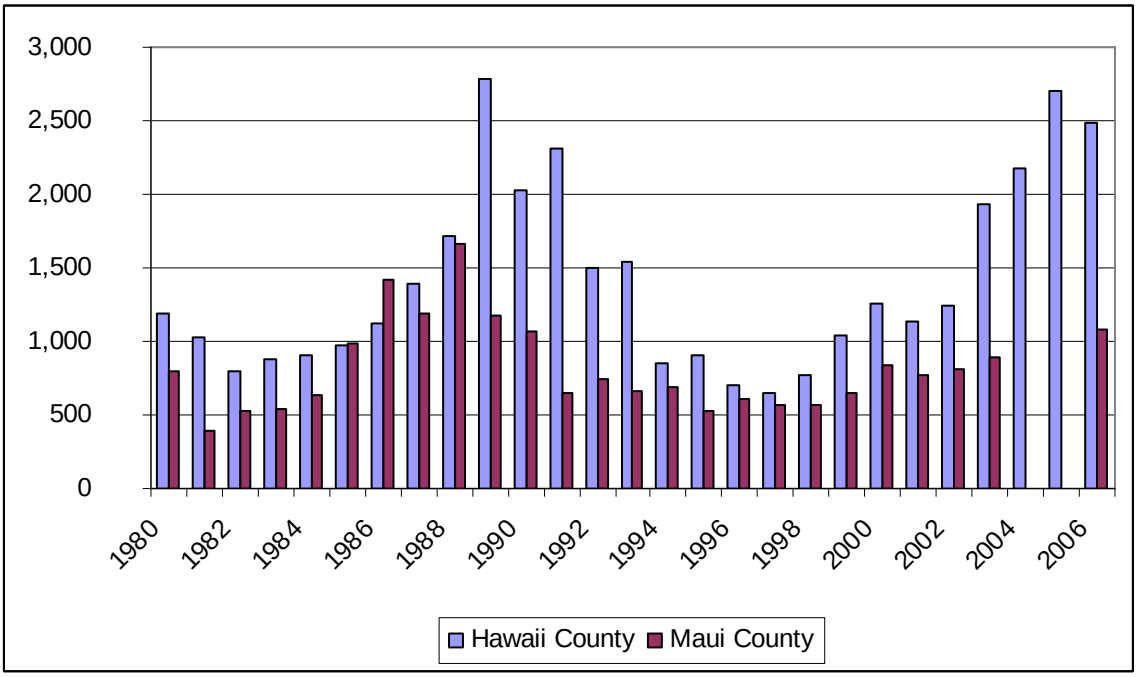
	North Kona District	Kalaoa CT 215.01	Kalaoa 215.01 BG 1	Kalaoa 215.01 BG 2	Kalaoa 215.01 BG 3	Hualalai CT 215.02	Kailua-Kona CT 216.01	Holualoa CT 216.02	Kahaluu-Keauhou CT 215.03
POPULATION									
Total Population (1)	28,543	9,505	3,087	3,307	3,111	3,688	5,987	5,268	4,095
Male	14,349	4,751	1,527	1,708	1,516	1,897	2,988	2,657	2,056
Female	14,194	4,754	1,560	1,599	1,595	1,791	2,999	2,611	2,039
Age Group									
Under 5 years	1,830	760	228	200	332	183	365	293	229
5 to 14 years	3,932	1,571	498	432	641	500	758	626	477
15 to 19 years	1,835	678	227	203	248	251	402	302	202
20 to 64 years	17,581	5,778	1,952	2,095	1,731	2,329	3,713	3,365	2,396
65 to 74 years	1,916	421	101	213	107	235	463	378	419
75 and over	1,449	297	81	164	52	190	286	304	372
Median Age	39.4	35.0	35.0	42.0	27.0	40.9	39.4	41.9	45.1
Race (Federal classification)									
White alone	47.1%	40.0%	46.6%	53.2%	19.5%	49.0%	45.5%	56.0%	52.9%
Black or African American alone	0.4%	0.3%	0.4%	0.5%	0.2%	0.2%	0.6%	0.6%	0.4%
American Indian and Alaska Native alone	0.5%	0.5%	0.5%	0.5%	0.5%	0.2%	0.5%	0.6%	0.5%
Asian alone	16.3%	14.8%	9.6%	16.0%	18.6%	15.2%	19.0%	16.4%	16.9%
Native Hawaiian and Other Pacific Islander alone	10.7%	14.0%	12.4%	7.5%	22.6%	11.3%	9.3%	7.3%	8.9%
Some other race alone	1.4%	0.9%	1.1%	0.6%	1.0%	1.0%	2.5%	1.7%	1.1%
Two or more races	23.5%	29.5%	29.5%	21.8%	37.6%	23.1%	22.7%	17.4%	19.2%

[3] The County developed three projections at the district level in 2000 for planning purposes. Since these projections did not draw on 2000 Census data, they are viewed here as outdated. It should be noted that the County's projections showed more rapid growth than the State projections discussed here.

4.9.1.3 Housing Inventory and Market

Since 1980, about 38,000 building permits were issued to construct new single-family homes in the county. Figure 4-26~~426Figure 4-25~~ shows that construction has gone through cycles, with much of the new housing built in economic booms. Compared to Maui, Hawai‘i County’s volume of new construction during boom times has been much larger, even though similar cycles are evident in both cases. Hawai‘i County has amassed a larger housing inventory over time. As of mid-2006, the county had an estimated total of 77,577 single- and multi-family units. [4]

Figure 4-26: New Single-Family Residential Building Permits, Hawai‘i and Maui Counties, 1980 - 2006



SOURCE: Time series data from the Hawai‘i State Data Book, available at http://www.hawaii.gov/dbedt/info /economic/databook/Data_Book_time_series/.

Housing costs are higher near job centers. The share of owner-occupied housing units by residents, rather than those rented, is lower near the job centers. Moreover, homeowners in the outlying districts are less likely to be paying a large part of their incomes for housing than are homeowners in North Kona and South Kohala. Table 4-41~~Table 4-41~~ and Table 4-42~~Table 4-42~~

[4] SMS Research & Marketing Services, Inc. *Housing Policy Study, 2006.* (Honolulu, HI~~:~~ 2007). The study was developed with the State and County housing agencies. Housing unit counts can be treated as updates of the counts otherwise published by the State, while data on resident preferences (mentioned below) are survey-based.

show 2000 Census housing data by district and zip code area, with the areas arranged from the southern end to the north of West Hawai'i.

Table 4-41: Housing Units and Cost, fFrom 2000 Census, Hawai'i County and West Hawai'i Districts

	Hawaii County	Ka'u	South Kona	North Kona	South Kohala	North Kohala
HOUSING						
Housing Units (1)						
Occupied	52,985	2,209	3,113	10,522	4,648	1,751
Vacant	9,689	674	401	3,438	1,146	171
Vacant for seasonal use	5,101	292	218	2,753	847	58
Vacant share of all units	15.5%	23.4%	11.4%	24.6%	19.8%	8.9%
Tenure of occupied housing units						
Owner occupied	64.5%	74.2%	62.2%	58.5%	58.9%	70.4%
Renter occupied	35.5%	25.8%	37.8%	41.5%	41.1%	29.6%
Average household size	2.75	2.63	2.76	2.70	2.81	2.97
Housing Costs (2)						
Median contract rent	$553	$371	$506	$683	$724	$639
Median gross rent	$645	$431	$572	$745	$811	$739
Owner-occupant housing costs						
Median, for owners with a mortgage	$1,133	$749	$1,323	$1,423	$1,385	$1,245
Renters, paying 30% to 39% of income	2.9%	3.4%	3.1%	3.6%	2.2%	2.4%
Renters, paying > 40% of income	4.6%	9.5%	6.6%	2.3%	4.0%	4.0%
Owners, with mortgage, paying 30% to 39% of income	10.1%	7.5%	9.2%	13.3%	12.8%	11.2%
Owners, with mortgage, paying 40% + of income	13.6%	11.0%	14.9%	19.1%	21.3%	12.1%

NOTES: (!) 2000 US Census, SF 1, from all households.
(2) 2000 Census, SF 3, from a sample of households.

Table 4-42: 2000 Census Housing Data, by Zip Code Area

Town	Zip Code	District	Population	Housing units	Renter-occupied units	Rental share of occupied units	Vacant units	Vacant share of total units
Ocean View	96737	Kau	2,112	1,273	207	23%	368	29%
Captain Cook	96704	South Kona	6,617	2,701	827	35%	344	13%
Kealakekua	96750	South Kona	2,629	1,049	498	51%	71	7%
Holualoa	96725	North Kona	2,956	1,293	483	44%	192	15%
Kailua-Kona	96740	North Kona	25,132	12,605	3,749	40%	3,319	26%
Waikoloa	96738	South Kohala	5,269	2,350	893	47%	444	19%
Kamuela	96743	South Kohala	8,546	3,748	1,093	37%	763	20%
Hawi	96719	North Kohala	2,615	671	176	29%	71	11%
Kapaau	96755	North Kohala	2,973	1,040	297	31%	74	7%

Source: 2000 Census, as reported in American Factfinder, www.census.gov.

As much as a quarter of the North Kona housing stock is vacant. While a few units will simply be vacant because they are for sale or rent, most of those listed as vacant are reserved for use by non-residents, whether as vacation rentals, second homes, or fractional ownership units.

In 2006, out-of-state owners held 9.9 percent of single-family properties and 16 percent of residential condominiums in the county.[5] In addition, some units were locally owned but placed in visitor rental pools.

Non-residents are disproportionately involved in the real estate market. From 2001 to 2005, out-of-state buyers accounted for about 35 percent of the county's single-family home sales and 75 percent of condominium sales.[6] Consequently, market prices reflect both local and non-local buying power, and the median home price is much higher than the average household can afford. In 2006, price affordability for a family with a median income was only 69 percent of the median sales price in the county. In short, many of the homes sold at prices that only a few local families – and many more offshore buyers – could afford.

Evidence of resident demand for new housing units is abundant. The housing market continues to be active, even though prices have reached levels that many families cannot afford. Based on a 2006 survey of 1,102 respondents in the county, SMS Research estimates that 25,769 households or 42.1 percent of existing households in the county expect to move in the future.[7] Of those, about 70 percent would prefer to own their next home.

About a third of Hawai‘i County respondents expecting to move named North Kona as their preferred destination. Total demand for housing in North Kona from Hawai‘i residents statewide as of 2006 is estimated at about 7,200 households, including all those expecting to move at some time in the future.

4.9.2 Project Area Existing Socio-Economic Characteristics

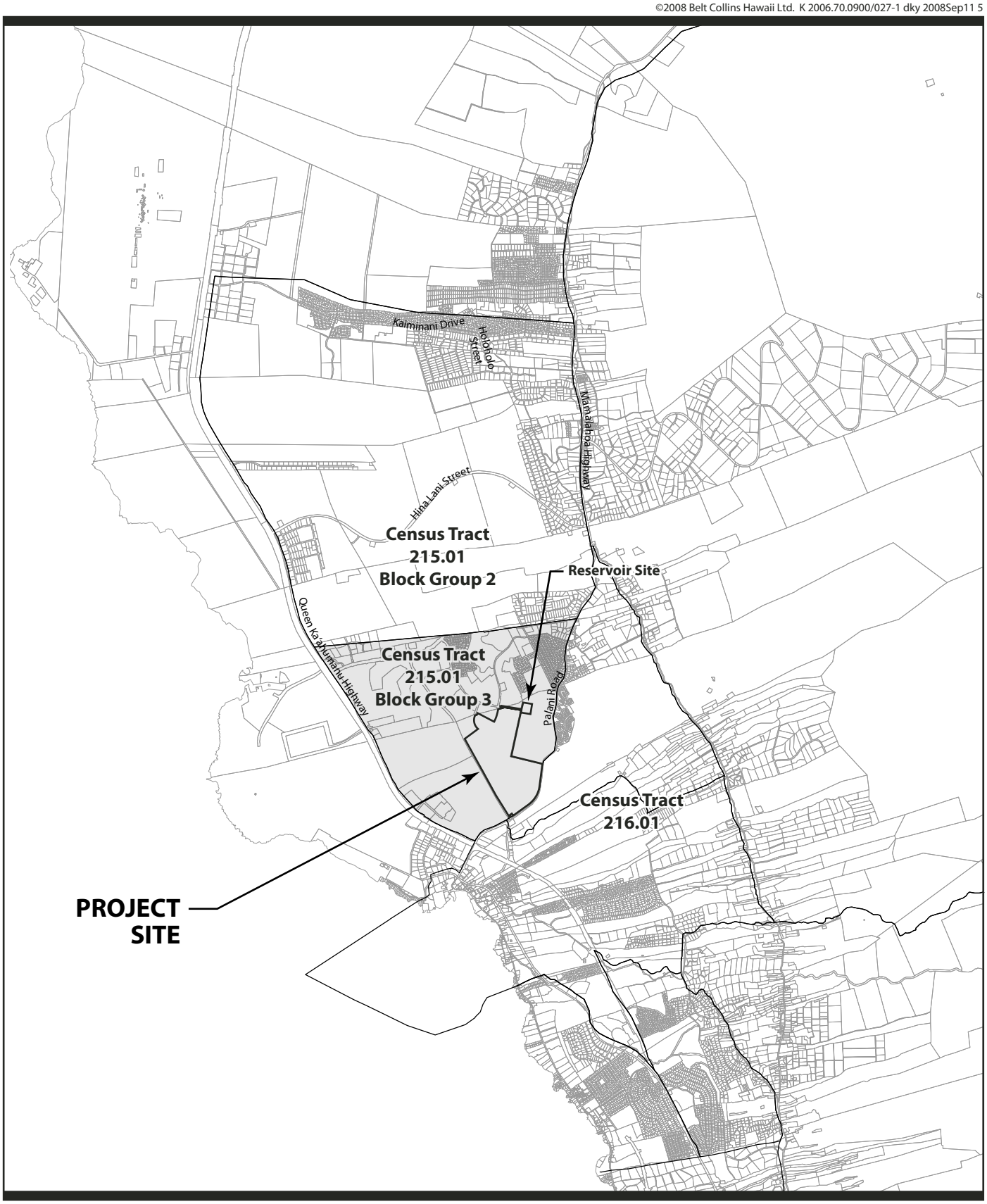
The project site lies within Census Tract 215.01, Block Group 3, as shown in Figure 4-27~~427Figure 4-26~~. In addition to the project site, that block group also includes two residential

5 SMS Research & Marketing Services Inc., *Housing Policy Study, 2006*. Prepared for Hawaii Housing Finance and Development Corporation and Housing Officers/Administrators for Honolulu, Maui, Hawaii and Kauai Counties. Honolulu, HI~~:~~ 2007. Posted at http://www.hawaii.gov/dbedt/hhfdc/resources/Reports.

6 A. Peterson, "Hawaii's Part-Time Residents." Presentation to Tourism and Travel Research Association by SMS Research. Posted at http://www.smshawaii.com/ParttimeResidents.pdf.

7 SMS Research & Marketing Services, Inc. *Housing Policy Study, 2006.*

areas: Kealakehe Village on and near Kealaka‘a Street, and Kaniohale, in the Villages of La‘i ‘Opua.



Belt Collins

NORTH

0 3500 7000

SCALE IN FEET

Figure 4-27
CENSUS GEOGRAPHY, PROJECT AREA

HHFDC Keahuolu Affordable Housing Project
Environmental Impact Statement
September 2008

The Makalapua shopping center is also located in the block group on QLT land west of the project site. Across Palani Road from the project are undeveloped QLT parcels, and below Henry Street, another commercial area (Crossroads Shopping Center).

The Block Group stands out as an area with large undeveloped sections, between the commercial and industrial areas of Kailua to the west and single-family residential areas to the north and east. To the south are single-family areas, along with concentrations of multi-family housing serving vacation and upscale markets toward the shore.

4.9.2.1 Economic Characteristics

The region's visitor plant extends along the coast, from Keauhou to the Mauna Kea Resort. Retail activity is centered on the intersection of Queen Ka'ahumanu Highway with Palani Road. New and proposed retail areas are dispersed, but much is within a few miles of that intersection (e.g., Lowe's on Henry Street, Costco in the Kaloko Industrial Park, and the planned Kona Commons, next to the existing QLT industrial area makai of the Queen Ka'ahumanu Highway).

Residents of Block Group 3 of Census Tract 215.01, the area surrounding the project site, have lower incomes than households in the other block groups of tract 215.01. The incidence of poverty is high in the immediate project area (see Table 4-43~~Table 4-43~~). Block Group 3 also includes more who report themselves as Native Hawaiian (22.6 percent of respondents) or of two or more races (37.6 percent) than residents of the other sub-areas.

In 2000, many residents of the immediate area worked in hotel and food services (18 percent). The next most common industries were transportation and warehousing (9.7 percent) and construction (9.5 percent).

4.9.2.2 Population and Housing

In 2000, some 3,100 people lived in Census Tract 215.01, Block Group 3. The average household had 3.37 members, much more than the district average (2.7 persons per household).

Table 4-43: Income and Poverty Characteristics, fFrom 2000 Census, North Kona District and Sub-Aareas

	North Kona District	Kalaoa CT 215.01	Kalaoa 215.01 BG 1	Kalaoa 215.01 BG 2	Kalaoa 215.01 BG 3	Hualalai CT 215.02	Kailua-Kona CT 216.01	Holualoa CT 216.02	Kahaluu-Keauhou CT 215.03
INCOME AND POVERTY									
Household income in 1999									
Under $25,000	22.2%	18.6%	16.9%	11.9%	28.2%	25.4%	24.7%	18.1%	28.2%
$25,000 to $49,999	30.8%	31.8%	36.6%	26.3%	33.4%	27.9%	36.2%	29.0%	25.4%
$50,000 to $74,999	20.0%	21.4%	18.1%	24.3%	21.5%	16.9%	20.6%	19.1%	20.0%
$75,000 to $99,999	11.6%	13.8%	12.8%	17.3%	10.9%	9.8%	9.3%	13.1%	10.4%
$100,000 to $199,999	12.2%	11.0%	11.7%	17.3%	2.4%	16.2%	7.4%	17.7%	10.7%
$200,000 and above	3.3%	3.3%	3.8%	3.0%	3.0%	3.9%	1.8%	3.0%	5.3%
Median Household income	$47,610	$49,772	$48,415	$61,181	$41,086	$46,100	$40,765	$51,590	$45,076
Share of total population below poverty line	9.7%	8.5%	7.8%	3.6%	14.4%	9.5%	8.7%	7.5%	17.1%
Age distribution, persons below poverty line									
0 to 17 years	32.7%	34.9%	37.5%	18.5%	37.9%	33.3%	27.7%	17.7%	42.0%
18 to 64 years	60.9%	60.3%	53.0%	81.5%	58.5%	56.6%	67.8%	69.4%	53.7%
65 to 74 years	3.6%	2.0%	4.7%	0.0%	1.1%	8.9%	0.0%	6.1%	3.9%
75 years and over	2.9%	2.8%	4.7%	0.0%	2.5%	1.1%	4.4%	6.8%	0.4%

Source: U.S. Census, SF3 data from a sample of households.

The median age was 27 years, far lower than for the district as a whole (39.4 years) and the other sub-areas studied. In 2000, only 14 housing units in the immediate area of a total of 994 units were vacant, held for seasonal use. Homeownership was less prevalent than in other sub-areas. The residents of 51.2 percent of occupied housing units were homeowners as compared to 58.5 percent for the district as a whole.

Housing costs for both renters and owners were lower in the immediate area than in the surrounding sub-areas, as shown in Table 4-44. However, over half of the renters in the area paid 30 percent or more of their income for housing. The immediate area includes not only DHHL housing, but also public housing: the La'ilani, Kealakehe, Kaimalino, and Jack Hall housing projects.

Table 4-44: Housing Costs, fFrom 2000 Census, North Kona District and Sub-Aareas

	North Kona District	Kalaoa CT 215.01	Kalaoa 215.01 BG 1	Kalaoa 215.01 BG 2	Kalaoa 215.01 BG 3	Hualalai CT 215.02	Kailua-Kona CT 216.01	Holualoa CT 216.02	Kahaluu-Keauhou CT 215.03
Households (1)									
Number	10,522	3,142	1,063	1,159	920	1,419	2,331	2,040	1,590
Persons in households	28,410	9,488	3,087	3,301	3,100	3,688	5,974	5,268	3,992
Average household size	2.70	3.02	2.90	2.85	3.37	2.60	2.56	2.58	2.51
Housing Costs (2)									
Median Contract rent	$683	$740	$920	$998	$509	$577	$0	$745	$694
Median Gross rent	$745	$822	$959	$1,158	$583	$638	$727	$828	$746
Owner-occupant housing costs									
Median, for owners with a mortgage	$1,423	$1,392	$1,285	$1,630	$1,223	$1,602	$1,301	$1,532	$1,493
Share of households with high housing costs									
Renters paying 30% to 39% of income	13.9%	19.3%	13.1%	16.2%	26.9%	9.8%	16.8%	8.0%	8.7%
Renters paying > 40% of income	34.5%	35.0%	41.8%	37.8%	27.6%	40.2%	35.4%	22.6%	41.7%
Owners paying 30% to 39% of income	13.5%	10.4%	13.2%	10.6%	6.9%	5.2%	16.6%	25.6%	6.1%
Owners paying > 40% of income	24.9%	25.0%	23.9%	27.9%	22.2%	27.6%	21.2%	28.2%	22.3%

NOTES:
(!) 2000 US Census, SF 1, from all households.
(2) 2000 Census, SF 3, from a sample of households.

4.9.3 Community Issues and Concerns

Information about North Kona residents' views of their community and concerns about the area's future is available from: (1) outreach efforts by the County conducted as part of the Community Development Plan process; (2) debates about proposed new development; (3) survey data; and (4) discussions with residents by Belt Collins Hawaii staff.[8]

4.9.3.1 Issues Independent of the Keahuolu Project

West Hawai'i residents have repeatedly pointed to traffic congestion as a problem affecting their quality of life. The problem is exacerbated by the high cost of housing near Kailua-Kona. Many workforce families are living in such areas as Hawai'i Ocean View Estates, which is far from jobs, commuting daily to work. The idea that development is eroding residents' quality of life has motivated protests over new development proposals along Queen Ka'ahumanu Highway and demands that the State and County move quickly to improve major roadways.

[8] Belt Collins did not conduct a full-scale interview series for this project. Instead, staff continued earlier discussions about community values and change with residents (conducted with regard to the Keahole generating plant expansion and the proposed Kula Nei subdivision). Also, an earlier version of the project's concept plans was sent to a range of stakeholders for comment.

Residents' urgent demands for road improvements have been heard in roadside demonstrations, planning focus groups, meetings with County authorities, and hearings on development proposals. A small survey of registered voters in West Hawai'i suggests that concerns about education and housing are also prominent:

Table 4-45: Survey Responses, 2006, Hawai'i and West Hawai'i Senate District

	State	County Average	District 3
Most important issue facing the State:			
Traffic	31%	15%	30%
Public education	29%	27%	35%
Housing	29%	24%	32%
Economy	24%	25%	25%
Crime, drugs	15%	17%	10%
Resource management	11%	11%	23%
Political reform	9%	11%	13%
Gas	8%	13%	7%

NOTE: State results are for 1,500 voters called in August 2006, with results weighted by island. "County Average" simply averages results for the three Hawaii County Senatorial districts. District 3 includes West Hawaii and part of Ka'u district. Sample size per Senatorial district is only 60 respondents.
SOURCE: "The People's Pulse," Summer-Fall 2006, posted at www.omnitrakgroup.com

A separate survey, dealing with issues that might be seen as tourism-related, showed the cost of housing to be crucial to residents throughout Hawai'i. Perhaps the most striking finding in Table 4-46 is that crime is much less of a perceived problem for West Hawai'i residents than for people in other areas.

One of the questions in the survey asked residents' about their sense that they have little control over their region's and island's future. When asked whether "This island is being run for tourists at the expense of local people," 39 percent of West Hawai'i respondents strongly agreed, as opposed to 26 percent of East Hawai'i respondents. Residents of Maui and Kauai counties were even more likely to agree strongly with this claim. The difference between East and West Hawai'i is likely due in part to the size of the tourism economy in West Hawai'i and, in part, to West Hawai'i residents' sense that decision-makers in both Hilo and Honolulu fail to understand and give due priority to West Hawai'i community needs.

Table 4-46: Issues of Concern to Residents, West Hawai'i, County and State, 2006

	State	Hawaii County	West Hawaii
% of respondents identifying issue as "Big problem"			
Cost of housing	73%	67%	66%
Average income for residents	40%	38%	39%
Crime	52%	46%	42%
Preservation of Native Hawaiian culture	30%	26%	25%
Air or water pollution	31%	22%	23%
Number and quality of parks	18%	18%	22%
Sample size	1,609	413	204

Source: Market Trends Pacific, Inc. and John M. Knox, Inc., 2006.

The draft Kona Community Development Plan, as reviewed by the Kona Steering Committee and posted in October 2007, identifies an overall vision for the region's future and eight "guiding principles."[9] Those principles indicate the range and balance of community aims:

- Protect Kona's natural resources and culture;
- Provide connectivity and transportation choices;
- Provide housing choices;
- Provide recreation opportunities;
- Direct future growth patterns:
  a. In compact villages, largely north of Kailua;
  b. Limit density in South Kona and character should remain rural; and
  c. Neighborhood character should emphasize diversity, history, the host culture, and respect for the natural environment;
- Provide infrastructure and essential facilities concurrent with growth;
- Encourage a diverse and vibrant economy emphasizing agriculture and sustainable industries; and
- Governance should manage growth, encourage cooperation among stakeholders, and be implemented equitably and consistently.

[9] Posted at http://www.hcrc.info/hawai-i-island-plan/kona/cdp-draft-chapters/KCDP-thru-4.4-SC-comments-10-11-07.pdf /view, and downloaded November 16, 2007.

Several of those interviewed reflected the general view that development has occurred too quickly. Many in the community want to see concurrency (i.e., future development should occur at the same time as infrastructure development). Their concerns usually focus on roads, but other public facilities, notably schools and recreation space, were mentioned as being in short supply. Some also are concerned about preserving or re-creating a local sense of place.

Some interviewees mentioned that recreation and community facilities are needed in North Kona. While they commented that regional facilities at Old Airport Park are inadequate, they were more interested in seeing new recreation sites dispersed through the urban area than in expanding the regional park.

4.9.3.2 Issues and Concerns wWith Regard to the Project

West Hawai‘i residents who were interviewed agree that housing is badly needed in North Kona for residents. Some viewed the Keahuolu project as valuable, while others simply viewed it as inevitable, given the pressure for new housing in the area. Others emphasized congestion and limited infrastructure, and thought the project could add to the region’s problems.

All those interviewed raised questions about traffic associated with the project. Repeatedly, residents were skeptical that planned road improvements would happen in a timely way or would address traffic congestion effectively. Accordingly, they tended to question whether the project would be as effective as hoped in easing regional highway congestion.

Some questioned whether the Keahuolu project would provide affordable housing to those who need it most in North Kona. Housing is needed for people at many income levels, but “affordable housing,” as defined by County regulations, is too expensive for many households (e.g., such as ones supported by a single hotel worker). A few raised questions about the concentration of State-sponsored housing in the area, viewing the project, the DHHL areas, and older low-income housing projects as similar and as potentially a “ghetto” (i.e., a low-income housing area afflicted by crime and other social problems).

Some mentioned plans for a community center on DHHL land adjoining the project, and hoped the project would either contribute to developing that center or include comparable community facilities.

4.9.4 Potential Socio-Economic Impacts

4.9.4.1 Future Socio-Economic Conditions wWithout tThe Project

As noted earlier, housing growth in North Kona has continued for many years. There is ample demand to justify new construction for resident and visitor markets.

Expansion of the resident housing stock appears to be imminent. In North Kona, the Kaloko Heights project and Palamanui (on Queen Kaʻahumanu Highway, north of Keahole Airport) could add more than 2,300 units to the local residential housing stock. Smaller projects by private developers could include hundreds more homes – including both market and affordable units – a few miles north or south of Kailua-Kona.

Next to the Keahuolu project, both DHHL and QLT are planning new residential developments. DHHL controls over 500 acres that has been master-planned as a residential community. To date, the Kaniohale residential area with 225 units has been built. In the earlier Kealakehe master plan, this was Village 3. Villages 4 and 5, with about 300 units, are slated for development soon. DHHL controls seven "villages." Eventual build-out could be at least double that planned for the next few years. QLT is planning commercial, industrial, and residential development of its lands west of the Keahuolu project site.

Plans for a community center complex on DHHL land, between Kealakehe High School and the project site, are being developed by Laʻi ʻOpua 2020, a local stakeholder group. They recently commissioned a feasibility and planning study.

In South Kohala, Castle & Cooke has already built early increments of its Wehilani development, while the County and UniDev are beginning construction of a workforce housing project with some 1,200 units also in Waikoloa Village. The latter project will give preference to

County employees, but it has been planned as a response to a wider need for workforce housing near the coastal resort area.

With more homes built in the future, residents can hope to live closer to work. With more housing opportunities, the workforce will be able to grow.

Prospects for resort and non-residential housing growth are less clear. New development of resort homes and timeshare projects is likely within the Keauhou and Waikoloa resorts. Additional resort housing will likely be built in the Kuki'o and Hualalai resort areas of North Kona. The Rutter project at Kohanaiki is expected to add 500 housing units. The much larger Jacoby development at Honokohau, which would include timeshares, hotel rooms, and a new, larger marina, is proposed for State lands. It has been criticized by the County administration, which sees it as inappropriate given current zoning and problems ~~of~~ with traffic congestion.

Work on the Kona Community Development Plan is underway. Consultants and community stakeholders are considering plans to expand the regional road network. Roads running between Palani Road and Queen Ka'ahumanu Highway would relieve some of the congestion now found on those major thoroughfares. The Holoholo Street route could link up with an extension of Kealaka'a Street and provide the highest of three connector roads in the region north of Kailua-Kona. Transit development is also being considered for this area, with bus routes anticipated on lower connector roads.[10]

Improvements on Queen Ka'ahumanu Highway and Palani Road are in process to improve safety and traffic flow north of Kailua-Kona. A major mid-level connector road, the Ane Keohokalole Highway, is being planned by the County. These projects address major concerns of residents. Roy Takemoto, a County official, has estimated that the new road work will result in much less traffic congestion by 2010.[11]

[10] Studies, presentations and meeting minutes for the Kona Community Development Plan process are posted at http://www.hawaiiislandplan.com/. The account in this section is based on those materials and discussions with stakeholders and planners.

[11] Quirk, J. "Kona-side Traffic Should Ease in Three Years." Hawaii Tribune-Herald, March 18, 2007.

4.9.4.2 Future Socio-Economic Conditions wWith the Project

As a workforce housing development, the project is planned to have beneficial socio-economic impacts. This section provides detailed accounts of specific impacts, covering both immediate and cumulative impacts.

Economic Impacts

Construction Employment and Wages

Development of the Keahuolu project is expected to involve residential construction over a period of four to eight years, as shown in Table 4-47Table 4-47. Commercial construction could follow residential development and occur in two phases. Project construction work will include off-site infrastructure development, on-site development of lots and infrastructure, and housing construction. The next table shows construction spending and direct construction labor, estimated in full-time equivalent jobs, for selected years and cumulatively over the construction period.[12]

Table 4-47: Preliminary Timetable for Construction

Year	Concept A No. Units	Concept B No. Units	Concept C No. Units	Commercial (SF)
2010	300	300	300	
2011	300	300	300	
2012	300	300	300	
2013	120	300	300	
2014		300	300	
2015		300	300	
2016		40	300	
2017			230	
2018				100,000
2019				
2020				97,000
Total	1,020	1,840	2,330	197,000

Source: HHFDC.

[12] Many specialized construction jobs are short-term. For example, an electrician may spend a week or less on a project where others work throughout the year. The number of workers hired is likely to be larger than the estimated number of full-time equivalent jobs. Also, the direct construction workforce includes workers in the offices and baseyards of firms involved in a project, as well as ones actually on-site.

Direct jobs are created within firms and by engaging subcontractors in building the project. When these jobholders in turn buy materials and equipment in the local economy, they contribute to the creation of indirect jobs (for example, in home supply stores or from concrete manufacturing firms.) When in turn direct and indirect workers spend their wages, they create induced jobs, supported by the movement of capital from those wages through the local economy. Induced jobs largely consist of retail, service, and government jobs.

Wages can be estimated from records of average wages in the construction industry in the County. The indirect and induced jobs are spread throughout the economy, so they are estimated from average wages of all workers.

Table 4-48: Construction-Related Spending, Jobs, and Wages

	2010	2015	2020	Cumulative, to 2020
Total construction consts (Millions)				
Concept A	$126.1	$0.0	$7.3	$403.4
Concept B	$125.2	$71.8	$7.3	$597.9
Concept C	$113.0	$61.0	$7.3	$623.4
Direct construction workforce (annual person-years)				
Concept A	639	-	37	2,044
Concept B	634	364	37	3,030
Concept C	573	309	37	3,159
Total construction-related workforce (annual person-years)				
Concept A	1,527	-	88	4,885
Concept B	1,516	869	88	7,241
Concept C	1,369	738	88	7,549
Direct construction wages (Millions, constant 2007 $s)				
Concept A	$34.2	$0.0	$2.0	$109.5
Concept B	$34.0	$19.5	$2.0	$162.3
Concept C	$30.7	$16.5	$2.0	$169.2
Total construction-related wages (Millions, constant 2007 $s)				
Concept A	$66.2	$0.0	$3.8	$211.9
Concept B	$65.8	$37.7	$3.8	$314.1
Concept C	$59.4	$32.0	$3.8	$327.5

	2010	2015	2020	Cumulative, to 2020
Total construction consts (Millions)				
Concept A	$126.1	$0.0	$7.3	$455.0
Concept B	$125.2	$71.8	$7.3	$651.5
Concept C	$113.0	$61.0	$7.3	$676.5
Direct construction workforce (annual person-years)				
Concept A	639	-	37	2,044
Concept B	634	364	37	3,030
Concept C	573	309	37	3,159
Total construction-related workforce (annual person-years)				
Concept A	1,527	-	88	4,885
Concept B	1,516	869	88	7,241
Concept C	1,369	738	88	7,549
Direct construction wages (Millions, constant 2007 $s)				
Concept A	$34.2	$0.0	$2.0	$109.5
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Concept B	$65.8	$37.7	$3.8	$314.1
Concept C	$59.4	$32.0	$3.8	$327.5

Notes: Construction costs estimated by Belt Collins Hawaii. Cost estimates cover on-site and off-site infrastructure, residential and commercial construction. School construction costs are not included. Workforce full-time equivalent jobs are estimated based on the relation between statewide construction spending and the construction workforce. Indirect and induced construction-related workforce calculated from the State's Inter-County Input-Output Model (2002 version). Wages estimated from 2005 average annual industry wage for Hawai'i County and total covered employment (for indirect and induced jobs), using 2005 data adjusted to 2007 in line with increases in the Consumer Price Index.

Sources: DBEDT, State of Hawaii Data Book 2006 (Honolulu, HI: 2007); *The Hawaii Inter-County Input-Output Study: 2002 Benchmark Report*. Honolulu, HI:, 2007. Posted at http://www.hawaii.gov/dbedt/info/economic/data_reports/2002_Intercounty_I-O/. Department of Labor and Industrial Relations, Employment and Payrolls in Hawaii, 2005. Honolulu, HI:, 2006.

On the average, some 204 to 243 full-time direct jobs will be involved in construction of the Keahuolu Project annually, while total construction-related employment will reach 489 to 581 jobs annually, as shown in Table 4-49:

Table 4-49: Average Annual Construction-Related Workforce

Concept	Construction Period	Average Annual Construction Workforce	
		Direct	*Total*
A	10 years	204	489 person-years
B	13 years	233	557 person-years
B	13 years	243	581 person-years

Operations Employment and Wages

Residential projects do not result in the creation of many permanent jobs. Resident managers and a few landscape, maintenance, and security workers could be employed on a permanent basis at Keahuolu. Within the neighborhood commercial area, as many as 800 jobs could be located when it is fully built out and occupied. These jobs would exist in Hawai‘i County wherever families find it possible to live: they would still exist even if the project is not built.

The location of direct jobs at the project site is a socio-economic impact, affecting residents and their neighbors. The indirect and induced jobs associated with operations on the project site are not, since those operations, funded by resident spending, would occur somewhere in the County with or without the project. Accordingly, indirect and induced jobs associated with operations are not calculated here.

Labor Force Impacts

The Keahuolu project will affect the regional labor force in part by creating jobs, but more importantly, by providing housing for service, retail, managerial, and professional workers. As more housing units are built, fewer workers will face unacceptable housing choices and/or difficult daily commutes. People living close to Kailua-Kona are likely to have more employment options, including full- and part-time employment. By shortening the commute time for workers and their families, the project is likely to increase labor force participation, with some joining the labor force and others changing from part-time to full-time employment. For young people, the number of easily accessible jobs is far greater in Kailua-Kona than in outlying areas. Consequently, high-school student participation in the labor force will likely be higher. (In

2000, civilian workers amounted to 70 percent of persons 16 and over in North Kona, compared to 53 percent in Ka‘u and 54 percent in North Kohala.)

With fewer obstacles to work, residents living near job centers are more likely to keep their jobs than ones with long commutes. A long-term result of increasing the housing stock for Kailua-Kona workers will likely be lower job turnover.

Population Impacts

Table 4-51 shows calculations for on-site population. When fully built, the Keahuolu project will house some 2,988 to 6,826 residents.

The project is unlikely to attract any new residents or visitors to Hawai‘i. Affordable units will be sold or rented to full-time occupants. A resident preference will be established for the initial sale of market units. While some market units could theoretically be sold to non-residents, this seems unlikely given both strong resident demand and the design of the project as a community for residents, not a resort.

Table 4-50: Direct Operations Jobs and Wages: Annual Estimates for Selected Years

	2010	2015	2020
Operations Jobs			
Concept A			
Residential			
Building Services	$4	$12	$12
Security	$1	$3	$3
Grounds and maint	$4	$4	$4
Commercial	$0	$0	$788
	$9	$20	$808
Concept B			
Residential			
Building Services	4	24	25
Security	1	6	6
Grounds and maint	4	4	4
Commercial	-	-	788
	9	34	823
Concept C			
Residential			
Building Services	6	36	47
Security	2	9	12
Grounds and maint	4	4	4
Commercial	-	-	788
	12	49	850
Operations Wages			
(In Millions of Constant 2007 $s)			
Concept A	$0.2	$0.5	$22.0
Concept B	$0.2	$0.9	$22.4
Concept C	$0.3	$1.2	$23.1

	2010	2015	2020
Operations Jobs			
Concept A			
Residential			
Building Services	4	12	12
Security	1	3	3
Grounds and maintenance	4	4	4
Commercial	-	-	788
	9	20	808
Concept B			
Residential			
Building Services	4	24	25
Security	1	6	6
Grounds and maintenance	4	4	4
Commercial	-	-	788
	9	34	823
Concept C			
Residential			
Building Services	6	36	47
Security	2	9	12
Grounds and maintenance	4	4	4
Commercial	-	-	788
	12	49	850
Operations Wages			
(In Millions of Constant 2007 $s)			
Concept A	$0.2	$0.5	$22.0
Concept B	$0.2	$0.9	$22.4
Concept C	$0.3	$1.2	$23.1

Notes: Building services and security jobs are associated with multifamily construction; grounds and maintenance jobs are associated with opening up and using the entire project site. Commercial jobs estimated at 4 jobs per 1,000 square feet gross leasable area.

Table 4-51: On-Site Occupancy and Population~~, Keahuolu Project~~

	2010	2015	2020
Units Built			
Concept A	300	1,020	1,020
Concept B	300	1,800	1,840
Concept C	300	1,800	2,330
Units Occupied			
Concept A	291	989	989
Concept B	291	1,746	1,785
Concept C	291	1,746	2,260
Resident Population			
Concept A	879	2,988	2,988
Concept B	879	5,273	5,390
Concept C	879	5,273	6,826

Notes: Occupancy is estimated at 97%, to allow for normal vacancies due to sales or change in renters. Because of strong demand, occupancy is expected to be high from initial construction through the period studied. Population estimated from the 2000 Census data for Census Tract 215.01, which contains a broad mix of local residents. Its average household size (3.02 persons per household) was well above the district average (2.70 persons per household).

Impacts on the Housing Market

Demand for homes in North Kona is already strong and expected to exceed planned production, especially of housing for middle-income families. (See the discussion of housing demand in 2006, in Chapter 2.) Also, the district resident population is expected to increase by some 6,400 persons between 2010 and 2020. That increase accounts for approximately 2,370 households at the 2000 district average household size of 2.70 persons/household. Additional housing demand at the regional level will be due to movement of the island of Hawai‘i residents to homes nearer the urban center and to purchases by non-residents, whether for vacation homes or retirement.

Initial plans for the Keahuolu project call for production of 300 housing units annually, with the first homes available in 2010.[13] Taken together with additional DHHL increments in La‘i ‘Opua, affordable units and some of the market housing produced in Palamanui, new housing in Waikoloa Village, and smaller projects, the cumulative impact of planned housing developments

[13] As noted in earlier chapters, the three conceptual alternatives represent the range of potential development that could be done in response to HHFDC’s Request for Proposals. The actual volume and timing of construction will be refined by the developer over time.

should be a significant reduction in demand. With much more housing available for residents, the price of moderate homes can be expected to stabilize. A wide range of prices and housing types (including apartments, condominiums, townhomes, homes, self-help housing, and properties in leased-land as well as fee-simple communities) will be available to West Hawai‘i residents.

The project's impact on housing can be estimated in relation to demand indicators. The 2006 *Hawaii Housing Policy Study* suggests that there is demand from about 7,200 resident households for units in North Kona in the next few years. In addition, population growth will account for formation of at least 2,370 new households.

Some 1,020 to 2,330 units are proposed in the different concepts for the Keahuolu project. The net increase in units is smaller, since the project also includes operational jobs, and the workers in those jobs will need housing. Table 4-52~~Table 4-52~~ shows the net housing impact of the project. The net addition to the housing stock is estimated as 511 units under Concept A to 1,794 units under Concept C. Given a regional demand for approximately 9,570 units (7,200 units existing demand plus 2,370 new households), the net contribution of the project amounts to 5.3 to 18.7 percent of regional demand.

Table 4-52: Net Housing Impact of Keahuolu Project

	2010	2015	2020
On-site Jobs			
Concept A	9	20	808
Concept B	9	34	823
Concept C	12	49	850
On-site Workers' Households (1)			
Concept A	5	12	509
Concept B	6	22	519
Concept C	7	31	536
Population supported by On-site jobs (2)			
Concept A	16	37	1,539
Concept B	17	65	1,568
Concept C	22	93	1,620
Units Built			
Concept A	300	1,020	1,020
Concept B	300	1,800	1,840
Concept C	300	1,800	2,330
Net Units (Units Built - On-site Workers' Households)			
Concept A	295	1,008	511
Concept B	294	1,778	1,321
Concept C	293	1,769	1,794

Notes:

1 Workers' households are assumed to include 1.585 workers per household, on average, based on averages for CT 215.01 in 2000.

2 Workforce households assumed to average 3.02 persons/household (based on 2000 average household size, CT 215.01).

Fiscal Impacts

Government Revenues

Development of the Keahuolu project will result in revenues for the State associated with construction and sale of property. The County will gain revenues from taxes on homes and residential land.

The State is expected to gain from corporate income taxes on firms building the project, from excise taxes on spending by construction-related workers in the local economy, and from income taxes on construction-related workers' wages. Because the project is being built to increase the supply of affordable housing, direct construction revenues will be exempted from the excise tax. State revenues associated with construction are derived in Table 4-53~~Table 4-53~~. Conveyance taxes might be levied on some market units, but these are not included in Table 4-53~~Table 4-53~~. The cumulative increase in State revenues is estimated as approximately $~~14~~ 19 to $~~23~~ 28 million by the end of the construction period.

The County will see increased revenues from real property taxes. As government land, the project site is not now yielding property taxes. When housing and commercial facilities are occupied, they will be taxable. However, some or all of the housing in the project would likely be assessed at below-market rates, and taxed at special rates for homeowners and affordable rentals. The treatment of low-income rentals at the homeowner rate is a new County practice, and the applicable laws could well be revised before any homes are built at Keahuolu. To derive a minimal estimate of new tax revenues, this analysis assumes that all housing within the project is sold and resold at affordable rates, and that all is taxed at homeowner and affordable rental rates.

For the County of Hawai'i, the minimal real property taxes associated with development of the Keahuolu project are estimated to range from $1.2 million to $1.7 million (2007 dollars) annually by 2020 and to reach a cumulative total of $9.4 million to $13.0 million through 2020. Table 4-54~~Table 4-54~~, Table 4-55, and Table 4-56~~Table 4-56~~ show calculations for the three project concepts.

Table 4-53: State of Hawai'i Tax Revenues Associated wWith Construction, Keahuolu Project

	2010	2015	2020	Cumulative
Total construction consts (Millions OF 2007 $S)				
Concept A	$90.4	$0.0	$7.3	$336.2
Concept B	$85.4	$85.4	$85.4	$1,110.0
Concept C	$72.8	$72.8	$72.8	$946.0
Total construction-related wages (Millions of 2007 $s)				
Concept A	$47.5	$0.0	$3.8	$176.6
Concept B	$44.9	$37.9	$3.8	$275.8
Concept C	$38.2	$32.9	$3.8	$288.9
Corporate income taxes (Thousands of $s) (1)				
Concept A	$80.7	$0.0	$6.5	$300.2
Concept B	$76.3	$64.4	$6.5	$468.9
Concept C	$65.0	$56.0	$6.5	$491.2
Excise Tax on workforce spending (Thousands of $s) (2)				
Concept A	$1,189.3	$0.0	$95.7	$4,423.8
Concept B	$1,123.7	$948.3	$95.7	$6,909.4
Concept C	$957.6	$825.0	$95.7	$7,238.1
Personal Income Tax (Thousands of $) (3)				
Concept A	$2,481.3	$0.0	$199.7	$9,229.7
Concept B	$2,344.4	$1,978.4	$199.7	$14,415.4
Concept C	$1,997.8	$1,721.2	$199.7	$15,101.3
Total State Revenues (Thousands of $s)				
Concept A	$3,751.3	$0.0	$302.0	$13,953.7
Concept B	$3,544.3	$2,991.1	$302.0	$21,793.7
Concept C	$3,020.4	$2,602.1	$302.0	$22,830.5

Notes:
(1) Corporate income tax historically averages 0.17% of corporate revenues (data from 2000).
(2) Excise tax at 4% of workforce disposable income. Share of spending subject to excise tax estimated from 2002 expenditure data.
(3) Personal income tax historically 5.22% of resident incomes (average, 1998-2002).
Sources: Hawaii State Department of Taxation, 2001, 2005.

	2010	2015	2020	Cumulative
Total construction costs (Millions of 2007 $s)				
Concept A	$126.1	$0.0	$7.3	$455.0
Concept B	$125.2	$71.8	$7.3	$651.5
Concept C	$113.0	$61.0	$7.3	$676.5
Total construction-related wages (Millions of 2007 $s)				
Concept A	$66.2	$0.0	$3.8	$239.0
Concept B	$65.8	$37.7	$3.8	$342.3
Concept C	$59.4	$32.0	$3.8	$355.4
Corporate income taxes (Thousands of $s) (1)				
Concept A	$112.6	$0.0	$6.5	$406.4
Concept B	$111.8	$64.1	$6.5	$581.8
Concept C	$100.9	$54.4	$6.5	$604.1
Excise Tax on workforce spending (Thousands of $s) (2)				
Concept A	$1,659.6	$0.0	$95.7	$5,988.0
Concept B	$1,647.3	$944.4	$95.7	$8,573.8
Concept C	$1,487.3	$802.1	$95.7	$8,902.5
Personal Income Tax (Thousands of $) (3)				
Concept A	$3,462.5	$0.0	$199.7	$12,493.2
Concept B	$3,436.9	$1,970.4	$199.7	$17,888.1
Concept C	$3,103.1	$1,673.4	$199.7	$18,574.0
Total State Revenues (Thousands of $s)				
Concept A	$5,234.7	$0.0	$302.0	$18,887.5
Concept B	$5,196.1	$2,978.9	$302.0	$27,043.8
Concept C	$4,691.4	$2,530.0	$302.0	$28,080.7

Sources: Hawaii State Department of Taxation, 2001, 2005.

Notes:
(1) Corporate income tax historically averages 0.17% of corporate revenues (data from 2000).
(2) Excise tax at 4% of workforce disposable income. Share of spending subject to excise tax estimated from 2002 expenditure data.
(3) Personal income tax historically 5.22% of resident incomes (average, 1998-2002).

Table 4-54: Minimum Estimate of Real Property Tax Revenues, County of Hawai'i, fFrom Development of Project Concept A

	2010	2015	2020	Cumulative
Basis for Valuation				
Units built				
For Sale (1)	239	813	813	813
For Rent (1)	61	207	207	207
Commercial area (GLA in thousands sq. ft.)	-	-	197	197
Value (Millions of 2007 $s)				
Value of housing units				
For Sale (2)	$59.5	$202.4	$202.4	
For Rent (3)	$10.0	$34.0	$34.0	
Homeowner's Exemptions				
Basic Exemption (4)	$9.6	$32.5	$32.5	
Additional Housing Exemption (5)	$11.9	$40.5	$40.5	
Net Taxable Value, Housing	$48.0	$163.3	$163.3	
Value of Commercial Property (6)	$0.0	$0.0	$29.6	
Real Property Taxes (Thousands of 2007 $s)				
Residential (7)	$266.6	$906.5	$906.5	$8,851.4
Commercial (8)	$0.0	$0.0	$266.0	$536.0
Total	$266.6	$906.5	$1,172.4	$9,387.4

Notes:
(1) One-third of multifamily units assumed to be rentals.
(2) Average housing unit assumed to be unit affordable for sale to family of four with income 110% of median, (priced at $217,900 in 2007).
(3) All rentals assumed to be "affordable," so units qualify for homeowner tax classification. Value of rentals extrapolated by assuming 5.7% cap rate, 95% occupancy, and that the average unit is a two-bedroom unit rented at the top of the affordable range for West Hawaii ($822). Cap rate based on NCREIF moving average.
(4) Basic exemption for homeowners = $40,000 of value.
(5) Since 2005, Hawaii County exempts 20% of the homeowners' property values, up to $400,000 in value.
(6) Commercial property value estimated from assumed construction costs.
(7) Homeowner class residential property is taxed at $5.55/$1,000 value.
(8) Commercial property is taxed at $9.00/$1,000 value.

Sources: Hawaii County property tax information, as posted at
http://www.hawaiipropertytax.com/pdffiles/HOME%20EXEMPTIONS%20Brochure.pdf
http://www.hawaiipropertytax.com/pdffiles/RP%20Form%2019-53(h)%20Affordable%20Rental%20Program%20Application.pdf
National Council of Real Estate Investment Fiduciaries data posted at http://www.ncreif.com/#

Table 4-55: Minimum Estimate of Real Property Tax Revenues, County of Hawai'i, fFrom Development of Project Concept B

	2010	2015	2020	Cumulative
Basis for Valuation				
Units built				
For Sale (1)	233	1,396	1,427	1,427
For Rent (1)	67	404	413	413
Commercial area (GLA in thousands sq. ft.)	-	-	197	197
Value (Millions of 2007 $s)				
Value of housing units				
For Sale (2)	$57.9	$347.2	$355.0	
For Rent (3)	$10.0	$34.0	$34.0	
Homeowner's Exemptions				
Basic Exemption (4)	$9.3	$55.8	$57.1	
Additional Housing Exemption (5)	$11.6	$69.4	$71.0	
Net Taxable Value, Housing	$47.0	$255.9	$260.9	
Value of Commercial Property (6)	$0.0	$0.0	$29.6	
Real Property Taxes (Thousands of 2007 $s)				
Residential (7)	$260.8	$1,420.5	$1,447.8	$12,449.4
Commercial (8)	$0.0	$0.0	$266.0	$536.0
Total	$260.8	$1,420.5	$1,713.8	$12,985.3

Notes: See table for Concept A. By assumption, one third of all multifamily units is assumed to be low-income rentals, so tax return on Concept B is higher than for Concept C, which has no single family units.

Table 4-56: Minimum Estimate of Real Property Tax Revenues, County of Hawai'i, fFrom Development of Project Concept C

	2010	2015	2020	Cumulative
Basis for Valuation				
Units built				
For Sale (1)	200	1,200	1,553	1,553
For Rent (1)	100	600	777	777
Commercial area (GLA in thousands sq. ft.)	-	-	197	197
Value (Millions of 2007 $s)				
Value of housing units				
For Sale (2)	$49.8	$298.6	$386.5	
For Rent (3)	$10.0	$34.0	$34.0	
Homeowner's Exemptions				
Basic Exemption (4)	$8.0	$48.0	$62.1	
Additional Housing Exemption (5)	$10.0	$59.7	$77.3	
Net Taxable Value, Housing	$41.8	$224.8	$281.0	
Value of Commercial Property (6)	$0.0	$0.0	$29.6	
Real Property Taxes (Thousands of 2007 $s)				
Residential (7)	$232.0	$1,247.8	$1,559.7	$12,268.6
Commercial (8)	$0.0	$0.0	$266.0	$536.0
Total	$232.0	$1,247.8	$1,825.6	$12,804.5

Notes: See table for Concept A. By assumption, one third of all multifamily units is assumed to be low-income rentals, so tax return on Concept B is higher than for Concept C, which has no single family units.

Government Costs

~~To the extent that the project increases demand for public services, the project will result in costs to the State and County. The developer will reduce County costs associated with new development by paying for off-site infrastructure. The developer will pay a fair share of school development costs to the State DOE and will contribute towards construction of the major road between the HHFDC and QLT lands at Keahuolu.~~

From a planning perspective, the Keahuolu project is a case of "smart growth." This concept is usually discussed in terms of alternative futures: sprawling urbanization vs. compact growth, especially infill growth in existing urban zones. Sprawl involves calculable costs to individuals (travel time and costs; less physical activity and higher incidence of obesity), to communities (lower involvement of adults as volunteers and community participants), and to municipal or regional authorities (higher costs of providing infrastructure over greater distances). For calculations, please see *Costs of Sprawl – 2000* published in the "Transit Cooperative Research Program Report 74," 2002.

In the context of Hawai‘i County, it is clear that delivery of some services – notably police and fire control – can be accomplished more efficiently and at lower cost if homes are concentrated near police and fire stations. The impact on roadways is also obvious. With concentrated development, traffic congestion may continue to be a serious problem in Kailua-Kona, but it is likely to be less severe over the many road-miles that commuters from Ka‘u, South Kona and North Kohala now travel to and from work. The analysis becomes more complex with regard to wastewater facilities, which exist in urban, but not rural areas. The developer will be responsible for onsite and offsite costs of infrastructure that can be dedicated to the County. The County will thereby acquire assets. The County will also be responsible for operations and maintenance of those assets, but will be able to bill users for these costs. Again, an urbanized population may well make greater demands for recreation services than a dispersed one, but the developer will be responsible for adding parks within the project area.

Increases in certain government revenues are quantified in the EIS because these can be calculated in a straightforward manner. Costs and other revenues are not calculated because the assumptions needed to calculate them are far more complex and may depend on future agency funding decisions (e.g., the timing and extent of park improvements). Since the total costs associated with public facilities for smart growth are likely to be smaller than with dispersed development, it is appropriate to disclose this likely positive impact but not necessary to calculate it in detail.

The project will serve West Hawai‘i residents and not a new population. It does not create a new demand for government services but rather relocates that demand to a site near the urban center. Consequently, the costs of government service delivery to Keahuolu project residents are likely to be less than they would be without the project.

~~Since the project serves West Hawai‘i residents, not a new population attracted to the county from elsewhere, it does not create new demand for government services. Instead, it helps to relocate that demand to a site near the urban center. Consequently, the costs of government services to Keahuolu project residents are likely to be less than they would be without the project.~~

Social Impacts

Impacts on West Hawai'i

The Keahuolu project will house a large number of working residents in Kailua-Kona, increasing demand for commercial and public services in the urban area.

The project contributes to a cumulative impact, the differentiation of urban and "country" areas in West Hawai'i. As young working families concentrate in or near Kailua-Kona, outlying areas will tend to have older populations and lower labor force participation. The urban area will be more densely settled, while other areas will be more "country" in appearance and ambiance. Retirees and some workers willing to commute long distances will still be found throughout West Hawai'i – the impact is the intensification of an ongoing trend, not a qualitative change.

As a rule, the shorter the commute, the easier it is for adults to participate in the life of their home communities, whether as volunteers, as parents involved with their children's schools and teams, or simply as participants in everyday life. Community involvement is likely to increase. On the other hand, residents moving from areas in which they grew up and have family ties can find a new development to be less vibrant and lacking the networks, occasions, and places in which they enjoy community life. The Keahuolu project's design as a walkable community with parks and schools nearby that will help to encourage resident community participation. On balance, then, the project is likely to increase West Hawai'i residents' ability to contribute to community life.

Traffic congestion on Palani Road has long been a source of resident dissatisfaction in Kona. By concentrating residents near Palani Road, close to Kailua-Kona job sites, the project is likely to worsen congestion on that route during its early years. In time, with highway improvements and the construction of new roads, the project will help to limit congestion throughout the region because a smaller share of workers will be commuting long distances on a few through roads.

Impacts on the Project Site and Surrounding Area

The immediate area will change due to the cumulative impact of development in the project, in QLT lands, and in DHHL lands. That change has been anticipated and most of the sites in question are already designated as Urban or Urban Expansion. A new residential center will be created for Kailua-Kona. With the eventual development of new roadways, the project and adjoining sites will have internal circulation, so that trips between homes and schools, community facilities, or commercial areas will not rely on major through roads. The commercial and public facilities within the project will likely help to encourage residents of the project and adjoining areas to limit trips outside the immediate area, and tend to engender a sense of Kealakehe/Kealuolu as a distinctive community or neighborhood in Kailua-Kona.

The new neighborhood will be characterized by design elements intended to encourage walking, bicycling, and public transit use. As a neighborhood with much of the new construction in Kailua, it will likely be more desirable than older areas with homes at similar prices. As a community with a mix of rental and for-sale units, the Keahuolu project will not fit the negative stereotypes associated with low-income housing.

4.9.4.3 Summary - Impacts of the Alternatives oOn Socio-Economic Conditions

The Keahuolu project is expected to have modest positive socio-economic impacts. Above all, it will increase the housing supply, and hence have a positive impact on housing prices and the quality of life. It will increase the workforce population within the Kailua urban area, and hence encourage higher labor force participation. It will result in increased revenues for the State and County, which are likely to offset any increased costs associated with new development at the project site. On the other hand, its short term impact on traffic along Palani Road will be negative, affecting Kailua residents and commuters from northern areas along Mamalahoa Highway.

The No Action Alternative would fail to respond to regional demand for housing, and would not provide support to help the County achieve its road connectivity goals. It would not have any significant socio-economic impacts.

The three concepts differ in the number of units, and hence in the extent to which they respond to regional housing demand and create a new community within Kailua-Kona. The density of settlement involved, however, is too low for the differences among the three alternatives to be associated with significant long-term social impacts. The adverse impact of traffic congestion before the new mid-level road is built will be similar for all three alternatives until 2015-2020, when the number of homes on-site will differ greatly. The project-related traffic impacts of all three alternatives, however, can be fully mitigated with recommended improvements.

The Impacts of the Alternatives on Socio-Economic Conditions

ALTERNATIVES	NO IMPACTS	POTENTIAL IMPACTS	ADVERSE IMPACTS	COMMENTS/MITIGATION MEASURES
1. No Action	✓			No substantial socio-economic impacts are anticipated under this alternative.
2. Alternative A		✓		The project is anticipated to be built out over a 10 year period. Socio-economic impacts are anticipated to be positive with a increased supply of affordable housing near employment centers.
3. Alternative B		✓		The project is anticipated to be built out over a 10 year period. Socio-economic impacts are anticipated to be positive with a increased supply of affordable housing near employment centers.
4. Alternative C		✓		The project is anticipated to be built out over a 10 year period. Socio-economic impacts are anticipated to be positive with a increased supply of affordable housing near employment centers.

4.10 PUBLIC FACILITIES

4.10.1 Public Safety

4.10.1.1 Existing Conditions

Police. The County Police Department's Kona station is located at Kealakehe, just above Queen Ka'ahumanu Highway, about 1.5 miles from the project site. It serves as the local station and

main office for West Hawai‘i bureaus. Some 78 positions were authorized for the Kona district as of 2005.[14]

Fire Protection. The County's North Kona fire station is located in ~~Kailua~~ Kailua-Kona, about 0.75 miles from the project. ~~The Keāhole Airport fire station is some 6.9 miles from the project.9~~ Funds for a new Makalei Fire Station have been budgeted.

The Public Facilities and Programs working group of the Kona Community Development Plan process issued a "Final Actions" report in 2006. It urged improvements in fire and police protection, accomplished by increased citizen patrols and higher wages for police officers. The report is posted at http://www.hcrc.info/cdp-documents/kona/working-groups/working-group-reports/FinalActions_FacilitiesPrograms_061212.doc/view.

Civil Defense. The County's webpage states that the role of the Civil Defense Agency is to direct and coordinate the development and administration of the County's total emergency preparedness and response program to ensure prompt and effective action when natural or man-caused disaster threatens or occurs anywhere in the County of Hawai‘i.

4.10.1.2 Potential Impacts

Police. The Keahuolu project will provide new homes in response to existing housing demand in North Kona. At the regional level, Keahuolu will not create additional demand for police services, unless the project is more difficult to police than other areas. Because Keahuolu is expected to draw residents from outlying areas to a central planned community, it will improve delivery of public safety services, since the time needed to respond to calls will be reduced.

While population and housing growth will lead to increased demand for police services, the impact of the Keahuolu project is likely to be small.

Fire Protection. The Keahuolu project will be built according to the Hawai‘i County Fire Code. All public roadways in the project will be wide enough to permit access by fire trucks. With

[14] Hawai‘i County Police Department, 2004-2005 Annual Report. Hilo, HI. Posted at http://www.hawaiipolice.com/topPages/annualreports.html.

development comes an increase in the Fire Department's responsibility for structures, and a decrease in the acreage on which brushfires could occur. To the extent that the project allows residents to congregate in a planned community, rather than being dispersed through the region, it will help the Fire Department to improve its response times. The net impact is likely to be minimal.

Civil Defense. Based on input received from the State Department of Defense – Office of Civil Defense, the HHFDC will recommend to the Keahuolu project developer that one outdoor warning siren (minimum size 121 DBC solar powered with omni-directional sound properties) be installed at a central location within the development.

4.10.2 Education

4.10.2.1 Existing Conditions

The Keahuolu project site is within the Kealakehe school catchment area. It is served by:

- Kealakehe Elementary School. Located on Kealakaʻa Street, this school serves nearly 990 ~~1,000~~ students from kindergarten through grade five. It has 60 full-time equivalent teaching positions, including regular education, special education, and supplemental instructors.
- Kealakehe Intermediate School. Also located on Kealakaʻa Street, this school has approximately 900 ~~1,000~~ students in grades six through eight, and a teaching staff of 58 positions.
- Kealakehe High School. Opened in 1997 in the Villages of Laʻi ʻOpua, this school serves students from Hualalai to Waikoloa Village. ~~In the 2006-2007 school year, 1,567 students were enrolled.~~ In the -2007-2008 school year, 1,638 students were enrolled. A total of 76.5 teaching positions are allocated to the school.

The following enrollment information is provided by the DOE:

Table 4-57:- Actual and Projected Enrollments at Department of Education Schools

	Actual Enrollment Done Fall 2007	Projected Enrollment – Done Spring 2006-2007				
	School Year 07-8	2008	2009	2010	2011	2012
Kealakehe Elementary	984	1106	1229	1285	1339	1371
Kealakehe Intermediate	909	911	922	911	893	910
Kealakehe High School	1638	1601	1596	1584	1586	1555

Private schools in North Kona include:

- Hualalai Academy, with 160 students in grades K through 12, located on Kealaka‘a Street;
- The Kona campus of the Hawai‘i Montessori School (serving grades K through six); and
- Makua Lani Christian School in Holualoa, and the Kona Christian Academy.

In addition, Hawai‘i Preparatory School, located in Waimea, South Kohala, is a K-12 school with approximately 585 students. It regularly enrolls students from North Kona, as well as ones from South Kohala and boarders. The Kea‘au campus of the Kamehameha Schools enrolls more than 1,100 Native Hawaiian students from the County. Some students commute from West Hawai‘i, catching buses from Ka‘u or Waimea.

4.10.2.2 Potential Impacts

The Hawai‘i State DOE has provided multipliers that were used to develop preliminary estimates of the Keahuolu project’s public school population, as shown in Table 4-58~~Table 4-58~~:

Table 4-58: Public School Student Population at Buildout of Keahuolu Project

	Concept A	Concept B	Concept C
Units			
Single Family	400	600	-
Multifamily	620	1,240	2,330
	1,020	1,840	2,330
Estimated Student Population at Buildout			
Elementary	223	387	388
Middle	63	108	101
High	73	126	124
	359	621	614

NOTE: Student population estimated from multipliers supplied by the Department of Education and the assumption that one-third of multifamily units will be low-income rentals. Multipliers are (children/unit):

	Elementary	Middle	High
SF	0.3	0.09	0.1
MF, moderate income	0.15	0.04	0.05
MF, rental	0.2	0.05	0.06

SOURCE: Discussions with Facilities Branch, Hawai'i State Department of Education, November 2007.

Project plans call for an elementary school to be located on-site, helping to relieve crowding at Kealakehe Elementary. A middle school eventually may also be needed nearby due to construction of additional increments of the DHHL Kealakehe area, of new QLT housing areas, and of the project.

All the schools in the Kealakehe complex are large, compared to DOE standards. With population growth in the catchment area (both at the Keahuolu project and elsewhere), existing schools will likely experience crowding until new schools are built as planned. Cooperation among the DOE, developers, and community leaders will help to manage stresses during the anticipated period of growth between 2010 and 2020, and to advocate timely construction of new schools.

4.10.3 Recreation

4.10.3.1 Existing Conditions

Major recreation facilities in North Kona include:

- Kailua Park Complex, known as Old Airport Park. This site includes a gym, swimming pool, and fields for active recreation as well as an extensive beach area. It lies on the shore, directly west of the Kealakehe/Keahuolu area.
- Hale Halawai. This recreation center, located on Ali‘i Drive on the south side of Kailua-Kona, offers sports and crafts programs.
- Honokohau Boat Harbor, approximately 2.6 miles from Keahuolu project, provides ocean access and services to boaters.

Newer subdivisions such as Pualani Estates and Lokahi Makai include a sports field for resident use.

The Public Facilities and Programs working group of the Kona Community Development Plan process identified two major objectives involving recreation: (a) develop an impact fee to pay for new recreation and sports facilities, and (b) provide community centers to meet the needs of residents of all ages.

4.10.3.2 Potential Impacts

The Keahuolu project will include approximately 25 acres of park and open space for use by residents, in accordance with County Parks Department requirements.

With increased population in the Kailua-Kona area, demand for active recreation space will increase. The Keahuolu project will contribute to that increase. However, many residents of the project are expected to move to North Kona from South Kona, Ka‘u, or South Kohala, areas with even fewer resources for active recreation (such as sports fields and gymnasia) than North Kona. The impact of the project involves redistribution of existing and anticipated demand, rather than new demand.

4.10.4 Medical Facilities

4.10.4.1 Existing Conditions

The primary medical facility for the Kona region is Kona Community Hospital in Kealakekhua, South Kona. This 94-bed hospital is part of the Hawaii Health Care System supported by the State. It has 24-hour emergency services, an intensive care unit, maternity, oncology, and other units. It is located about 10 miles from the Keahuolu project.

In Waimea, the North Hawaii Community Hospital is a privately owned non-profit facility with 40 beds, a 24-hour emergency room, and acute care services. It is located about 39 miles from the Keahuolu project.

4.10.4.2 Potential Impacts

With increased population in North Kona, demand for medical services will grow. The Keahuolu project's population will contribute to that growth in proportion to its size. Its residents account for 6.8 to 15.6 percent of the forecasted North Kona district population. As noted for other public services, the impact of the project involves redistribution of existing and anticipated demand, rather than new demand. In the coming years, however, the question of the location of medical facilities for West Hawai'i may well arise again. In the context of that ongoing discussion, the project will help to increase demand for new medical facilities near Kailua-Kona, in addition to or rather than Kealakekua.

4.10.5 Summary - Impacts of the Alternatives on Public Facilities

The project will not have significant impacts on public facilities. It will concentrate demand for schools and recreation, but will also provide a school site and open space on-site, in accordance with DOE and County Parks Department requirements, respectively, thereby managing and mitigating the potential impacts.

ALTERNATIVES	NO IMPACTS	POTENTIAL IMPACTS	ADVERSE IMPACTS	COMMENTS/MITIGATION MEASURES
1. No Action	✓			Demand for school and recreation facilities is strong, independent of the project.
2. Alternative A		✓		The project is anticipated to be built out over a ~~10~~ 10- year period. The project site provides open space / play area and a site is reserved for a school facility.
3. Alternative B		✓		The project is anticipated to be built out over a ~~10~~ 10- year period. The project site provides open space / play area and a site is reserved for a school facility.
4. Alternative C		✓		The project is anticipated to be built out over a ~~10~~ 10- year period. The project site provides open space / play area and a site is reserved for a school facility.

CHAPTER FIVE: RELATIONSHIP OF THE PROPOSED ACTION TO LAND USE PLANS, POLICIES, AND CONTROLS FOR THE AFFECTED AREA

STATE OF HAWAIʻI PLANS AND CONTROLS

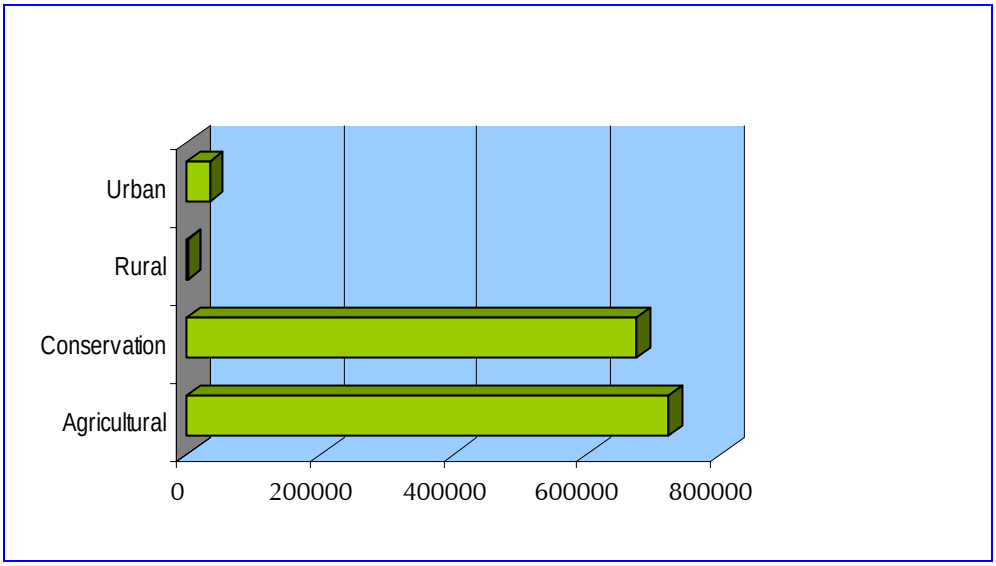
5.1 THE LAND USE LAW

The Legislature for the State determined in 1961 that a state-wide zoning system was needed to protect Hawaiʻi's valuable land from development that provided a short-term gain for a few and resulted in a long-term loss to the income and growth potential of the State's economy. Accordingly, the Legislature established an overall framework of land-use management and adopted the Land Use Law under Chapter 205 of the HRS. The law placed all lands in the State in one of four land-use districts: *Urban, Agricultural, Conservation, or Rural* (the Rural District was added in 1963), and established the LUC under HRS §205-1.

5.1.1 Land Use District Boundaries

The LUC identified land areas suitable for inclusion in one of the four districts and set the standards for determining the boundaries. Of the approximately 2.5 million acres of land in the County, 1.4 million acres are in West Hawaiʻi, which is comprised of North Kohala, South Kohala, North Kona, South Kona, and Kaʻu. A large portion of the land is in the Agricultural and Conservation Districts, as demonstrated in Figure 5-1.

Figure 5-1: Proportion of Land in District Boundaries – West Hawai'i



5.1.1.1 Urban District

The Urban District generally includes city-like concentrations of people, structures, services, and vacant areas to accommodate future development and foreseeable growth. Approximately 54,267 acres or 2 percent of the County's total land area comprise the Urban District. Individual counties govern the zoning within the district.

5.1.1.2 Agricultural District

The Agricultural District includes activities or uses such as farming, aquaculture, game and fish propagation; agricultural services; farm buildings, employee housing, district mills, storage facilities, processing facilities, vehicle and equipment storage areas, roadside stands; wind machines and wind farms; small-scale meteorological, air quality, noise, and other scientific and environmental data collection and monitoring facilities; agricultural parks; and ~~open~~ open-area recreational facilities, including golf courses and golf driving ranges, provided that they are not located on land in the highest productivity categories as determined by the LUC. This district includes land with a high capacity for intensive cultivation as well as a low capacity. Minimum lot sizes in this district under the State Land Use Law are one acre. This district has the second greatest land area with approximately 1,184,599 acres or slightly over 46 percent of the total land area of the County. The LUC and/or County regulate special uses within the Agricultural District

depending upon lot size. County zoning ordinances may further define accessory uses within this district.

5.1.1.3 Conservation District

The Conservation District primarily includes land in existing forest and water reserve zones, and areas necessary for ~~(1)~~ protecting watersheds and water sources; ~~(2)~~ preserving scenic and historic areas; ~~(3)~~ providing park lands, wilderness, and beach reserves; ~~(4)~~ conserving indigenous or endemic plants, forestry, fish, and wildlife; ~~(5)~~ preventing floods and soil erosion; ~~(6)~~ retaining open-space areas to enhance the present or potential value of abutting or surrounding communities; ~~(7)~~ using areas of value for recreational purposes, other related activities, and other permitted uses not detrimental to a multiple-use conservation concept. This district has the largest land area with approximately 1,338,135 acres or 52 percent of the total land area of the County. The State Board of Land and Natural Resources (BLNR) has authority over conservation lands and the State DLNR sets rules governing its uses.

The Conservation District has five subzones: (1) Protective, (2) Limited, (3) Resource, (4) General, and (5) Special. The first four subzones are arranged in a hierarchy of environmental sensitivity, ranging from the most environmentally sensitive (Protective) to the least sensitive (General). The Special subzone applies to special cases, specifically to allow a unique land use on a specific site. Each subzone has a set of "identified land uses" ~~which~~ that may be allowed by discretionary permit. Applications can only be accepted for an identified land use listed under the particular subzone covering the subject property. Most of the identified land uses require a discretionary permit or some sort of approval from the DLNR or BLNR. Major permits are required for land uses~~, which~~ that have the greatest potential impact, and an environmental assessment and/or an EIS is required (and ~~may also require~~ a Public Hearing may also be required).

5.1.1.4 Rural District

Rural Districts are defined under the State Land Use Law as lands primarily comprised of small farms mixed with low-density residential lots that have a minimum lot size of one-half acre. Of

the four districts, this is the smallest, with approximately 807 acres of the County's total land area. This district generally includes low-density residential uses, agricultural uses, public, quasi public, and public utility facilities. These districts may include contiguous areas not suitable for low-density residential lots or small farms. Jurisdiction over rural districts is shared by the LUC and respective county.

5.1.2 The Land Use Commission

The LUC's primary responsibilities are to: (1) administer the law and determine the boundaries for each district; (2) preserve and protect Hawai'i's land; (3) encourage uses to which lands are best suited; and (4) ensure that areas of State concern are addressed in the land-use decision-making process.

The LUC also reviews and rules on applicant-initiated amendments to the district boundaries, pursuant to HRS Section 205-4 and HAR, Chapter 15-15, *Hawaii Land Use Commission Rules*, as amended, and approves special-use permits for land comprised of 15 acres or more, pursuant to HRS Section 205-6.

The Governor appoints members to the LUC, and the Senate confirms the appointments. Members are selected from a cross-section of the community for a specified term. One member is appointed from each of the four counties and five at large, for a total of nine.[1]

5.1.3 Decision-Making Criteria for a Boundary Amendment

The LUC, when reviewing a petition for a boundary amendment, considers the decision-making criteria of HRS Section 205-17:

(1) The extent to which the proposed reclassification conforms to the applicable goals, objectives, and policies of the Hawaii state plan and relates to the applicable priority guidelines of the Hawaii state plan and the adopted functional plans;

[1] Data in Section 5.1 was obtained from Chapter 205 of the Hawai'i Revised Statutes, State of Hawai'i LUC website (http://luc.state.hi.us), and the 2001 County of Hawai'i Proposed General Plan. The revised 2001 General Plan was used instead of the existing plan because the County conducts five- and ten-year comprehensive reviews and updates of the General Plan to maintain dynamism and flexibility. The revised plan contains major changes and trends that have occurred and updated statistics reflecting these changes.

DISCUSSION: The proposed Keahuolu Affordable Housing Pproject is consistent with the goals, objectives, policies, and priority guidelines of the Hawai'i State Plan and the State Functional Plans. A thorough review of the Hawai'i State Plan and the adopted State Functional Plans are discussed in detail in subsequent sections.

(2) The extent to which the proposed reclassification conforms to the applicable district standards;

DISCUSSION: A reclassification to the Urban District would allow the subject property to (1) conform with the County's General Plan LUPAG, which designates the majority of the subject property for Urban Expansion and the remainder of the property as Low Density Urban; (2) accommodate the projected population growth of the County; (3) support current State land use classifications in the area surrounding the subject property, as the project site is almost entirely surrounded by land designated as Urban; and (4) support the objectives and policies of the State's West Hawai'i Regional Plan and the County's Keahole to Kailua Development Plan.

(3) The impact of the proposed reclassification on the following areas of state concern:

(A) Preservation or maintenance of important natural systems or habitats;

(B) Maintenance of valued cultural, historical, or natural resources;

(C) Maintenance of other natural resources relevant to Hawaii's economy, including, but not limited to, agricultural resources;

DISCUSSION: Development of the proposed project will alter much of the existing landscape of the subject property. However, no significant natural systems or habitats have been identified within the project area. Cultural and archaeological resources identified as significant will be preserved in accordance with procedures established by the SHPD. The subject property is not considered to be a valued agricultural resource due to the poor quality of the soil.

(D) Commitment of state funds and resources;

DISCUSSION: The costs associated with the hearing and processing of the proposed boundary amendment is one form of commitment of State resources. The developer of the project or its successors will be responsible to fund site work and the construction of on-site and off-site infrastructure including~~:~~ roadways; wastewater transmission lines; potable water wells, reservoirs and transmission lines; and other utilities.

(E) Provision for employment opportunities and economic development; and

DISCUSSION: The project contributes to economic development in several ways including employment opportunities for construction work during the period of development, increased revenues to the State and County in the form of taxes, and long-term employment associated with the commercial floor area development. The project fulfills the objectives of both the State and the County to encourage residential development in the area between Keahole and Kailua in North Kona, to provide employee housing near job centers and to support job growth in West Hawai‘i’s visitor industry. The proposed project contributes to fulfilling those objectives by providing affordable and market-priced housing units, and commercial floor area for new businesses.

(F) Provision for housing opportunities for all income groups, particularly the low, low-moderate, and gap groups;

DISCUSSION: HHFDC’s stated objective of the RFP process for this project is to produce the maximum number of affordable units in the most livable community within the shortest feasible duration.

(4) The representations and commitments made by the petitioner in securing a boundary change.

DISCUSSION: In approving a boundary amendment, the LUC must take into account the General Plan of the respective County; and where applicable, the objectives, policies, and guidelines of the State Coastal Zone Management ~~Act~~ Area (CZMA), HRS Chapter 205A. The following

sections will discuss the various State and County plans and identify the applicability and the extent to which the proposed petition for a boundary amendment conforms to these plans.

5.1.4 Standards for Determining "U" Urban District Boundaries

The LUC, when reviewing a petition for a boundary amendment, considers the following standards set forth in HAR Section 15-15-18 in determining the "U" urban district boundaries:

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

DISCUSSION: The vast majority of the property is designated as Urban Expansion on the County's General Plan LUPAG map. The property is generally surrounded by lands that are either in existing residential development or are planned for both residential and other urban development. The property is generally surrounded by lands in the Urban district.

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

(A) Proximity to centers of trading and employment except where the development would generate new centers of trading and employment;

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

(C) Sufficient reserve areas for foreseeable urban growth;

DISCUSSION: The property is within two miles of West Hawai'i's commercial, industrial and economic center – Kailua-Kona. Some basic services are already available to the site. As part of the project, the developer will construct on-site and off-site infrastructure that will be dedicated to the County and become part of the County's regional system. The project site includes parks and a site reserved for a school. The project site is designated by the State and the County as a reserve area for urban growth.

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

DISCUSSION: The topography of the property is consistent with urban design standards and it is generally free of potentially adverse environmental conditions such as floods, tsunami, or unstable soil conditions.

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

DISCUSSION: The property is generally surrounded by lands classified as Urban and the majority of the property is designated as Urban Expansion on the County's LUPAG map.

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

DISCUSSION: The majority of the property is designated as Urban Expansion on the County's LUPAG map and is designated for urban grown by both the State and County general plans.

(6) It may include lands which do not conform to the standards in paragraphs (1) to (5):

(A) When surrounded by or adjacent to existing urban development; and

(B) Only when those lands represent a minor portion of this district;

DISCUSSION: The subject project lands conform to the standards in paragraphs (1) to (5).

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

DISCUSSION: The lands will not contribute to scattered spot urban development. The majority of the property is designated as Urban Expansion and the remainder is designated Low Density Urban on the County's LUPAG map. The project lands are designated for urban growth by both the State and County general plans.

(8) It may include lands with a general slope of twenty per cent or more if the commission finds that those lands are desirable and suitable for urban purposes and that the design and construction controls, as adopted by any federal, state, or county agency, are adequate to protect the public health, welfare and safety, and the public's interests in the aesthetic quality of the landscape. [Eff 10/27/86; am and comp Aug 16, 1997] (Auth: HRS §§205-1, 205-2, 205-7) (Imp: HRS §205-2)

DISCUSSION: The lower half of the site has areas with less than 5 percent slope while the remaining lower half has 5 to 15 percent slopes. The upper half of the site primarily has less than 15 percent slopes.

5.2 HAWAI'I STATE PLAN

The ~~Department of Business, Economic Development and Tourism (~~DBEDT~~)~~ (formerly known as the Department of Planning and Economic Development) completed in 1978 a 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 Hawaii, Department of Planning and Economic Development, 1978, Revised 1989, 1991.)

The Legislature adopted in 1978 the Hawaii 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 table, identified as Table 5-1a and 5-1b, 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 5-1a: Hawaii 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

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)	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 lower slopes of Hualalai in North Kona are intended for residential development to provide housing opportunities for the fast growing population of West Hawai'i. The proposed project is consistent with those policies. The project will provide affordable housing units in close proximity to North Kona employment centers.		
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.	A
(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
(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 project will develop affordable housing units and commercial floor area in a location specifically designated by the State and County for urban expansion. The project directly contributes to government's desire to direct population growth to areas with the greatest economic benefit and to provide housing near employment centers.		
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:	

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)	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.	NA
(3)	Seek broader outlets for new or expanded Hawai'i business investments.	NA
(4)	Expand existing markets and penetrate new markets for Hawai'i's products and services.	NA
(5)	Assure that the basic economic needs of Hawai'i's people are maintained in the event of disruptions in overseas transportation.	NA
(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.	NA
(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
(13)	Provide equal employment opportunities for all segments of Hawai'i's population through affirmative action and nondiscrimination measures.	C
(14)	Encourage businesses that have favorable financial multiplier effects within Hawai'i's economy.	C
(15)	Promote and protect intangible resources in Hawai'i, such as scenic beauty and the aloha spirit, which are vital to a healthy economy.	C
(16)	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.	NA
(17)	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.	NA
COMMENTARY: As the fastest growing region on the County, the North Kona area needs affordable housing opportunities to support employees of the visitor industry and service sectors. The proposed project is situated to help fulfill West Hawai'i's employee housing demand.		
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.	NA
(3)	An agriculture industry that continues to constitute a dynamic and essential component of Hawai'i's strategic, economic, and social well-being.	NA
(b)	To achieve the agriculture objectives, it shall be the policy of this State to:	

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(1)	Establish a clear direction for Hawai'i's agriculture through stakeholder commitment and advocacy.	NA
(2)	Encourage agriculture by making best use of natural resources.	NA
(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.	NA
(5)	Foster increased public awareness and understanding of the contributions and benefits of agriculture as a major sector of Hawai'i's economy.	NA
(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
(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.	NA
(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.	NA
(13)	Promote economically competitive activities that increase Hawai'i's agricultural self-sufficiency.	NA
(14)	Promote and assist in the establishment of sound financial programs for diversified agriculture.	NA
(15)	Institute and support programs and activities to assist the entry of displaced agricultural workers into alternative agricultural or other employment.	NA
(16)	Facilitate the transition of agricultural lands in economically nonfeasible agricultural production to economically viable agricultural uses.	NA
COMMENTARY: The subject property has soils with poor agricultural viability. The site is surrounded by lands designated for urban expansion. Development of the property for residential use will not adversely impact the agricultural industry because no potentially productive agricultural land is being removed from the inventory. Rather, the project will have an indirect beneficial impact on the agricultural industry because the resulting population increases the demand for goods and services in the area including locally grown agricultural products.		
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.	NA
(2)	Insure that visitor industry activities are in keeping with the social, economic, and physical needs and aspirations of Hawai'i's people.	NA
(3)	Improve the quality of existing visitor destination areas.	C

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(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.	NA
(7)	Foster a recognition of the contribution of the visitor industry to Hawai'i's economy and the need to perpetuate the aloha spirit.	NA
(8)	Foster an understanding by visitors of the aloha spirit and of the unique and sensitive character of Hawai'i's cultures and values.	NA
COMMENTARY: The health of the County's economy is influenced by the availability of affordable housing in reasonable proximity to job centers. Reducing commute times is important to workers' well being. Because West Hawai'i is a high growth visitor destination, the current housing opportunities are outstripped by its employment opportunities. The provision of new affordable housing will have a beneficial impact on visitor industry workers.		
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.	C
(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: Increasing the availability of housing has a beneficial impact upon existing and potential federal workers by helping to provide housing opportunities in reasonable proximity to West Hawai'i's job centers.		
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:	

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(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
(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.	A
(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: The goals and policies set forth in HRS 226-10 correspond with the changes and growth occurring in the West Hawai'i region. Bold initiatives set by the County's General Plan; the State's 1989 West Hawai'i Regional Plan; the County's 1991 Keahole to Kailua Development Plan and its current efforts to prepare a Kona Community Development Plan; and overall State plans are steadily materializing in the area. Over $1 billion of planned construction of resort-residential complexes has been announced, in addition to the substantial investment already in place. The State in collaboration with Hiluhilu Development LLC (also known as Palamanui), is currently in the planning stages for the new Palamanui/University of Hawai'i Center at West Hawai'i College project combined with residential development, which will encompass approximately 1,225 acres. The project will bring higher educational, research and information facilities, residential and commercial complexes and numerous growth opportunities in the region. Together, these efforts contribute to the diversification of the economy. Yet, their success requires the availability of affordable housing in reasonable proximity to job centers. The Keahuolu Affordable Housing project will have a beneficial indirect impact upon economic diversification by contributing much needed housing opportunities.		
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;	C

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(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;	C
(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;	C
(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.	C
COMMENTARY: As is the case with other segments of the economy, the availability of affordable housing in reasonable proximity to employment centers will have a beneficial impact upon the information industry's ability to attract and keep workers.		
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.	C
(2)	Effective protection of Hawai'i's unique and fragile environmental resources.	C
(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.	C
(2)	Ensure compatibility between land-based and water-based activities and natural resources and ecological systems.	C
(3)	Take into account the physical attributes of areas when planning and designing activities and facilities.	C
(4)	Manage natural resources and environs to encourage their beneficial and multiple use without generating costly or irreparable environmental damage.	C
(5)	Consider multiple uses in watershed areas, provided such uses do not detrimentally affect water quality and recharge functions.	NA
(6)	Encourage the protection of rare or endangered plant and animal species and habitats native to Hawai'i.	C
(7)	Provide public incentives that encourage private actions to protect significant natural resources from degradation or unnecessary depletion.	C
(8)	Pursue compatible relationships among activities, facilities, and natural resources.	C
(9)	Promote increased accessibility and prudent use of inland and shoreline areas for public recreational, educational, and scientific purposes.	C
COMMENTARY: The location of the Keahuolu project is consistent with sound planning principals for the prudent use land-based resources. The project area has been carefully surveyed to ensure that the no significant habitats are present and that no endangered, threatened or candidate species will be impacted.		
226-12	OBJECTIVE AND POLICIES FOR THE PHYSICAL ENVIRONMENT – SCENIC, NATURAL BEAUTY, AND HISTORIC RESOURCES.	

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(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.	NA
(3)	Promote the preservation of views and vistas to enhance the visual and aesthetic enjoyment of mountains, ocean, scenic landscapes, and other natural features.	C
(4)	Protect those special areas, structures, and elements that are an integral and functional part of Hawai'i's ethnic and cultural heritage.	C
(5)	Encourage the design of developments and activities that complement the natural beauty of the islands.	C
COMMENTARY: Significant archaeological sites that have been identified will be preserved. Preserved areas will become elements of open space areas throughout the development. The concept plans for the Keahuolu project provide for neighborhood parks and a landscaped buffer along Ane Keohokalole Highway.		
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.	C
(2)	Greater public awareness and appreciation of Hawai'i's environmental resources.	C
(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.	NA
(2)	Promote the proper management of Hawai'i's land and water resources.	C
(3)	Promote effective measures to achieve desired quality in Hawai'i's surface, ground, and coastal waters.	C
(4)	Encourage actions to maintain or improve aural and air quality levels to enhance the health and well-being of Hawai'i's people.	C
(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.	C
(6)	Encourage design and construction practices that enhance the physical qualities of Hawai'i's communities.	C
(7)	Encourage urban developments in close proximity to existing services and facilities.	C
(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 project will include the development of infrastructure that will benefit the region, including roadways, wastewater transmission lines, and potable water supply, transmission lines and reservoirs. The project's location is not in an area subject to significant natural or man-made hazards. The subject property is in close proximity to existing services and facilities as it is approximately one mile mauka of Kailua-Kona.		
226-14	OBJECTIVE AND POLICIES FOR FACILITY SYSTEMS – IN GENERAL.	

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(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.	A
COMMENTARY: The preliminary planning of the project's infrastructure systems has resulted in coordination discussions with State and County agencies and private landowners in the area. Future development of these systems will require ongoing coordination. According to the HHFDC RFP, the project's design should include features to conserve energy and water usage.		
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:	
(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.	C
(2)	Promote re-use and recycling to reduce solid and liquid wastes and employ a conservation ethic.	C
(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 project is in a location designated for urban growth. The sewer requirements of Alternative B and Alternative C would require additional capacity at the Kealakehe ~~Sewage Treatment Plant~~WWTP. The developer may promote re-use and recycling as practicable to reduce wastes.		
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

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(4)	Assist in improving the quality, efficiency, service, and storage capabilities of water systems for domestic and agricultural use.	C
(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.	C
COMMENTARY: The potable water wells needed to support the project are indentified in water source development plans approved by the County. The developer will fund the development of the potable water system, including a well(s), reservoirs and transmission lines. Construction of the system will enhance service to the surrounding area as well by improving water supply, storage capacity and connectivity.		
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:	
(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;	C
(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;	A
(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

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(13)	Encourage diversification of transportation modes and infrastructure to promote alternate fuels and energy efficiency.	A
COMMENTARY: One of the key elements of the proposed project is its contribution to improvements in the regional roadway network. The project is to provide feasible roadway connections to existing and/or future developments on adjacent lands, thereby helping to improve regional traffic circulation and provide alternate routes to Queen Kaʻahumanu and Mamalahoa highways. Another key element of the project is that it is to be transit-oriented, which means the development is to accommodate multiple transit stops (bus or other modes) along the planned Ane Keohokalole Highway.		
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;	NA
(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 Hawaiʻi'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;	NA
(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;	NA
(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 Hawaiʻi's greenhouse gas emissions through agriculture and forestry initiatives.	NA

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COMMENTARY: A number of the policies are directed at government agencies. However, the Keahuolu project can contribute to energy efficiency in at least two arenas: residential energy consumption and transportation. As stated in the HHFDC RFP, 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. The project is to also incorporate principles of waste minimization and pollution prevention. In terms of transportation, the regional roadway connections that will result from the project will contribute to improved vehicular circulation in North Kona, which translates into less energy consumption. The conceptual design of the project promotes a walkable, bikable community with high density residential areas within a one-quarter mile walking radius of proposed transit stops along Ane Keohokalole Highway.		
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 developer will fund the development of the telecommunications systems required to service the 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
(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

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(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.	NA
(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: The Keahuolu project will offer a range of affordable and market-priced housing units in a range of densities. This will create a variety of housing opportunities for the public. The project's location in close proximity to Kailua-Kona and North Kona's employment centers will make the project attractive to potential home buyers.		
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
COMMENTARY: The project 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.		
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.	C
(3)	Provide appropriate educational opportunities for groups with special needs.	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		
(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: The project site contains an approximately 12-acre area reserved for a school site.		
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.	NA
(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.	NA
(3)	Enhance the enjoyment of recreational experiences through safety and security measures, educational opportunities, and improved facility design and maintenance.	NA
(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.	NA
(7)	Provide adequate and accessible physical fitness programs to promote physical and mental well-being of Hawai'i's people.	NA
(8)	Increase opportunities for appreciation and participation in the creative arts, including the literary, theatrical, visual, musical, folk, and traditional art forms.	NA
(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.	NA
(10)	Assure adequate access to significant natural and cultural resources in public ownership.	C
COMMENTARY: The conceptual project design contains neighborhood parks and recreation areas.		
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.	

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		
(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
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: Significant archaeological sites that have been identified will be preserved. Preserved areas will become elements of open space areas throughout the development.		
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.	NA
(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

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)	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: If warranted, the project site may contain a civil warning siren.		
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

Table 5-1b: Hawaii 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.	
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:	

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		
(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;	C
(ii)	Rely on economic linkages within the local economy;	C
(iii)	Diversify the economy;	C
(iv)	Reinvest in the local economy;	C
(v)	Are sensitive to community needs and priorities, and	C
(vi)	Demonstrate a commitment to provide management opportunities to Hawai'i residents.	C
(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.	C
(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.	NA
(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
(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.	NA
(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

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		
(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.	C
(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.	NA
(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.	NA
(4)	Encourage visitor industry practices and activities which respect, preserve, and enhance Hawai'i's significant natural, scenic, historic, and cultural resources.	NA
(5)	Develop and maintain career opportunities in the visitor industry for Hawai'i's people, with emphasis on managerial positions.	NA
(6)	Support and coordinate tourism promotion abroad to enhance Hawai'i's share of existing and potential visitor markets.	NA
(7)	Maintain and encourage a more favorable resort investment climate consistent with the objectives of this chapter.	NA
(8)	Support law enforcement activities that provide a safer environment for both visitors and residents alike.	NA
(9)	Coordinate visitor industry activities and promotions to business visitors through the state network of advanced data communication techniques.	NA
(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.	NA
(2)	Assist in providing adequate, reasonably priced water for agricultural activities.	NA
(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.	NA
(4)	Assist in the formation and operation of production and marketing associations and cooperatives to reduce production and marketing costs.	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)	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.	NA
(8)	Continue the development of agricultural parks and other programs to assist small independent farmers in securing agricultural lands and loans.	NA
(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.	C
(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.	C
(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
(6)	Support promotional activities to market Hawai'i's information industry services.	NA
226-104	POPULATION GROWTH AND LAND RESOURCES PRIORITY GUIDELINES.	

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		
(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.	NA
(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.	A
(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.	C
(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.	C
(4)	Encourage restriction of new urban development in areas where water is insufficient from any source for both agricultural and domestic use.	NA
(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.	NA
(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.	C
(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.	C
(11)	Identify all areas where priority should be given to preserving rural character and lifestyle.	C

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		
(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.	C
(13)	Protect and enhance Hawai'i's shoreline, open spaces, and scenic resources.	C
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
(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
(3)	Initiate efforts to improve the quality of education by improving the capabilities of the education work force;	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)	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

5.3 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 proposed petition for a boundary amendment for the Keahuolu Affordable Housing Pproject are discussed in the following sections. It is important to note that while these plans are considered to be the current "official" State Functional Plans, a deviation from the original goals of the plan may have occurred due to national and world events or other unforeseeable factors.

5.3.1 State Agricultural Functional Plan (1991)

5.3.1.1 Goals of the Plan

The State Agricultural Functional Plan sought to ultimately increase the overall level of agricultural development in Hawai'i. At the time the plan was written, the two 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. As we now know, lower labor and production costs in other parts of the world caused a rapid decline and demise of the pineapple and sugar industries in Hawai'i. While diversified agriculture has helped offset year-to-year declines for sugar and pineapple, according to DOA 2006 statistics, overall revenue for diversified agriculture has fallen to its lowest level in 10 years. The estimated gross state product for agriculture in 2005 was approximately $339 million[2] (State of Hawaii Data Book, 2006).

The functional plan for agriculture also set 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. ~~DEBDT~~DBEDT, large corporations, and other organizations were delegated with the task of implementing actions to develop linkages between the agriculture industry and the State's $10-$14 billion annual tourism industry. The goal was to promote and develop a diverse range of products and programs focusing on niche marketing, such as ag-tourism, and to assist in the development of diversified agriculture.

5.3.1.2 Agriculture in the County of Hawai'i

Agriculture is an important industry in the County that helps to broaden and diversify the economy in terms of employment, and also supplies residential communities and resorts with agricultural commodities. A number of growers are also exporters of various crops. Other related agricultural industries include packing, processing, and manufacturing.

Approximately 1.2 million acres or 47 percent of the total land area in the County are in the State Land Use Agricultural District. Approximately 720,099 acres are in West Hawai'i. This includes potentially high or high capacity agricultural lands as well as potentially low capacity lands. A sizeable percentage of the land is currently not used for agriculture.

The County predicts that agriculture's future will remain favorable with strong diversification and development of new export protocol and technology. If trends remain constant and

[2] Gross state product estimates are on a North American Industry Classification System (NAICS) basis.

diversified agricultural continues its upward climb, the need for energy efficient technologies to support increased production will continue to evolve by necessity.

5.3.1.3 Conformance with the Goals of the Plan

As the project area consists of lands that are generally unsuitable for agricultural development due to the poor soil types, its reclassification from the Agricultural District to the Urban District will not have a significant adverse impact on the agricultural industry. The County's land use policy identifies the project site primarily for Urban Expansion and the balance for Low Density Urban.

5.3.2 State Conservation Functional Plan (1991)

5.3.2.1 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.

5.3.2.2 Conservation Land in the County of Hawai'i

Conservation Districts are primarily those lands in the existing forest and water reserve zones. This district has the largest land area with approximately ~~1,304,347~~1,338,135 acres or 50 percent of the total land area of the County. The following table shows the amount of acreage for the various districts in the County:

Table 5-2: District Boundaries in the County of Hawai'i by Area

	Agricultural	Conservation	Rural	Urban	Total
Puna	175,104	138,563	146	6,329	320,142
South Hilo	70,695	169,493	0	12,814	253,002
North Hilo	53,587	120,110	71	608	174,376
Hamakua	162,729	235,805	13	1,041	399,588
East Hawai'i	462,115	663,971	230	20,792	1,147,108
North Kohala	64,713	13,187	16	2,434	80,350
South Kohala	150,426	15,356	53	10,608	176,443
North Kona	158,853	188,331	477	17,787	365,448
South Kona	110,749	35,051	31	845	146,676
Ka'u	237,743	422,239	0	1,801	661,783
West Hawai'i	722,484	674,164	577	33,475	1,430,700
Total	1,184,599	1,338,135	807	54,267	2,577,808

State of Hawai'i, DBEDT, Office of Planning GIS Data
County of Hawai'i Planning Department

5.3.2.3 Conformance with the Goals of the Plan

Because the project site and the reservoir site are not classified as Conservation District lands, their reclassification to the Urban district would have no impact upon the goals of the State Conservation Functional Plan.

5.3.3 State Educational Functional Plan (1989)

5.3.3.1 Goals of the Plan

The State Educational Functional Plan reflects the DOE's 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.

5.3.3.2 Education in West Hawai'i

New schools have emerged in the West Hawai'i region to accommodate the increase in population arising from growth in the region. The Konawaena High School complex includes Konawaena High School, Konawaena Middle School, the newly constructed Konawaena

Elementary School, Hookena Elementary School, and Honaunau Elementary School and serves approximately 2,882 students. The Kealakehe High School complex is comprised of the newly constructed Kealakehe High School, Kealakehe Intermediate School, Holualoa Elementary School, Kealakehe Elementary School, and Kahakai Elementary School. The Kaʻu High School complex is comprised of Kaʻu High School, Pahala Elementary School, and Naʻalehu Elementary and Intermediate School.

The State is currently in the planning stages for the new UH Center at West Hawaiʻi, which will be located initially on a 33-acre portion of a larger 500-acre site on the mauka side of the Queen Kaʻahumanu Highway, directly mauka of the Kona International Airport. (See discussion in the next Section.) Upon completion, the new campus is anticipated to accommodate approximately 1,500 students.

5.3.3.3 Conformance with the Goals of the Plan

The proposed project is consistent with the goals of the Educational Functional Plan. Because the government plans designate the property for urban expansion, the project area's eventual development as a residential community is anticipated. The project site contains an approximately ~~12~~ 12-acre area reserved for development of a future school facility.

5.3.4 State Higher Education Functional Plan (1984)

5.3.4.1 Goals of the Plan

The objectives of the State Higher Education Functional Plan are to provide (1) a number of diverse post-secondary educational institutions; (2) quality educational, research, and public service~~s~~ programs; (3) appropriate opportunities for all who can benefit; (4) financing to ensure accessibility; and (5) coordination of educational resources.

5.3.4.2 Higher Education in the County of Hawaiʻi

The UH at Hilo (located in Hilo on the east side of the island) provides alternative higher educational opportunities within the UH system through a variety of programs. ~~The~~ Hawaiʻi Community College provides access to higher education and workforce training for the entire

County, and offers an extensive ~~program~~ array of certificate and associate degree programs onsite and through distance education technologies. In West Hawai‘i, in addition to the Hawai‘i Community College programs, the college is responsible for the UH Center, through which it delivers baccalaureate and masters degree programs.

The State completed in 1998 a long-range development plan for a UH West Hawai‘i College, and is working on the initial development phase on a 33-acre portion of a 500-acre State-owned parcel. Just adjacent to the proposed campus, Hiluhilu Development LLC (Hiluhilu) plans to develop a 725-acre vacant parcel and has proposed to provide supporting infrastructure for the West Hawai‘i College.

The project, which is known as Palamanui/UH West Hawai‘i College (formerly referred to as Hiluhilu Development) envisions a master planned community with a mix of single- and multi-family units, an 18-hole golf course, a university village center with commercial uses, university related uses, and a medical wellness center. Subject to an agreement with the University, plans include a mixture of classroom, offices, commercial areas, conference and community outreach facilities, parking, and athletic fields.

According to Hiluhilu’s Final EIS, the residential component of the project will include a mixture of housing types including single family, townhouses, condominiums, and apartments. The commercial components of Palamanui will consist of retail, office, and professional uses that will provide support for the residential component of Palamanui and the adjacent UH West Hawai‘i campus.

The UH’s vision for West Hawai‘i is to develop a unique educational environment that will integrate the community into the educational enterprise. The mission is to incorporate the philosophies of multidisciplinary educational programs with an emphasis on Hawaiian studies, a multicultural environment, a learning-centered focus using the island as a living laboratory, and a technically advanced campus well positioned to support the future needs of the community. The proposed project will bring many opportunities to the region in terms of research, education, training, economic development, and diversification. The West Hawai‘i College will serve as a

center for information technology, and will provide job training and educational opportunities for local residents and incoming students.

5.3.4.3 Conformance with the Goals of the Plan

The Keahuolu project will have a range of affordable and market-priced housing opportunities in direct response to the existing and future demand for primary market housing in North Kona. The project should contribute to the availability of affordable and market priced housing for faculty and staff.

5.3.5 State Employment Functional Plan (1990)

5.3.5.1 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.

5.3.5.2 Employment Opportunities in West Hawai'i

Employment opportunities on the island of Hawai'i have increased substantially and primarily have been created by the expanding visitor industry. A substantial amount of investor interest continues to flow into West Hawai'i, primarily the Kohala and Kona districts, which according to the Hawai'i County General Plan continues to accommodate the majority of the visitor market within the County. Over $1 billion of planned construction of resort-residential complexes has been announced, in addition to the substantial investment already in place.

Annual employment for secondary industries, such as government, construction, trades (retail and wholesale), utilities, financial institutions, and professional services accounted for approximately 68 percent of the County's workforce. Kailua-Kona functions as the center for government, commercial, and industrial activities for West Hawai'i. ~~Retail, B~~banking services; retail stores, ~~and~~ including "big-box" retailers such as Costco, K-Mart, and WalMart; and international sporting events such as the Iron~~M~~man Triathlon are in Kona.

Additionally, diversified agriculture in West Hawai‘i helps to broaden and diversify the economic base in terms of employment. Processing, manufacturing, and packaging are growing industries. Coffee production since the 1800s continues in the North and South Kona districts, with Kona coffee experiencing in 1982-1995 sales fluctuating between $2.1 and $8.7 million. Other agricultural enterprises include cattle ranching, aquaculture, and the growing of flowers, fruits, macadamia nuts, and vegetables. Timber and fishing are small industries in Kona. The Kailua-Kona Wharf is considered a major center for big game fishing and annual international tournaments. Quarrying operations for building materials are also conducted in North Kona. The old Kailua and Kaloko industrial areas provide the largest concentration of industrial activities within West Hawai‘i, which accommodate a wide range of manufacturing, service, wholesale, and retail activities.

5.3.5.3 Conformance with the Goals of the Plan

The project will contribute to employment through the provision of ~~construction~~ construction-related jobs during the period from 2010 through 2020. The project will also contribute to employment through the development of up to 197,000 square feet of commercial floor area within the project site. From a broader perspective, the provision of affordable and market-priced housing in North Kona fulfills the State and County goals of constructing housing in close proximity to regional job centers.

5.3.6 State Energy Functional Plan (1991)

5.3.6.1 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~~;~~, and (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.

The State Legislature in 2001 passed a law establishing “renewable portfolio standard” goals for electric utilities of seven percent by December 31, 2003, eight percent by December 31, 2005, and nine percent by December 31, 2010.

5.3.6.2 Conformance with the Goals of the Plan

The Keahuolu project can contribute to energy efficiency in at least two arenas: residential energy consumption and transportation. As stated in the HHFDC RFP, 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. The project is to also incorporate principles of waste minimization and pollution prevention. In terms of transportation, the regional roadway connections that will result from the project will contribute to improved vehicular circulation in North Kona, which translates into less energy consumption. The conceptual design of the project promotes a walkable, bikable community with high density residential areas within a one-quarter mile walking radius of proposed transit stops along Ane Keohokalole Highway.

5.3.7 State Health Functional Plan (1989)

5.3.7.1 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) 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.

The DOH is responsible for establishing, monitoring, and enforcing the Water Quality Standards. These standards are intended to protect the environmental quality of the waters of the island and maintain public health. The DOH is also responsible for establishing standards and regulations for noise control, which are uniform throughout the State.

5.3.7.2 Health Conditions in the County of Hawai'i

Hawai'i is recognized worldwide for its natural resources and pristine environment. The summits of Mauna Kea and Mauna Loa offer some of the best areas in the world for astronomy because of their optical clarity and accessibility. The island of Hawai'i and the other Hawaiian islands~~,~~ escape major sources of man-made pollutants~~,~~ because of their geographic isolation from mainland industries. However, as in any metropolitan area, there are pollution concerns over air quality, water contamination, and noise.

The major sources of air pollution on the island of Hawai'i are volcanic emissions, open burning, sprayed agricultural chemicals, modes of transportation, and fixed combustion sources such as power plant emissions. Natural pollutants from airborne dust are also contributing factors. Prevailing northeast trade winds and diurnal land and sea breezes form air circulation patterns that can create local concentrations of pollutants. In areas where the topography favors a confluence of air currents, the potential is great for hazy conditions to develop, especially if vehicular, volcanic, and other air pollution sources increase.

Surface water resources, coastal waters, and groundwater resources of the County are vulnerable to contamination as population increases and further development occurs. According to County data, the major sources of water pollution are sewage, natural surface runoff, and the by-products of agricultural activities. Recycled water is currently being used for erosion and dust control at lined landfills, and there may be a need in the future to recycle sewage and wastewater effluent