

APPENDIX F-1.

2010 Supplemental Traffic Report



7481-04
January 26, 2010

Mr. Rory Frampton
West Maui Land Company, Inc.
33 Lono Avenue, Suite 450
Kahului, HI 96732

Subject: Kahoma Residential Development - Supplemental Report

Dear Mr. Frampton:

As requested, we prepared a supplemental report to address changes to the proposed project, as well as, include additional intersections in the analyses.

Project Location and Description

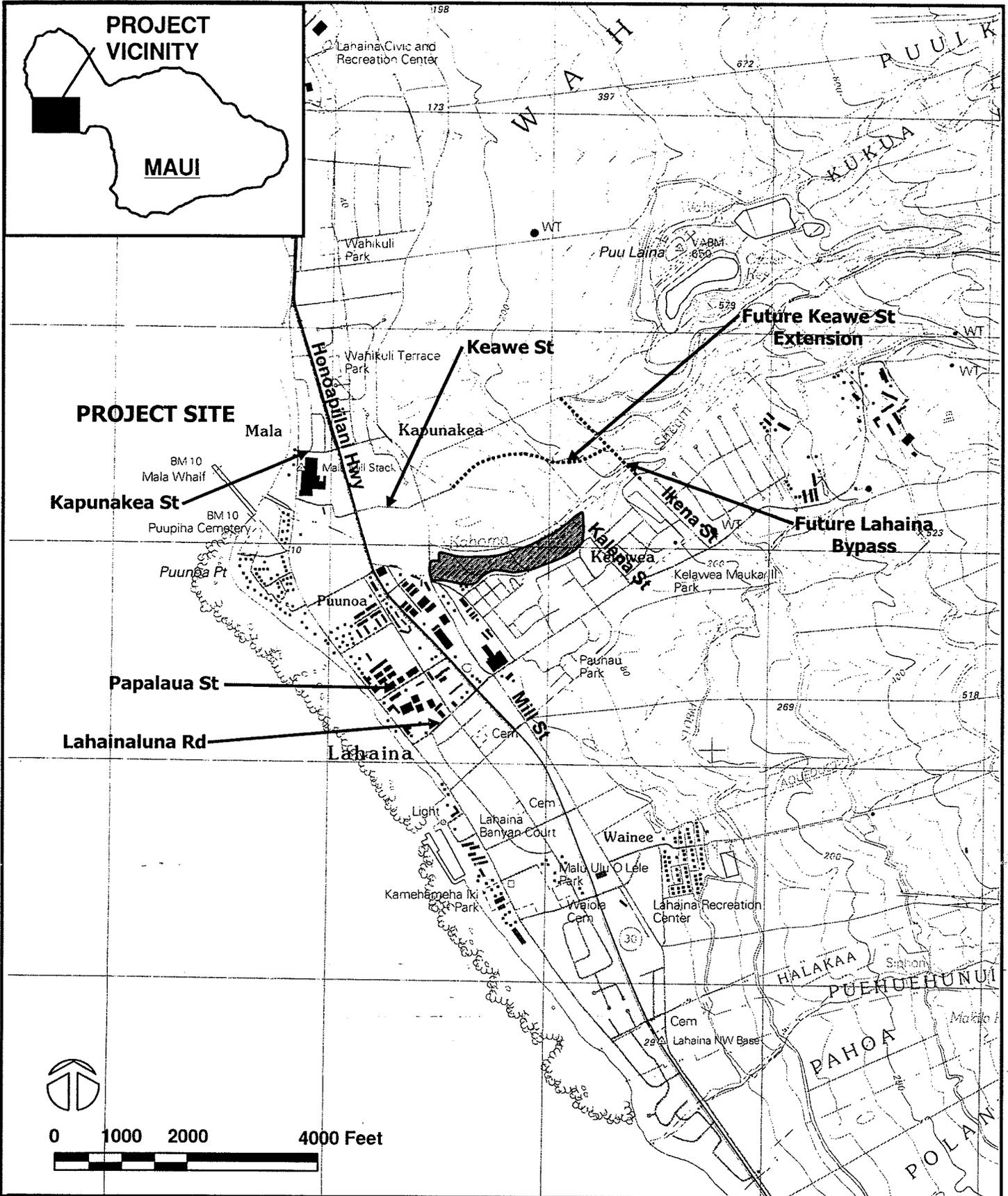
The proposed Kahoma Residential Development will be located on an approximately 16.8-acre site bordered by the Kahoma Stream to the north and existing residential homes to the south. A Traffic Impact Report was prepared for the proposed project in October 2007. Since then, the number of residential units in the project has been reduced slightly. The development will include 25 special needs multi-family rental units and 62 single-family residential lots. Access will still be provided via roadway connections on the west and east ends of the project site via Mill Street (off Keawe Street) and Kalena Street (off Lahainaluna Road). The proposed project is expected to be completed and occupied by the Year 2013. Figure 1 shows the project location and vicinity and Figure 2 shows the updated project site plan.

Field Investigation

The West Maui Land Company, Inc. retained a local company to collect supplemental traffic count data in the project vicinity on October 3-10, 2009. The field investigations consisted of manual intersection turning movement count surveys between the morning peak hours of 6:00 AM and 9:00 AM, and between the afternoon peak hours of 2:30 PM and 6:00 PM at the following intersections:

- Honoapiilani Highway, Keawe Street, and Lahaina Cannery Mall Driveway
- Keawe Street and Mill Street
- Honoapiilani Highway and Lahainaluna Road
- Lahainaluna Road and Kalena Street

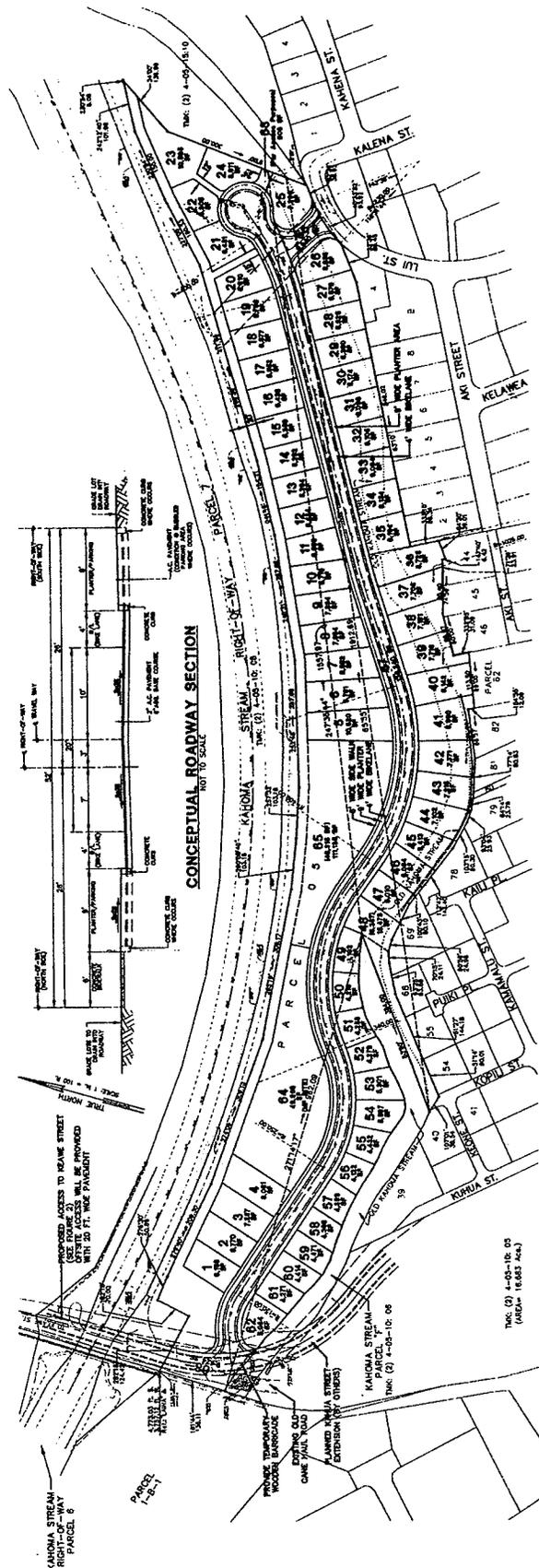
Appendix A includes the traffic count data.




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KAHOMA RESIDENTIAL DEVELOPMENT
 Location Map and Vicinity Map

FIGURE
 1




**WILSON OKAMOTO
 CORPORATION**
 ENGINEERS - PLANNERS

KAHOMA RESIDENTIAL DEVELOPMENT
PROJECT SITE PLAN



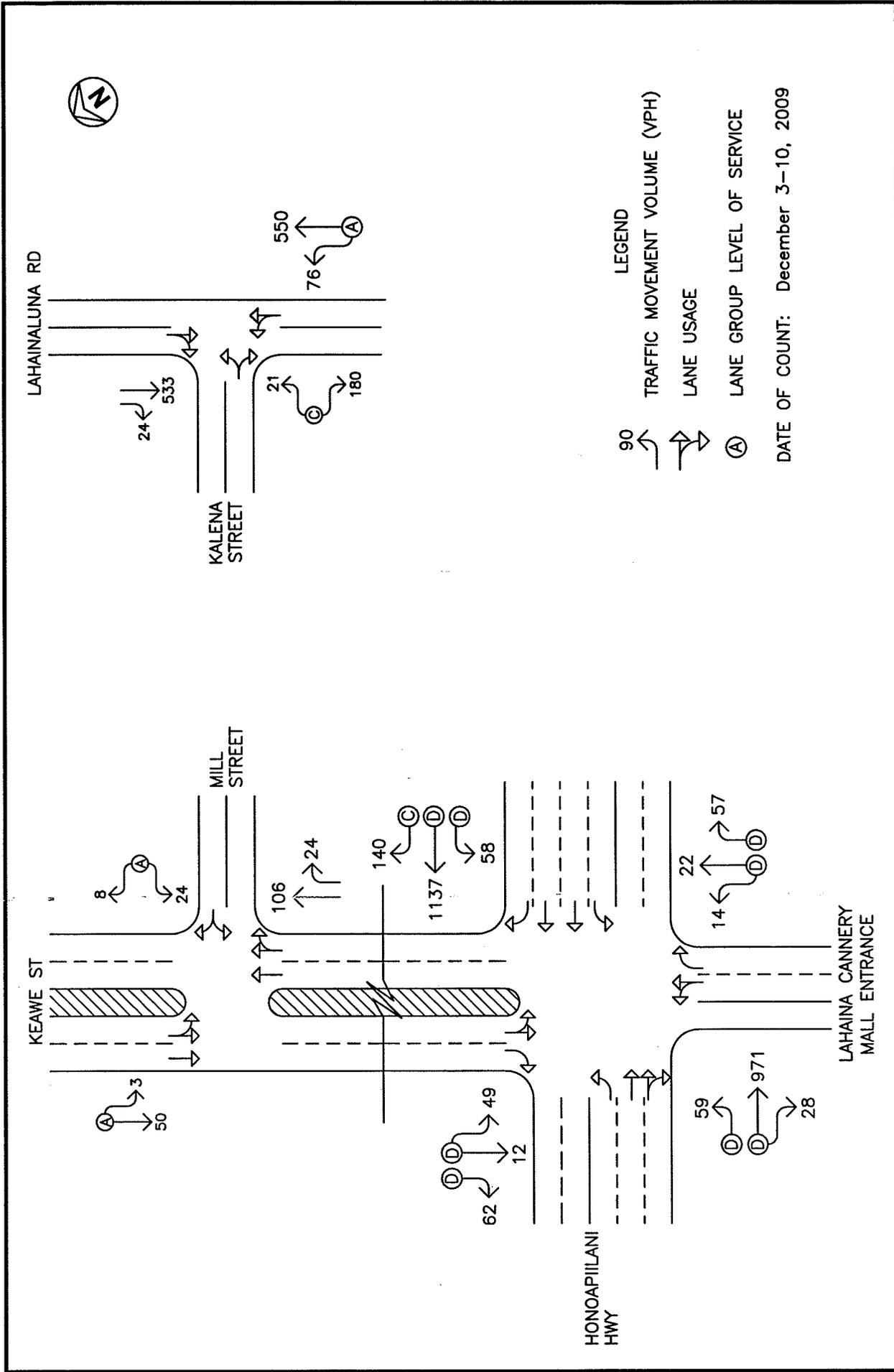
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Existing Traffic Conditions

Figures 3 and 4 show the Year 2010 AM and PM peak hour traffic volumes and traffic operating conditions at the subject intersections in the project vicinity. The morning peak hour of traffic generally occurs between 7:15 AM and 8:15 AM in the project vicinity while the afternoon peak hour of traffic generally occurs between the hours of 3:45 PM and 4:45 PM in the project vicinity. LOS calculations are included in Appendix B.

At the signalized intersection with Keawe Street and the Lahaina Cannery Mall driveway, the northbound approach of the Honoapiilani Highway has exclusive turning lanes and two through lanes while the southbound approach has an exclusive left-turn lane, one through lane, and a shared through and right-turn lane. The westbound approach of Keawe Street has an exclusive right-turn lane and a shared left-turn and through lane. The eastbound approach of this intersection is comprised of the Lahaina Cannery Mall driveway which has an exclusive right-turn lane and a shared left-turn and through lane. During the AM peak period, the highway carries 1,335 vehicles northbound and 1,058 vehicles southbound during the AM peak period. During the PM peak period, traffic volumes are higher with 1,393 vehicles traveling northbound and 1,326 vehicles traveling southbound during the PM peak period. The Keawe Street approach of the intersection carries 123 vehicles and 369 vehicles westbound during the AM and PM peak periods, respectively, while the Lahaina Cannery Mall driveway carries 93 vehicles and 265 vehicles eastbound during the AM and PM peak periods, respectively. The critical traffic movements at the intersection are the northbound left-turn and southbound through and right-turn traffic movements along the highway which operate at LOS "D" during both peak periods of traffic and the traffic movements on the westbound approach of Keawe Street which operate at LOS "D" during both peak periods.

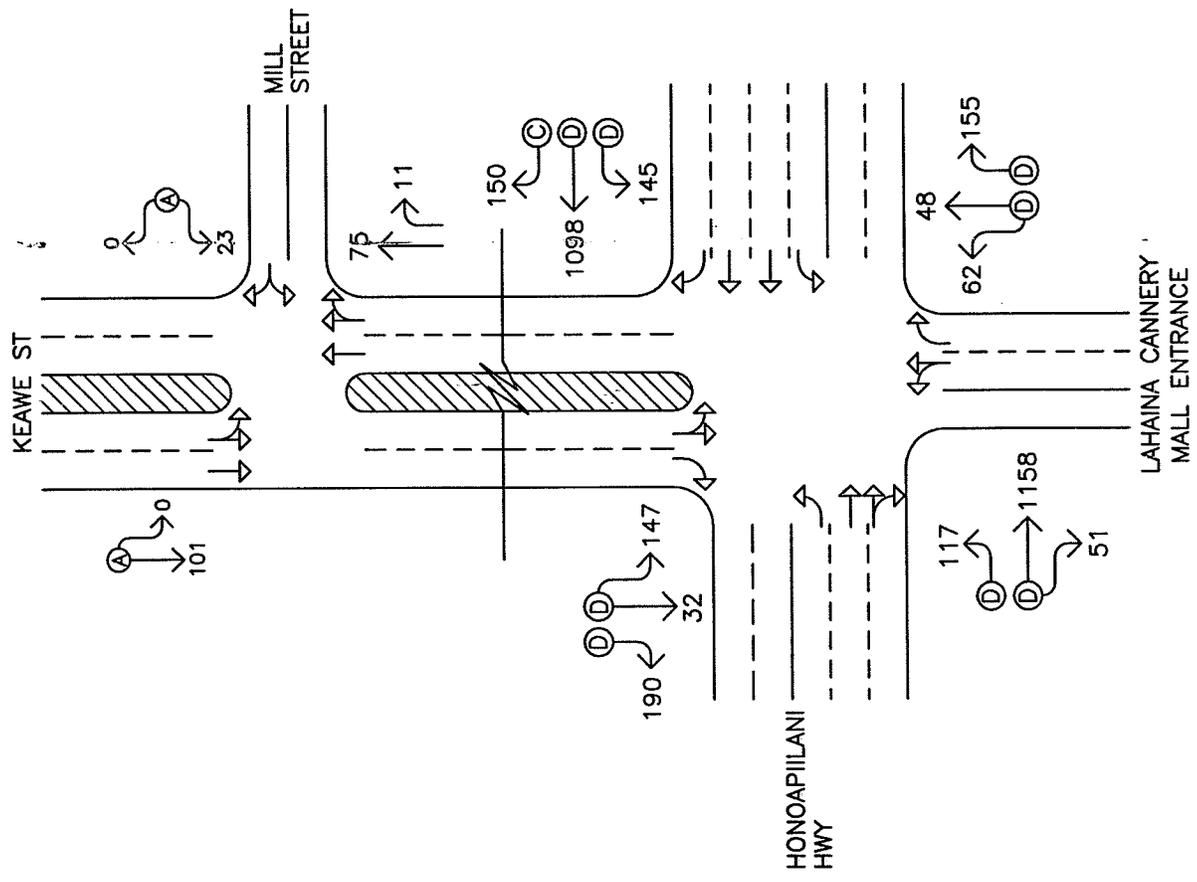
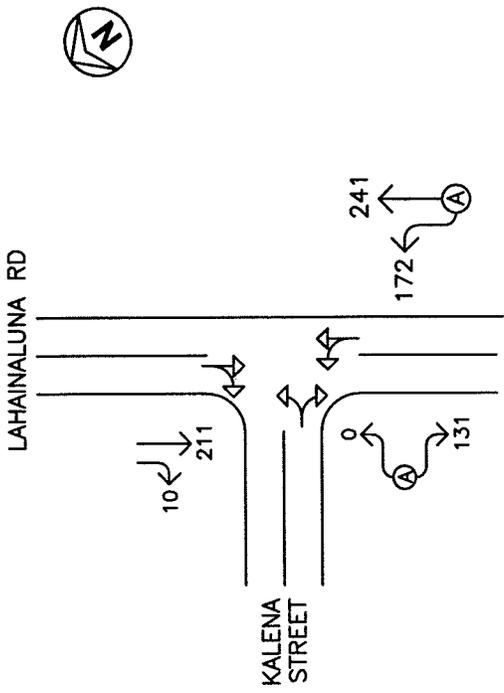
East of the intersection with Honoapiilani Highway, Keawe Street intersects Mill Street. At this unsignalized intersection, both approaches of Keawe Street have two lanes that serve all traffic movements. The northbound approach of Mill Street has one stop-controlled lane that serves all traffic movements. The southbound approach of the intersection is comprised of a gated access road. As such, for the purpose of this report, the intersection of Keawe Street and Mill Street is assessed as a T-intersection. During the AM peak period, Keawe Street carries 130 vehicles eastbound and 53 vehicles westbound. The overall traffic volume during the PM peak period is approximately the same with 86 vehicles traveling eastbound and 101 vehicles traveling westbound. The Mill Street approach of the intersection carries 32 vehicles and 23 vehicles during the AM and PM peak periods, respectively. The critical traffic movements at



KAHOMA RESIDENTIAL SUBDIVISION

EXISTING AM PEAK HOUR OF TRAFFIC

FIGURE 3



- LEGEND
- 90 TRAFFIC MOVEMENT VOLUME (VPH)
 - LANE USAGE
 - Ⓐ LANE GROUP LEVEL OF SERVICE

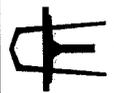
DATE OF COUNT: December 3-10, 2009

KAHOMA RESIDENTIAL SUBDIVISION

EXISTING PM PEAK HOUR OF TRAFFIC

FIGURE

4



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Access to the east end of the project site will be provided via Kalena Street off Lahainaluna Road. At the intersection with Kalena Street, the eastbound approach of Lahainaluna Road has one lane that serves left-turn and through traffic movements while the westbound approach has one lane that serves through and right-turn traffic movements. The stop-controlled approach of Kalena Street has one lane that serves left-turn and right-turn traffic movements. During the AM peak period, Lahainaluna Road carries 626 vehicles eastbound and 557 vehicles westbound. Traffic volumes during the PM peak period are less with 413 vehicles traveling eastbound and 221 vehicles traveling westbound. The Kalena Street approach of the intersection carries 201 vehicles and 131 vehicles southbound during the AM and PM peak periods. The critical traffic movements at the intersection are the eastbound approach which operates at LOS "A" during both peak periods and the southbound approach which operates at LOS "C" and LOS "A" during the AM and PM peak periods, respectively.

Trip Generation and Distribution

The trip generation methodology used in this study is based upon generally accepted techniques developed by the Institute of Transportation Engineers (ITE) and published in "Trip Generation, 8th Edition," 2008. The ITE trip generation rates are developed empirically by correlating the vehicle trip generation data with various land use characteristics such as the number of vehicle trips generated per dwelling unit. Table 1 summarizes the project site trip generation characteristics applied to the AM and PM peak hours of traffic.

Table 1: Peak Hour Trip Generation

APARTMENT INDEPENDENT VARIABLE:		# of dwelling units = 25
		PROJECTED TRIP ENDS
AM PEAK	ENTER	3
	EXIT	10
	TOTAL	13
PM PEAK	ENTER	10
	EXIT	6
	TOTAL	16



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Table 1: Peak Hour Trip Generation (Cont'd)

SINGLE-FAMILY DETACHED HOUSING		
INDEPENDENT VARIABLE:		# of dwelling units = 62
		PROJECTED TRIP ENDS
AM PEAK	ENTER	13
	EXIT	40
	TOTAL	53
PM PEAK	ENTER	43
	EXIT	25
	TOTAL	68
TOTALS		
		PROJECTED TRIP ENDS
AM PEAK	ENTER	16
	EXIT	50
	TOTAL	66
PM PEAK	ENTER	53
	EXIT	31
	TOTAL	84

Due to the reduction in single-family residential units in the current development plan, the volume of trips generated by the proposed project is expected to be less than originally projected by the October 2007 TIAR.

As described in the October 2007 TIAR, the directional distribution of traffic was based on the prevalent distribution of traffic along Honoapiilani Highway with site-generated vehicles distributed between the two roadway connections from the project site based on the proximity of the dwelling units to the connections and then routed to Honoapiilani Highway via Keawe Street or Lahainaluna Road via Kalena Street.

Through Traffic Forecasting Methodology

As described in the October 2007 TIAR, the travel forecast is based upon the average annual traffic growth rate as described in the Maui Long-Rang Land Transportation Plan (MLRLTP). The MLRLTP estimates that the average daily traffic along Honoapiilani Highway would increase at an average rate of approximately 1.6% per year. Using 2009 as the Base Year, a growth factor of 1.066 was applied to the existing through traffic demands along the highway to achieve the projected Year 2013 traffic demands.



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Other Considerations

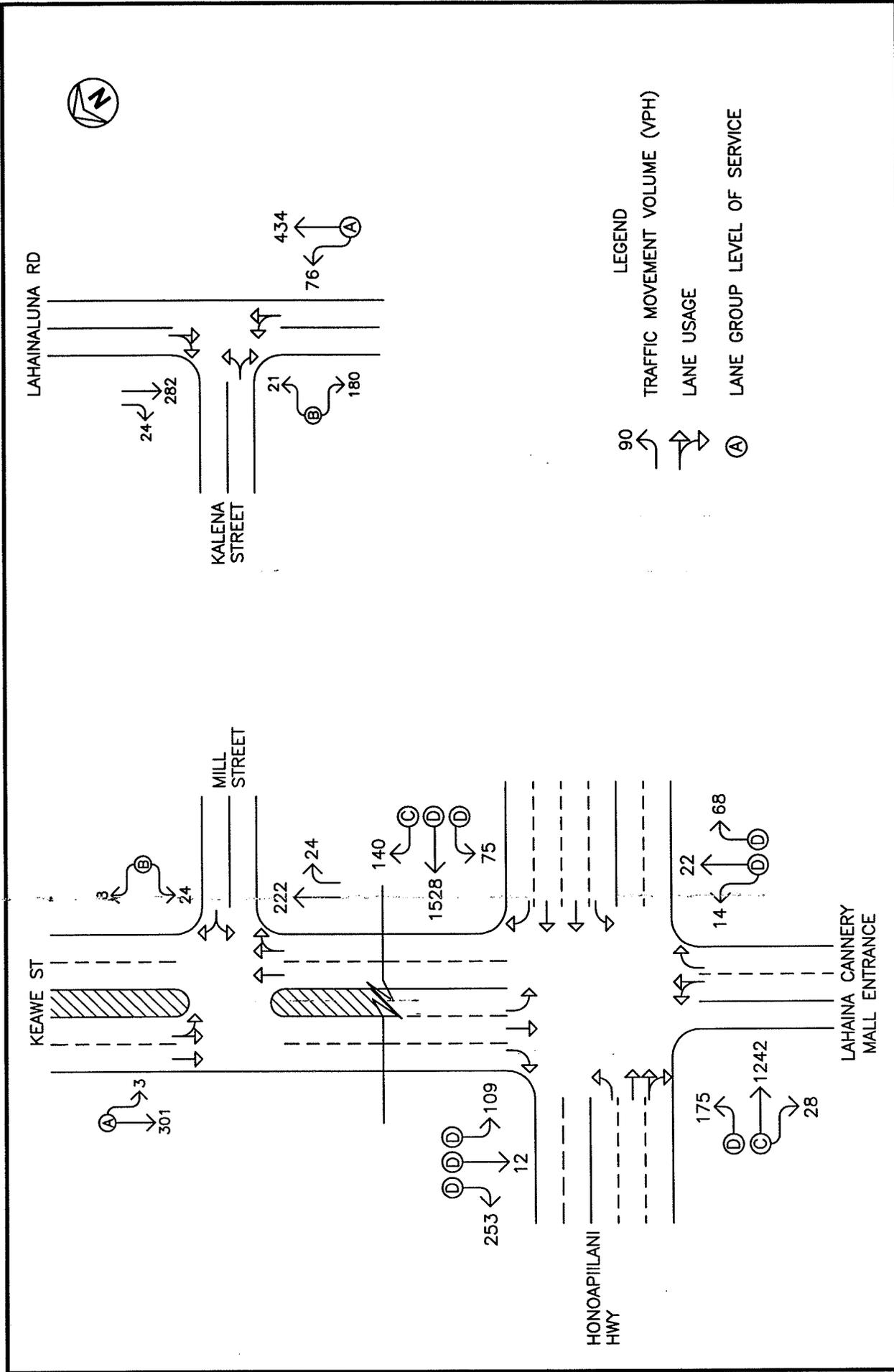
As described in the October 2007 TIAR, there are other developments in the project vicinity expected to be completed before or at the same time as the Kahoma Residential Development. Similar to the original TIAR, the traffic generated by these projects was incorporated into without project conditions with the exception of the Keawe Street Extension. When the October 2007 TIAR was prepared, the schedule for the Keawe Street extension was not known and, therefore, not incorporated into without project conditions. Since then, construction has begun on Phase 1A of the Lahaina Bypass Road and, as such, the extension is expected to be constructed by the completion of the proposed Kahoma Residential Development. As such, for the purpose of this report, the Keawe Street Extension project was also incorporated into without project conditions. In conjunction with the extension, intersection modifications are expected at the intersection of Honoapiilani Highway with Keawe Street to provide exclusive turning lanes and one through lane on the westbound approach.

Year 2013 Conditions

The projected Year 2013 AM and PM peak period traffic volumes and operating conditions without and with the proposed project are shown in Figures 5 to 8, and summarized in Table 2. The baseline Year 2010 operating conditions are provided for comparison purposes. LOS calculations are included in Appendix C.

Table 2: Existing and Projected (Without and With Project) LOS Traffic Operating Conditions

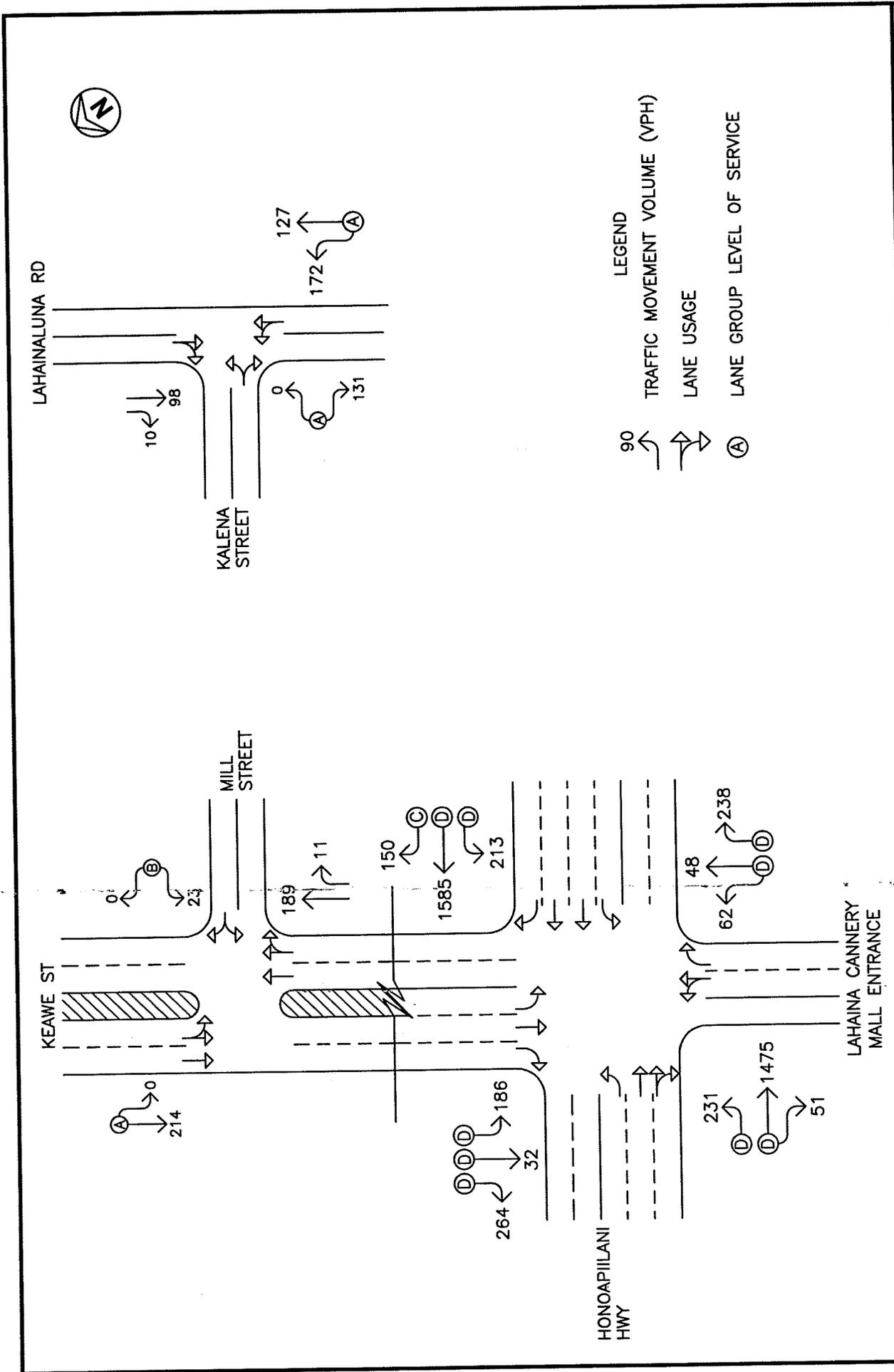
Intersection	Critical Traffic Movement		AM			PM		
			Exist	Year 2013		Exist	Year 2013	
				w/out Proj	w/ Proj		w/out Proj	w/ Proj
Honoapiilani Hwy/ Keawe St	EB	LT-TH	D	D	D	D	D	D
		RT	D	D	D	D	D	D
	WB	LT	D	D	D	D	D	D
		TH		D	D		D	D
		RT	D	D	D	D	D	D



KAHOMA RESIDENTIAL SUBDIVISION

YEAR 2013 AM PEAK HOUR OF TRAFFIC WITHOUT PROJECT

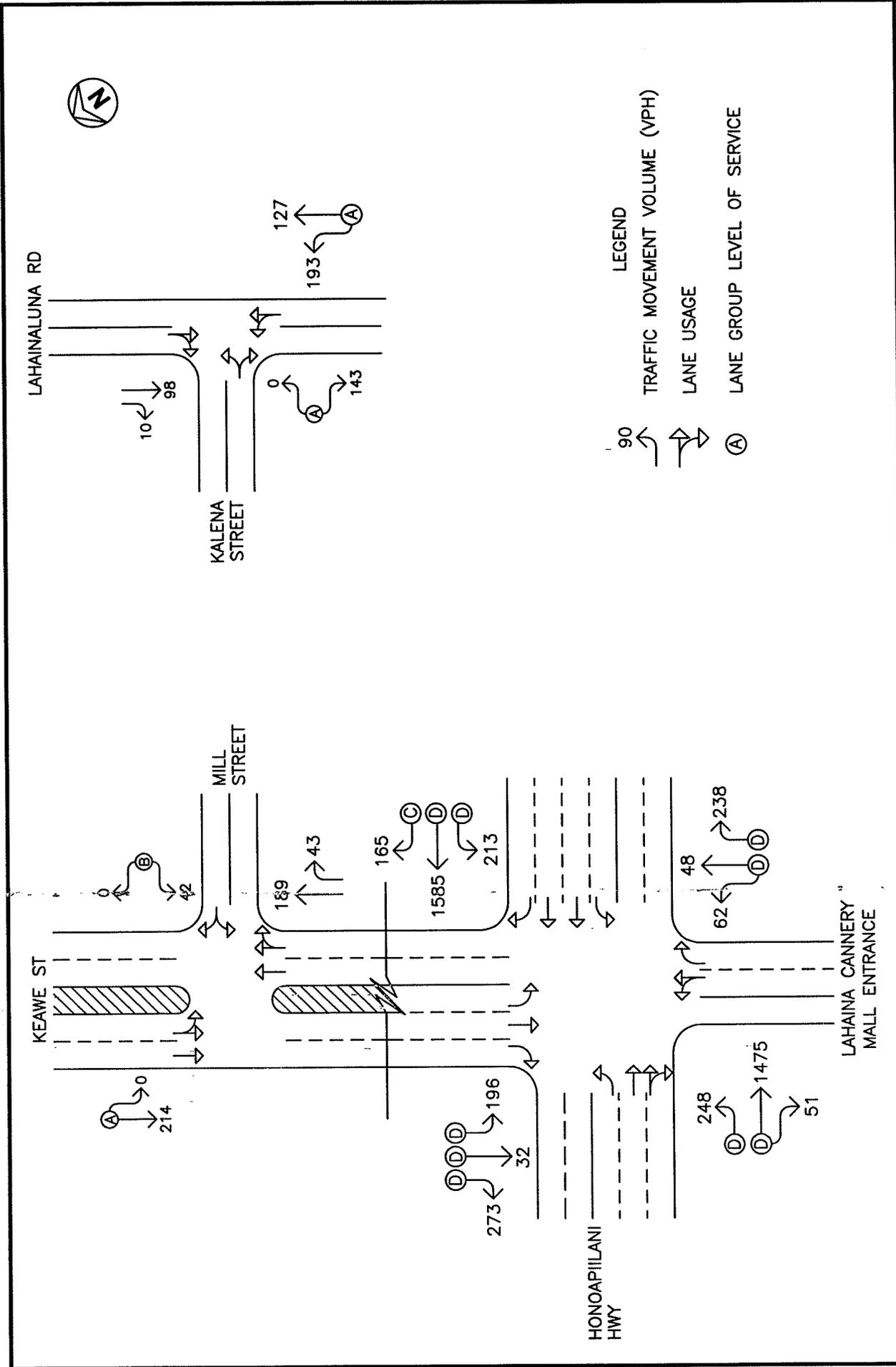
FIGURE 5



KAHOMA RESIDENTIAL SUBDIVISION

YEAR 2013 PM PEAK HOUR OF TRAFFIC WITHOUT PROJECT

FIGURE 6



KAHOMA RESIDENTIAL SUBDIVISION

YEAR 2013 PM PEAK HOUR OF TRAFFIC WITH PROJECT

FIGURE 8



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Table 2: Existing and Projected (Without and With Project) LOS Traffic Operating Conditions (Cont'd)

Intersection	Critical Traffic Movement		AM			PM		
			Exist	Year 2013		Exist	Year 2013	
				w/out Proj	w/ Proj		w/out Proj	w/ Proj
Honoapiilani Hwy/ Keawe St (Cont'd)	NB	LT	D	D	D	D	D	D
	SB	TH-RT	D	C	C	D	D	D
Keawe St/ Mill St	WB	LT-TH	A	A	A	A	A	A
	NB	LT-RT	A	B	B	A	B	B
Lahainaluna Rd/Kalena St	EB	LT-TH	A	A	A	A	A	A
	SB	LT-RT	C	B	B	A	A	A

Traffic conditions at the three study intersections are expected to remain similar to existing conditions under Year 2013 conditions without and with the proposed project. Although traffic volumes are expected to increase due to ambient growth in traffic, development of other projects in the vicinity, and the completion of the proposed Kahoma Residential Development, the proposed improvements at the intersection Honoapiilani Highway with Keawe Street to provide exclusive turning lanes on the westbound approach are expected to alleviate projected conditions at that intersection. In addition, the construction of Phase 1A of the Lahaina Bypass Road and extension of Keawe Street are expected to alleviate existing traffic conditions along Lahainaluna Road due to the provision of an alternate route mauka of the highway. In addition, Year 2010 existing conditions at the intersection of Honoapiilani Highway with Lahainaluna Road were compared with the baseline conditions from the October 2007 TIAR to verify if the previous analyses were still valid. The comparison indicated that Year 2010 traffic volumes were similar to or less than those utilized for the October 2007 TIAR. As such, the proposed Kahoma Residential Development is not expected to have a significant impact on traffic operations in the vicinity and the recommendations included in the October 2007 TIAR are still applicable to this project.



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Should you have any questions or require additional information, please contact Mr. Pete Pascua or myself at 946-2277.

Sincerely,

A handwritten signature in black ink, which appears to read "Cathy Leong". The signature is fluid and cursive, written over the printed name and title below it.

Cathy Leong, P.E.

APPENDIX A
TRAFFIC COUNT DATA

APPENDIX B

**CAPACITY ANALYSES CALCULATIONS
EXISTING PEAK HOUR TRAFFIC ANALYSIS**

HCS+: Signalized Intersections Release 5.4

Analyst: CL
 Agency:
 Date: 1/22/10
 Period: AM PEAK
 Project ID:
 E/W St: Keawe Street

Inter.:
 Area Type: All other areas
 Jurisd:
 Year : Existing
 N/S St: Honoapiilani Highway

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	1	0	1	1	1	2	1	1	2	0
LGConfig		LT	R		LT	R	L	T	R	L	TR	
Volume	14	22	57	49	12	62	58	1137	140	59	971	28
Lane Width		12.0	12.0		12.0	12.0	12.0	12.0	12.0	12.0	12.0	
RTOR Vol			6			6			14			3

Duration 1.00 Area Type: All other areas

		Signal Operations							
		1	2	3	4	5	6	7	8
Phase Combination									
EB	Left	A				NB	Left	A	
	Thru	A					Thru	A	
	Right	A					Right	A	
	Peds						Peds		
WB	Left	A				SB	Left	A	
	Thru	A					Thru	A	
	Right	A					Right	A	
	Peds						Peds		
NB	Right					EB	Right		
SB	Right					WB	Right		
Green		33.0					31.5	55.5	
Yellow		4.0					4.0	4.0	
All Red		1.0					1.0	1.0	
Cycle Length: 135.0 secs									

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios		Lane Group		Approach	
			v/c	g/C	Delay	LOS	Delay	LOS
Eastbound								
LT	407	1666	0.12	0.24	39.8	D	40.2	D
R	387	1583	0.18	0.24	40.5	D		
Westbound								
LT	342	1399	0.22	0.24	41.0	D	40.8	D
R	387	1583	0.18	0.24	40.5	D		
Northbound								
L	456	1956	0.15	0.23	41.2	D		
T	1612	3920	0.82	0.41	38.9	D	37.8	D
R	719	1750	0.20	0.41	25.7	C		
Southbound								
L	456	1956	0.15	0.23	41.3	D		
TR	1605	3905	0.73	0.41	35.2	D	35.5	D

Intersection Delay = 37.1 (sec/veh) Intersection LOS = D

HCS+: Signalized Intersections Release 5.4

Analyst: CL
 Agency:
 Date: 1/22/10
 Period: PM PEAK
 Project ID:
 E/W St: Keawe Street

Inter.:
 Area Type: All other areas
 Jurisd:
 Year : Existing
 N/S St: Honoapiilani Highway

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	1	0	1	1	1	2	1	1	2	0
LGConfig		LT	R		LT	R	L	T	R	L	TR	
Volume	62	48	155	147	32	190	145	1098	150	117	1158	51
Lane Width		12.0	12.0		12.0	12.0	12.0	12.0	12.0	12.0	12.0	
RTOR Vol			16			19			15			5

Duration 1.00 Area Type: All other areas

Phase Combination	Signal Operations							
	1	2	3	4	5	6	7	8
EB Left	A				NB Left	A		
Thru	A				Thru		A	
Right	A				Right		A	
Peds					Peds			
WB Left	A				SB Left	A		
Thru	A				Thru		A	
Right	A				Right		A	
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green	39.0				29.0	52.0		
Yellow	4.0				4.0	4.0		
All Red	1.0				1.0	1.0		

Cycle Length: 135.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios		Lane Group		Approach	
			v/c	g/C	Delay	LOS	Delay	LOS
Eastbound								
LT	318	1101	0.38	0.29	39.1	D	38.6	D
R	457	1583	0.33	0.29	38.2	D		
Westbound								
LT	350	1211	0.65	0.29	46.5	D	43.5	D
R	457	1583	0.48	0.29	40.4	D		
Northbound								
L	420	1956	0.39	0.21	46.0	D		
T	1510	3920	0.82	0.39	41.0	D	40.3	D
R	674	1750	0.23	0.39	28.1	C		
Southbound								
L	420	1956	0.31	0.21	45.0	D		
TR	1501	3898	0.89	0.39	46.7	D	46.6	D

Intersection Delay = 43.0 (sec/veh) Intersection LOS = D

HCS+: Unsignalized Intersections Release 5.4

TWO-WAY STOP CONTROL SUMMARY

Analyst: CL
 Agency/Co.:
 Date Performed: 1/22/2010
 Analysis Time Period: AM Peak
 Intersection:
 Jurisdiction:
 Units: U. S. Customary
 Analysis Year: Existing
 Project ID:
 East/West Street: Keawe St
 North/South Street: Mill St
 Intersection Orientation: EW
 Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street:	Approach Movement	Eastbound			Westbound		
		1 L	2 T	3 R	4 L	5 T	6 R
Volume		106	24		3	50	
Peak-Hour Factor, PHF		0.64	0.64		0.74	0.74	
Hourly Flow Rate, HFR		165	37		4	67	
Percent Heavy Vehicles		--	--		2	--	--
Median Type/Storage		Undivided			/		
RT Channelized?							
Lanes		2	0		0	2	
Configuration		T	TR		LT	T	
Upstream Signal?		No			No		

Minor Street:	Approach Movement	Northbound			Southbound		
		7 L	8 T	9 R	10 L	11 T	12 R
Volume		24		8			
Peak Hour Factor, PHF		0.75		0.75			
Hourly Flow Rate, HFR		32		10			
Percent Heavy Vehicles		2		2			
Percent Grade (%)			0			0	
Flared Approach: Exists?/Storage				No	/		/
Lanes		0		0			
Configuration			LR				

Delay, Queue Length, and Level of Service

Approach Movement	EB 1	WB 4	Northbound			Southbound		
			7	8	9	10	11	12
Lane Config		LT		LR				
v (vph)		4		42				
C(m) (vph)		1367		782				
v/c		0.00		0.05				
95% queue length		0.01		0.17				
Control Delay		7.6		9.9				
LOS		A		A				
Approach Delay				9.9				
Approach LOS				A				

HCS+: Unsignalized Intersections Release 5.4

TWO-WAY STOP CONTROL SUMMARY

Analyst: CL
 Agency/Co.:
 Date Performed: 1/22/2010
 Analysis Time Period: PM Peak
 Intersection:
 Jurisdiction:
 Units: U. S. Customary
 Analysis Year: Existing
 Project ID:
 East/West Street: Keawe St
 North/South Street: Mill St
 Intersection Orientation: EW

Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach Movement	Eastbound			Westbound		
	1 L	2 T	3 R	4 L	5 T	6 R
Volume		75	11	0	101	
Peak-Hour Factor, PHF		0.80	0.80	0.90	0.90	
Hourly Flow Rate, HFR		93	13	0	112	
Percent Heavy Vehicles		--	--	2	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes		2	0		0	2
Configuration		T	TR		LT	T
Upstream Signal?		No			No	

Minor Street: Approach Movement	Northbound			Southbound		
	7 L	8 T	9 R	10 L	11 T	12 R
Volume	23		0			
Peak Hour Factor, PHF	0.60		0.60			
Hourly Flow Rate, HFR	38		0			
Percent Heavy Vehicles	2		2			
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No	/		/
Lanes	0		0			
Configuration		LR				

Delay, Queue Length, and Level of Service

Approach Movement Lane Config	EB	WB	Northbound			Southbound		
	1	4	7	8	9	10	11	12
		LT		LR				
v (vph)		0		38				
C(m) (vph)		1483		820				
v/c		0.00		0.05				
95% queue length		0.00		0.15				
Control Delay		7.4		9.6				
LOS		A		A				
Approach Delay				9.6				
Approach LOS				A				

APPENDIX C

**CAPACITY ANALYSIS CALCULATIONS
PROJECTED YEAR 2013 PEAK HOUR TRAFFIC ANALYSIS**

HCS+: Signalized Intersections Release 5.4

Analyst: CL
 Agency:
 Date: 1/22/10
 Period: AM PEAK
 Project ID:
 E/W St: Keawe Street

Inter.:
 Area Type: All other areas
 Jurisd:
 Year : Year 2013 w/out project
 N/S St: Honoapiilani Highway

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	1	1	1	1	1	2	1	1	2	0
LGConfig		LT	R	L	T	R	L	T	R	L	TR	R
Volume	14	22	68	109	12	253	75	1528	140	175	1242	28
Lane Width		12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	
RTOR Vol			7			25			14			3

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left		A			NB Left	A		
Thru		A			Thru		A	
Right		A			Right		A	
Peds					Peds			
WB Left		A			SB Left	A		
Thru		A			Thru		A	
Right		A			Right		A	
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green		32.5				25.5	62.0	
Yellow		4.0				4.0	4.0	
All Red		1.0				1.0	1.0	

Cycle Length: 135.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios		Lane Group		Approach	
			v/c	g/C	Delay	LOS	Delay	LOS
Eastbound								
LT	409	1698	0.12	0.24	40.2	D	40.9	D
R	381	1583	0.21	0.24	41.3	D		
Westbound								
L	325	1352	0.37	0.24	43.5	D		
T	449	1863	0.03	0.24	39.2	D	48.1	D
R	381	1583	0.66	0.24	50.7	D		
Northbound								
L	369	1956	0.22	0.19	46.7	D		
T	1800	3920	0.94	0.46	48.2	D	46.2	D
R	804	1750	0.17	0.46	21.6	C		
Southbound								
L	369	1956	0.53	0.19	50.7	D		
TR	1795	3908	0.78	0.46	33.3	C	35.4	D

Intersection Delay = 41.9 (sec/veh) Intersection LOS = D

HCS+: Signalized Intersections Release 5.4

Analyst: CL
 Agency:
 Date: 1/22/10
 Period: PM PEAK
 Project ID:
 E/W St: Keawe Street

Inter.:
 Area Type: All other areas
 Jurisd:
 Year : Year 2013 w/out project
 N/S St: Honoapiilani Highway

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	1	1	1	1	1	2	1	1	2	0
LGConfig		LT	R	L	T	R	L	T	R	L	TR	R
Volume	62	48	238	186	32	264	213	1585	150	231	1475	51
Lane Width		12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	
RTOR Vol			24			26			15			5

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left		A			NB Left	A		
Thru		A			Thru		A	
Right		A			Right		A	
Peds					Peds			
WB Left		A			SB Left	A		
Thru		A			Thru		A	
Right		A			Right		A	
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green		33.0				27.0	60.0	
Yellow		4.0				4.0	4.0	
All Red		1.0				1.0	1.0	

Cycle Length: 135.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios		Lane Group		Approach	
			v/c	g/C	Delay	LOS	Delay	LOS
Eastbound								
LT	371	1517	0.31	0.24	42.2	D	45.5	D
R	387	1583	0.58	0.24	47.2	D		
Westbound								
L	292	1193	0.67	0.24	52.2	D		
T	455	1863	0.07	0.24	39.3	D	49.9	D
R	387	1583	0.65	0.24	49.6	D		
Northbound								
L	391	1956	0.57	0.20	50.8	D		
T	1742	3920	0.96	0.44	53.9	D	51.4	D
R	778	1750	0.18	0.44	22.8	C		
Southbound								
L	391	1956	0.62	0.20	52.4	D		
TR	1734	3902	0.92	0.44	45.6	D	46.5	D

Intersection Delay = 48.9 (sec/veh) Intersection LOS = D

HCS+: Unsignalized Intersections Release 5.4

TWO-WAY STOP CONTROL SUMMARY

Analyst: CL
 Agency/Co.:
 Date Performed: 1/22/2010
 Analysis Time Period: AM Peak
 Intersection:
 Jurisdiction:
 Units: U. S. Customary
 Analysis Year: Year 2013 w/out project
 Project ID:
 East/West Street: Keawe St
 North/South Street: Mill St
 Intersection Orientation: EW
 Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street:	Approach Movement	Eastbound			Westbound		
		1 L	2 T	3 R	4 L	5 T	6 R
Volume			222	24	3	301	
Peak-Hour Factor, PHF			0.64	0.64	0.74	0.74	
Hourly Flow Rate, HFR			346	37	4	406	
Percent Heavy Vehicles			--	--	2	--	--
Median Type/Storage		Undivided			/		
RT Channelized?							
Lanes			2	0	0	2	
Configuration			T	TR		LT T	
Upstream Signal?			No			No	

Minor Street:	Approach Movement	Northbound			Southbound		
		7 L	8 T	9 R	10 L	11 T	12 R
Volume		24		8			
Peak Hour Factor, PHF		0.75		0.75			
Hourly Flow Rate, HFR		32		10			
Percent Heavy Vehicles		2		2			
Percent Grade (%)			0			0	
Flared Approach: Exists?/Storage				No	/		/
Lanes		0		0			
Configuration			LR				

Delay, Queue Length, and Level of Service

Approach Movement	EB 1	WB 4 LT	Northbound			Southbound		
			7	8 LR	9	10	11	12
Lane Config								
v (vph)		4		42				
C(m) (vph)		1172		503				
v/c		0.00		0.08				
95% queue length		0.01		0.27				
Control Delay		8.1		12.8				
LOS		A		B				
Approach Delay				12.8				
Approach LOS				B				

HCS+: Unsignalized Intersections Release 5.4

TWO-WAY STOP CONTROL SUMMARY

Analyst: CL
 Agency/Co.:
 Date Performed: 1/22/2010
 Analysis Time Period: PM Peak
 Intersection:
 Jurisdiction:
 Units: U. S. Customary
 Analysis Year: Year 2013 w/out project
 Project ID:
 East/West Street: Keawe St
 North/South Street: Mill St
 Intersection Orientation: EW
 Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street:	Approach Movement	Eastbound			Westbound		
		1 L	2 T	3 R	4 L	5 T	6 R
Volume		189	11		0	214	
Peak-Hour Factor, PHF		0.80	0.80		0.90	0.90	
Hourly Flow Rate, HFR		236	13		0	237	
Percent Heavy Vehicles		--	--		2	--	--
Median Type/Storage		Undivided			/		
RT Channelized?							
Lanes		2	0		0	2	
Configuration		T	TR		LT	T	
Upstream Signal?		No			No		

Minor Street:	Approach Movement	Northbound			Southbound		
		7 L	8 T	9 R	10 L	11 T	12 R
Volume		23		0			
Peak Hour Factor, PHF		0.60		0.60			
Hourly Flow Rate, HFR		38		0			
Percent Heavy Vehicles		2		2			
Percent Grade (%)			0			0	
Flared Approach: Exists?/Storage				No	/		/
Lanes		0		0			
Configuration			LR				

Delay, Queue Length, and Level of Service

Approach Movement	EB 1	WB 4	Northbound			Southbound		
			7 LT	8 LR	9	10	11	12
Lane Config								
v (vph)		0		38				
C(m) (vph)		1314		612				
v/c		0.00		0.06				
95% queue length		0.00		0.20				
Control Delay		7.7		11.3				
LOS		A		B				
Approach Delay				11.3				
Approach LOS				B				

HCS+: Unsignalized Intersections Release 5.4

TWO-WAY STOP CONTROL SUMMARY

Analyst: CL
 Agency/Co.:
 Date Performed: 1/22/2010
 Analysis Time Period: AM Peak
 Intersection:
 Jurisdiction:
 Units: U. S. Customary
 Analysis Year: Year 2013 w/out project
 Project ID:
 East/West Street: Lahainaluna Rd
 North/South Street: Kalena St
 Intersection Orientation: EW
 Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street:	Approach Movement	Eastbound			Westbound		
		1 L	2 T	3 R	4 L	5 T	6 R
Volume		76	434			282	24
Peak-Hour Factor, PHF		0.68	0.68			0.81	0.81
Hourly Flow Rate, HFR		111	638			348	29
Percent Heavy Vehicles		2	--	--		--	--
Median Type/Storage		Undivided			/		
RT Channelized?							
Lanes		0	1			1	0
Configuration		LT			TR		
Upstream Signal?		No			No		

Minor Street:	Approach Movement	Northbound			Southbound		
		7 L	8 T	9 R	10 L	11 T	12 R
Volume					21		180
Peak Hour Factor, PHF					0.81		0.81
Hourly Flow Rate, HFR					25		222
Percent Heavy Vehicles					2		2
Percent Grade (%)			0			0	
Flared Approach: Exists?/Storage					/		No /
Lanes					0		0
Configuration					LR		

Delay, Queue Length, and Level of Service

Approach Movement Lane Config	EB 1 LT	WB 4	Northbound			Southbound		
			7	8	9	10	11	12
v (vph)	111						247	
C(m) (vph)	1181						831	
v/c	0.09						0.30	
95% queue length	0.31						1.26	
Control Delay	8.4						11.2	
LOS	A						B	
Approach Delay							11.2	
Approach LOS							B	

HCS+: Signalized Intersections Release 5.4

Analyst: CL
 Agency:
 Date: 1/22/10
 Period: AM PEAK
 Project ID:
 E/W St: Keawe Street

Inter.:
 Area Type: All other areas
 Jurisd:
 Year : Year 2013 w/ project
 N/S St: Honoapiilani Highway

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	1	1	1	1	1	2	1	1	2	0
LGConfig		LT	R	L	T	R	L	T	R	L	TR	R
Volume	14	22	68	123	12	269	75	1528	145	179	1242	28
Lane Width		12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	
RTOR Vol			7			27			14			3

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left		A			NB Left	A		
Thru		A			Thru		A	
Right		A			Right		A	
Peds					Peds			
WB Left		A			SB Left	A		
Thru		A			Thru		A	
Right		A			Right		A	
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green		33.5				25.0	61.5	
Yellow		4.0				4.0	4.0	
All Red		1.0				1.0	1.0	

Cycle Length: 135.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios		Lane Group		Approach	
			v/c	g/C	Delay	LOS	Delay	LOS
Eastbound								
LT	422	1700	0.11	0.25	39.4	D	40.1	D
R	393	1583	0.21	0.25	40.5	D		
Westbound								
L	335	1352	0.41	0.25	43.3	D		
T	462	1863	0.03	0.25	38.4	D	48.1	D
R	393	1583	0.68	0.25	51.0	D		
Northbound								
L	362	1956	0.23	0.19	47.1	D		
T	1786	3920	0.95	0.46	50.6	D	48.3	D
R	797	1750	0.18	0.46	21.9	C		
Southbound								
L	362	1956	0.55	0.19	51.7	D		
TR	1780	3908	0.79	0.46	33.8	C	36.1	D

Intersection Delay = 43.2 (sec/veh) Intersection LOS = D

HCS+: Signalized Intersections Release 5.4

Analyst: CL
 Agency:
 Date: 1/22/10
 Period: PM PEAK
 Project ID:
 E/W St: Keawe Street

Inter.:
 Area Type: All other areas
 Jurisd:
 Year : Year 2013 w/ Project
 N/S St: Honoapiilani Highway

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	1	1	1	1	1	2	1	1	2	0
LGConfig		LT	R	L	T	R	L	T	R	L	TR	
Volume	62	48	238	196	32	273	213	1585	165	248	1475	51
Lane Width		12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	
RTOR Vol			24			27			17			5

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left		A			NB Left	A		
Thru		A			Thru		A	
Right		A			Right		A	
Peds					Peds			
WB Left		A			SB Left	A		
Thru		A			Thru		A	
Right		A			Right		A	
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green		33.0				27.0	60.0	
Yellow		4.0				4.0	4.0	
All Red		1.0				1.0	1.0	

Cycle Length: 135.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios		Lane Group		Approach	
			v/c	g/C	Delay	LOS	Delay	LOS
Eastbound								
LT	371	1517	0.31	0.24	42.2	D	45.5	D
R	387	1583	0.58	0.24	47.2	D		
Westbound								
L	292	1193	0.71	0.24	54.4	D		
T	455	1863	0.07	0.24	39.3	D	51.4	D
R	387	1583	0.67	0.24	50.6	D		
Northbound								
L	391	1956	0.57	0.20	50.8	D		
T	1742	3920	0.96	0.44	53.9	D	51.2	D
R	778	1750	0.20	0.44	23.0	C		
Southbound								
L	391	1956	0.67	0.20	54.3	D		
TR	1734	3902	0.92	0.44	45.6	D	46.8	D

Intersection Delay = 49.1 (sec/veh) Intersection LOS = D

HCS+: Unsignalized Intersections Release 5.4

TWO-WAY STOP CONTROL SUMMARY

Analyst: CL
 Agency/Co.:
 Date Performed: 1/22/2010
 Analysis Time Period: AM Peak
 Intersection:
 Jurisdiction:
 Units: U. S. Customary
 Analysis Year: Year 2013 w/ project
 Project ID:
 East/West Street: Keawe St
 North/South Street: Mill St
 Intersection Orientation: EW
 Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street:	Approach Movement	Eastbound			Westbound		
		1 L	2 T	3 R	4 L	5 T	6 R
Volume		222	33		3	301	
Peak-Hour Factor, PHF		0.64	0.64		0.74	0.74	
Hourly Flow Rate, HFR		346	51		4	406	
Percent Heavy Vehicles		--	--		2	--	--
Median Type/Storage		Undivided			/		
RT Channelized?							
Lanes		2	0		0	2	
Configuration		T	TR		LT	T	
Upstream Signal?		No			No		

Minor Street:	Approach Movement	Northbound			Southbound		
		7 L	8 T	9 R	10 L	11 T	12 R
Volume		54		8			
Peak Hour Factor, PHF		0.75		0.75			
Hourly Flow Rate, HFR		72		10			
Percent Heavy Vehicles		2		2			
Percent Grade (%)			0			0	
Flared Approach: Exists?/Storage				No	/		/
Lanes		0		0			
Configuration			LR				

Delay, Queue Length, and Level of Service

Approach Movement	EB 1	WB 4	Northbound			Southbound		
			7 LT	8 LR	9	10	11	12
Lane Config								
v (vph)		4		82				
C(m) (vph)		1158		468				
v/c		0.00		0.18				
95% queue length		0.01		0.64				
Control Delay		8.1		14.3				
LOS		A		B				
Approach Delay				14.3				
Approach LOS				B				

HCS+: Unsignalized Intersections Release 5.4

TWO-WAY STOP CONTROL SUMMARY

Analyst: CL
 Agency/Co.:
 Date Performed: 1/22/2010
 Analysis Time Period: PM Peak
 Intersection:
 Jurisdiction:
 Units: U. S. Customary
 Analysis Year: Year 2013 w/ project
 Project ID:
 East/West Street: Keawe St
 North/South Street: Mill St
 Intersection Orientation: EW Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street:	Approach Movement	Eastbound			Westbound		
		1 L	2 T	3 R	4 L	5 T	6 R
Volume			189	43	0	214	
Peak-Hour Factor, PHF			0.80	0.80	0.90	0.90	
Hourly Flow Rate, HFR			236	53	0	237	
Percent Heavy Vehicles			--	--	2	--	--
Median Type/Storage		Undivided			/		
RT Channelized?							
Lanes			2	0	0	2	
Configuration			T	TR		LT T	
Upstream Signal?			No			No	

Minor Street:	Approach Movement	Northbound			Southbound		
		7 L	8 T	9 R	10 L	11 T	12 R
Volume		42		0			
Peak Hour Factor, PHF		0.60		0.60			
Hourly Flow Rate, HFR		69		0			
Percent Heavy Vehicles		2		2			
Percent Grade (%)			0			0	
Flared Approach: Exists?/Storage				No	/		/
Lanes		0		0			
Configuration			LR				

Delay, Queue Length, and Level of Service

Approach Movement	EB 1	WB 4	Northbound			Southbound		
			7	8	9	10	11	12
Lane Config		LT		LR				
v (vph)		0		69				
C(m) (vph)		1270		595				
v/c		0.00		0.12				
95% queue length		0.00		0.39				
Control Delay		7.8		11.8				
LOS		A		B				
Approach Delay				11.8				
Approach LOS				B				

HCS+: Unsignalized Intersections Release 5.4

TWO-WAY STOP CONTROL SUMMARY

Analyst: CL
 Agency/Co.:
 Date Performed: 1/22/2010
 Analysis Time Period: AM Peak
 Intersection:
 Jurisdiction:
 Units: U. S. Customary
 Analysis Year: Year 2013 w/ project
 Project ID:
 East/West Street: Lahainaluna Rd
 North/South Street: Kalena St
 Intersection Orientation: EW
 Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach Movement	Eastbound				Westbound		
	1 L	2 T	3 R		4 L	5 T	6 R
Volume	84	434			282	24	
Peak-Hour Factor, PHF	0.68	0.68			0.81	0.81	
Hourly Flow Rate, HFR	123	638			348	29	
Percent Heavy Vehicles	2	--	--		--	--	
Median Type/Storage	Undivided			/			
RT Channelized?							
Lanes	0	1			1	0	
Configuration	LT				TR		
Upstream Signal?	No				No		

Minor Street: Approach Movement	Northbound				Southbound		
	7 L	8 T	9 R		10 L	11 T	12 R
Volume					21	200	
Peak Hour Factor, PHF					0.81	0.81	
Hourly Flow Rate, HFR					25	246	
Percent Heavy Vehicles					2	2	
Percent Grade (%)		0				0	
Flared Approach: Exists?/Storage				/		No	/
Lanes					0	0	
Configuration					LR		

Delay, Queue Length, and Level of Service

Approach Movement Lane Config	EB	WB	Northbound				Southbound		
	1	4	7	8	9		10	11	12
	LT						LR		
v (vph)	123						271		
C(m) (vph)	1181						837		
v/c	0.10						0.32		
95% queue length	0.35						1.43		
Control Delay	8.4						11.4		
LOS	A						B		
Approach Delay							11.4		
Approach LOS							B		

APPENDIX F-2.

2011 Supplemental Traffic Report



KENNETH K. KUROKAWA, P.E.
TERRANCE S. ARASHIRO, P.E.
DONOHUE M. FUJII, P.E.
STANLEY T. WATANABE
IVAN K. NAKATSUKA, P.E.
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RECEIVED JAN 21 2011

#11-005
January 19, 2011

Ms. Heidi Bigelow
West Maui Land Company, Inc.
33 Lono Avenue, Suite 450
Kahului, Hawaii 96732

Dear Ms. Bigelow:

**Subject: Supplemental Traffic Assessment
for the Kahomoa Residential Development
TMK: (2) 4-5-010:005 & 006
Kihei, Maui, Hawaii**

This traffic assessment supplements the October 2007 Traffic Impact Report (TIR) for the Kahoma Residential Development and the January 26, 2010 Kahoma Residential Development - Supplemental Report both prepared by the Wilson Okamoto Corporation. The October 2007 TIR proposed that the Kahoma Residential Development will be developed with 25 multi-family dwelling units and 70 single family dwelling units. The January 26, 2010 supplemental report assumed that the development would include 25 multi-family dwelling units and 62 single-family dwelling units. Currently, the project has been revised to contain 68 single-family dwelling units.

Project Description

The revised Kahoma Residential Development is proposing to develop 68 single-family dwelling units on a 16.8 acre site bordered by the Kahoma Flood Channel to the north, the existing Lahaina plantation housing to the south and a former cane haul road (also known as Mill Street) to the west.

Existing Roadways

Honoapiilani Highway

Honoapiilani Highway is a north-south, two-way, two-lane, undivided roadway between Prison Street. North of Prison Street, Honoapiilani Highway widens to become a two-way, four-lane, undivided roadway. Regionally, Honoapiilani Highway begins in Central Maui, runs around the "Pali" and through West Maui.



Ms. Heidi Bigelow
West Maui Land Company, Inc.

January 19, 2011

Keawe Street

Keawe Street is an east-west, two-way, four-lane, roadway. To the east, Keawe Street provides access to the Lahaina Gateway Mall via two (2) driveways and the Lahaina Business Park where it terminates. Ultimately, Keawe Street will also provide access to the Hawaii Housing Finance and Development Corporation (HHFDC) Villages of Leialii and will be extended eastward providing access to the Lahaina Bypass Road. To the west, it is a driveway into the Lahaina Cannery Mall.

Lahainaluna Road

Lahainaluna Road is an east-west, two-way, two-lane, undivided roadway. To the east of Honoapiilani Highway, Lahainaluna Road provides access to a residential area, Princess Nahienaena Elementary School, Lahaina Intermediate School and Lahainaluna High School. To the west, Lahainaluna Road provides access to businesses before terminating at its intersection with Front Street.

Study Scope

The focus of this traffic assessment will be on the trip generation potential of the Project to determine whether it meets the minimum trip generation criteria recommended by Institute of Transportation Engineers (ITE). The Manual of Transportation Engineering Studies, dated 2000, published by ITE, which states:

“... in lieu of other locally established thresholds, a traffic access/impact study should be conducted whenever a proposed development will generate 100 or more added (new) peak direction trips to or from the site during the adjacent roadway’s peak hours or the development’s peak hours.”

Trip Generation

The Institute of Transportation Engineers (ITE) publishes trip rates, Trip Generation, 7th Edition based upon historical data from similar land uses. The traffic from the 68 single-family dwelling units was generated using the ITE trip rates.

Table 1 shows an estimate of traffic generated by the proposed development during the AM and PM peak hours of traffic. Table 2 compares the trips generated by the October 2007 TIR, the January 26, 2010 Supplemental Report and the revised Kahoma Residential Development.

Ms. Heidi Bigelow
West Maui Land Company, Inc.

January 19, 2011

Table 1 Trip Generation

Use	AM Peak Hour			PM Peak Hour		
	Enter	Exit	Total	Enter	Exit	Total
68 Single Family Dwelling Units (ITE Code 210)	15	44	58	47	28	75

Table 2 Trip Generation Comparison

Use	AM Peak Hour			PM Peak Hour		
	Enter	Exit	Total	Enter	Exit	Total
October 2007 Traffic Impact Report	17	54	71	59	35	94
January 26, 2010, Supplemental Report	16	50	66	53	31	84
68 Single Family Dwelling Units	15	44	58	47	28	75

Conclusions

The following are the conclusions of the traffic assessment study.

- The Project is anticipated to generate 58 total trips during the AM peak hour of traffic and 75 during the PM peak hour of traffic which is less traffic than the October 2007 TIR and the January 2010 Supplemental Report.
- The recommendations contained in the October 2007 TIR and the January 2010 Supplemental Report is conservative since the revised Kahoma Residential Development will generate less trips.
- The preparation of a Traffic Impact Assessment Report is not required as the Project does not meet the minimum trip generation criteria of 100 new trips in the peak direction which is recommended by ITE regarding the preparation of a Traffic Impact Assessment Report.



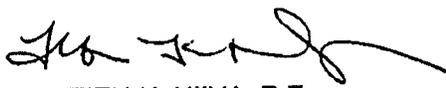
Ms. Heidi Bigelow
West Maui Land Company, Inc.

January 19, 2011

We appreciate the opportunity to prepare this Supplemental Traffic Assessment for the Project. Should you require clarification, please feel free to call me at (808) 533-3646.

Sincerely,

AUSTIN, TSUTSUMI & ASSOCIATES, INC.

By 
KEITH K. NIIYA, P.E.
Chief Transportation/Traffic Engineer

KKV:ml

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