Contents

TABLES

FIGURES

3.14 TRANSPORTATION

This section documents the regulatory background of the Honoapi‘ilani Highway Improvements Project (the Project), details the operational configurations of access points, and summarizes highway traffic operations within the project area. Additionally, this section includes an evaluation of existing conditions and the projected Future Year 2045 conditions for the No Build Alternative and the Build Alternatives, as well as a discussion of the safety implications of the No Build Alternative compared to the Build Alternatives. FIGURE 3.14-1 identifies the project area and the existing highway alignments and intersections with local streets and driveways.

The Lāhainā wildfire and rebuilding efforts are having a dramatic effect on current traffic conditions in West Maui. To maintain consistency with long-range planning efforts, this ~~Draft~~ Final Environmental Impact Statement (EIS) utilizes the Maui Metropolitan Planning Organization’s (Maui MPO’s) Year 2045 pre-Lāhainā wildfire traffic projections. Based on coordination with the MPO and given the extended period of reconstruction and rebound in economic activity, these traffic demand projections are considered to be appropriate over the long term but are likely conservatively high for the 2045 analysis year. The implications of this are discussed in Section 3.14.4.6 and Section 3.14.4.7, which evaluate the future operations of the alternatives.

Following publication of the Draft EIS, the public was afforded an opportunity to review and comment on the effects of the Project with respect to transportation. Based on those comments and continued design considerations, there have been several refinements to the Preferred Alternative. These are described and evaluated in Chapter 5, Preferred Alternative, along with supporting traffic impact assessment found in Appendix 3.14. Specific to the Draft EIS assessment of the Build Alternatives, there are no Final EIS revisions to the analysis contained within this section.

3.14.1 Regulatory Context

The design, operations, and safety of Honoapi‘ilani Highway in the project area are regulated by several agencies, primarily the State of Hawai‘i Department of Transportation (HDOT) and the Federal Highway Administration (FHWA).

3.14.2 Methodology

The Project is a new two-lane, divided highway that would be constructed to allow for upgrading to a four-lane, divided highway—if future conditions are appropriate and funds are available. This new two-lane, divided highway would replace the existing two-lane, undivided highway as the primary regional arterial roadway. The existing two-lane highway would become a local roadway, which would be transferred to the jurisdiction of Maui County and primarily provide access to existing uses. The transportation impacts evaluated in this section focus on a two-lane highway configuration for both the existing and future conditions.

The evaluation of both existing and future conditions includes documentation of existing and future roadway and intersection configurations, documentation of existing and projected future traffic volumes, and analysis of peak-hour roadway segment and intersection operations. Additionally, public

transit, bicycle, and pedestrian conditions for existing and future conditions are documented. Traffic crash information is summarized for existing conditions and the potential safety benefits of the Project are forecast.

Industry-accepted methodologies for roadway capacity, intersection operational analyses, and traffic safety were used to evaluate existing and future traffic conditions:

- Roadway segment level of service was determined using ranges of volume/capacity ratios based on guidance contained in the *Highway Capacity Manual, Seventh Edition: A Guide for Multimodal Mobility Analysis*.
- Intersection operational analyses utilized methodologies documented in the *Highway Capacity Manual, Sixth Edition: A Guide for Multimodal Mobility Analysis*—Chapter 19 was referenced for signalized intersections and Chapter 20 was referenced for unsignalized intersections. Cubic Transportation Systems Synchro Studio 11 traffic analysis software was used to apply these methodologies.
- Evaluation of traffic signal warrants were based on procedures documented in the FHWA *Manual on Uniform Traffic Control Devices for Streets and Highways, 2009 Edition* (Chapter 4C, Traffic Control Signal Needs Studies, was applied).
- Intersection configuration recommendations were based on guidelines in *A Policy on Geometric Design of Highways and Streets,* 7th Edition, 2018—commonly referred to as the Green Book—from the American Association of State Highway and Transportation Officials (AASHTO).
- Safety analyses utilized methods documented in the AASHTO *Highway Safety Manual*, Part C – Predictive Method. And crash modification factors obtained from the Oregon DOT *Crash Reduction Factor Manual* were used to estimate benefits of the proposed divided Honoapi‘ilani Highway.

Appendix 3.14 provides additional detailed information on the analyses conducted using these methodologies.

FIGURE 3.14-1. **Project Area and Existing Traffic Study Area Intersections**

3.14.3 Affected Environment

As shown in FIGURE 3.14-1, the Honoapi‘ilani Highway Improvements Project area is in West Maui between Ukumehame (milepost 11) and Launiupoko (milepost 17). The southeastern terminus would connect to the existing Honoapi‘ilani Highway in the vicinity of the Pali. The northwestern terminus in Launiupoko would connect to the existing Lāhainā Bypass.

3.14.3.1 Existing Roadways

Honoapi‘ilani Highway

Honoapi‘ilani Highway is a two-lane, undivided principal arterial that is part of the National Highway System and the Primary Highway Freight System. It is the primary roadway connecting West Maui to the rest of the island of Maui. The posted speed limit varies between 35 miles per hour (mph) in areas with high driveway density and 55 mph with infrequent formal access. Passing is allowed on selected segments of Honoapi‘ilani Highway. Intersections within the project area are unsignalized with stop-control on the minor-street approaches.

Olowalu Area

Olowalu Recycling and Refuse Convenience Center Driveway

This driveway is a two-lane, paved mauka-makai road originating at Honoapi‘ilani Highway between Launiupoko and Olowalu. It provides access to both the Olowalu Recycling and Refuse Convenience Center and a former cinder mining quarry, which is currently a temporary storage site for ash and debris from the Lāhainā wildfire.

Honoapi‘ilani Highway Frontage Road

This is a private, partially paved, two-lane frontage road located mauka of and parallel to Honoapi‘ilani Highway. It begins at the Olowalu Recycling and Refuse Convenience Center driveway and ends at the north terminus of the Olowalu Village Road. The frontage road, also referred to as a cane haul road, provides access to a farm and the Maui Paintball site. There are gates on this roadway located just south of the farm driveway and at its southern terminus. These gates are often locked, restricting public access to this segment of the frontage road.

Upper Olowalu Access Road

This partially paved two-lane road provides access to the Olowalu Petroglyphs site and residences that are makai and mauka of the site. The roadway begins at Olowalu Village Road and terminates at the driveways into mauka properties and the Olowalu Cultural Reserve area.

Olowalu Village Road

Olowalu Village Road is a paved, two-lane roadway located mauka of and generally parallel to Honoapi‘ilani Highway. The drivable segment of this roadway begins approximately at the Upper Olowalu Access Road—north of the Olowalu General Store area—and ends south of Olowalu Village. It provides traffic circulation within Olowalu Village and in the Olowalu General Store area. On the makai side of Honoapi‘ilani Highway, the roadway leading to Olowalu Landing and Camp Olowalu is also designated as Olowalu Village Road. This roadway intersects Honoapi‘ilani Highway opposite the main

driveway into the Olowalu General Store area and provides access to private driveways to the Olowalu Plantation House and a residential neighborhood located makai of Honoapiʻilani Highway.

Luawai Street

Luawai Street is a paved, two-lane, mauka-makai road originating at Honoapiʻilani Highway in the vicinity of Olowalu Village. It provides access to a large-lot residential subdivision and can be used to access the Olowalu Petroglyphs.

Ukumehame Area

Ehehene Street

Ehehene Street is a paved, two-lane, mauka-makai road originating at Honoapiʻilani Highway in the Ukumehame area. It provides access to the Ukumehame Sod Farm, Maui Island Sod, and a large-lot residential subdivision.

Pōhaku ʻAeko Street

Pōhaku ʻAeko Street is a paved, two-lane, mauka-makai road originating at Honoapiʻilani Highway in the Ukumehame area. It provides access to a large-lot residential subdivision with an internal street, Paekiʻi Place.

Ukumehame Firing Range Driveway

The Ukumehame Firing Range driveway is a paved, two-lane, mauka-makai road originating at Honoapiʻilani Highway in the Ukumehame area. It provides access to Ukumehame Firing Range and maintenance access to the HDOT sedimentation basin.

3.14.3.2 Existing Intersections

Eleven intersections, all unsignalized, were included in the evaluation of existing conditions. FIGURE 3.14-2 shows their locations on the existing Honoapiʻilani Highway and FIGURE 3.14-3 shows their lane configurations. These intersections are the defined intersections on the existing Honoapiʻilani Highway.

In addition to these defined intersections, there is semicontinuous beach access along the makai side of Honoapiʻilani Highway. FIGURE 3.14-4 shows the existing access points and beach access. Although some beaches have designated parking areas, large segments of the beaches allow unrestricted vehicular maneuvers directly on and off Honoapiʻilani Highway. As shown in FIGURE 3.14-4, much of this unrestricted beach access occurs in the Launiupoko and Ukumehame areas.

FIGURE 3.14-2. **Location of Existing Intersections**

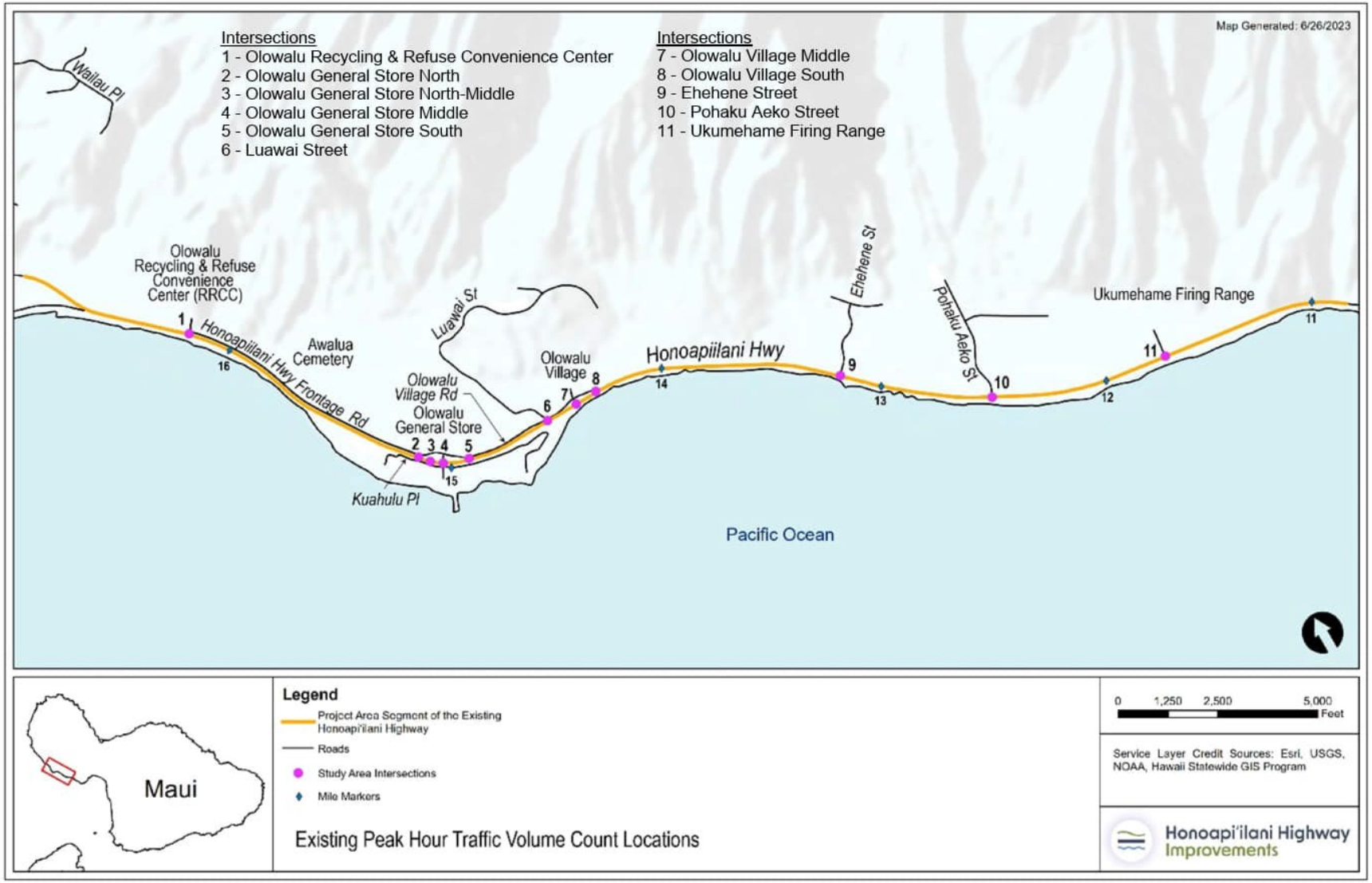


FIGURE 3.14-3. **Existing Lane Configurations**

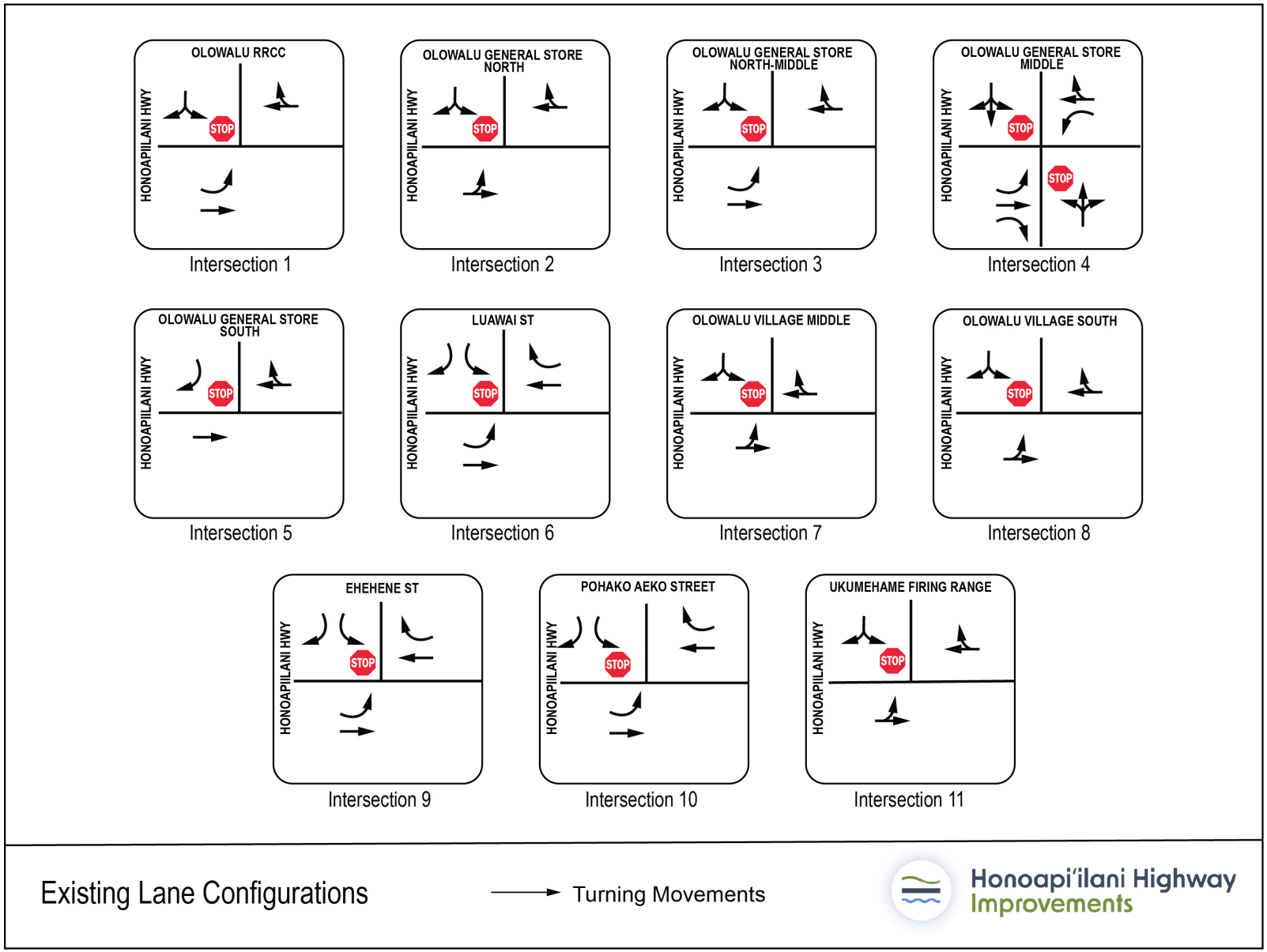
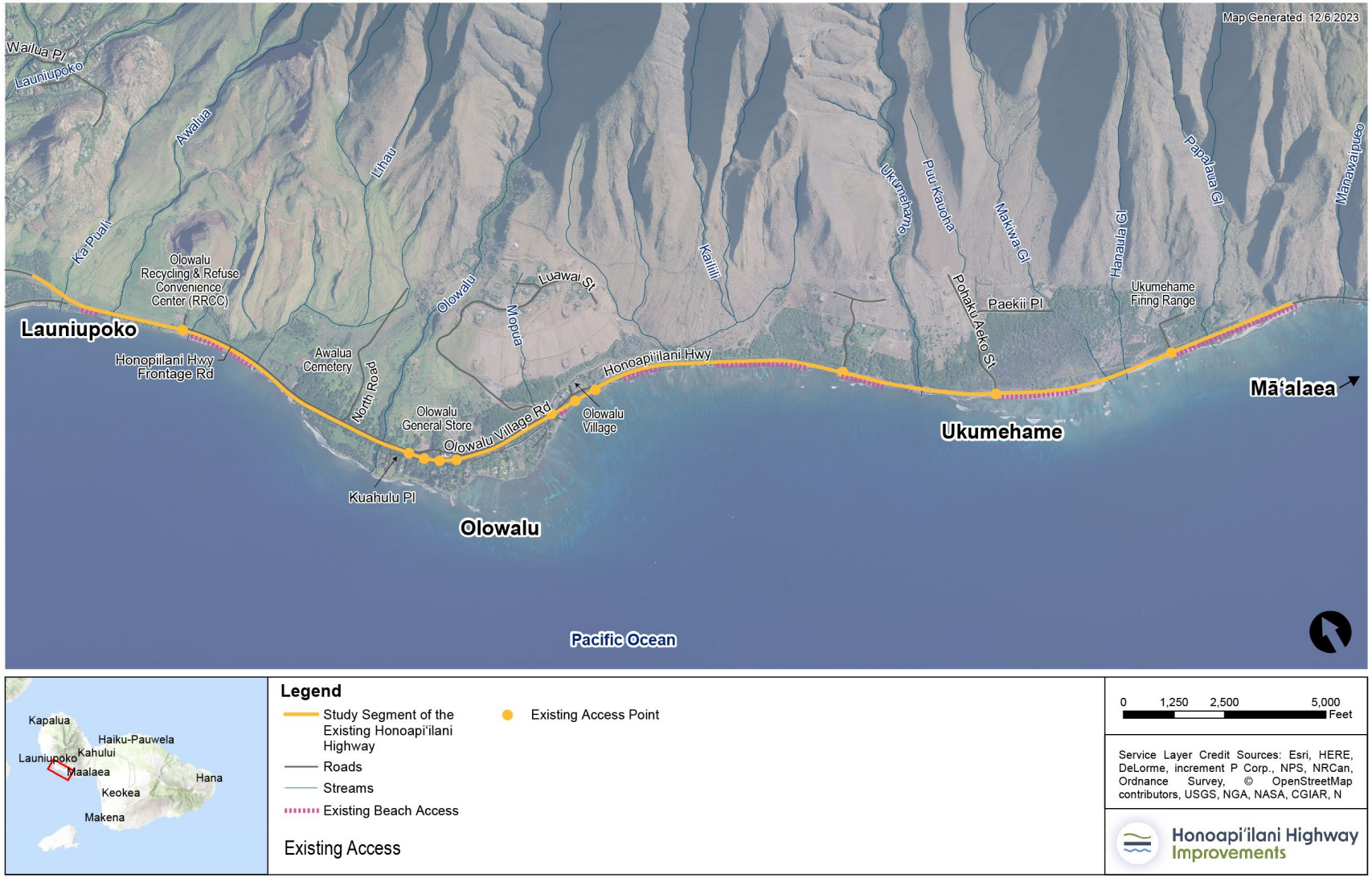


FIGURE 3.14-4. **Existing Access along Honoapi'ilani Highway**



Honoapiʻilani Highway and Refuse Convenience Center

The Olowalu Recycling and Refuse Convenience Center driveway to the Honoapiʻilani Highway is controlled by a stop sign and has one departing lane for both right and left turns. An exclusive left-turn lane is provided for the southbound Honoapiʻilani Highway approach.

Olowalu Area

Honoapiʻilani Highway/Olowalu General Store Area

There is one major driveway and three minor driveways into this commercial area.

The major access driveway is across from the roadway that provides access to the makai area of Camp Olowalu, Olowalu Landing, and the Olowalu Plantation House. This four-legged, unsignalized intersection has exclusive left-turn lanes on both Honoapiʻilani Highway approaches. An exclusive right-turn lane into the makai roadway is provided on the southbound Honoapiʻilani Highway approach. Both driveway approaches from the Olowalu General Store area and the makai roadway are STOP-sign controlled.

All of the minor-street accesses are unsignalized T-intersections and have either explicit (signed) or implicit (unsigned driveway) STOP-control on the driveway approach. The northernmost minor access is near the northern terminus of Olowalu Village Road. A second minor access is just to the south, in the parking area fronting the Olowalu Farmer's Market and Kamala's Kitchen. These two minor accesses are full-movement T-intersections with no turn movement restrictions. The third minor access is a right-in/right-out driveway located south of Leoda's Kitchen and Pie Shop.

Honoapiʻilani Highway/Luawai Street

The Honoapiʻilani Highway/Luawai Street intersection is an unsignalized T-intersection with STOP-sign control on the Luawai Street approach. An exclusive left-turn lane is provided for the southbound Honoapiʻilani approach, and a right-turn deceleration lane is provided for the northbound Honoapiʻilani approach. A left-turn refuge is provided in the median for vehicles turning left out of Luawai Street. The Luawai Street approach is channelized with separate left- and right-turn lanes.

Honoapiʻilani Highway/Olowalu Village

Two Olowalu Village access points are provided south of Luawai Street. Both access points are unsignalized and have no stop signs for traffic seeking to get on to the highway. Neither access point has delineated left- or right-turn lanes.

Ukumehame Area

Honoapi‘ilani Highway/Ehehene Street

The Honoapi‘ilani Highway/Ehehene Street intersection is an unsignalized T-intersection with STOP-sign control on the Ehehene Street approach. An exclusive left-turn lane is provided for the southbound Honoapi‘ilani approach, and right-turn deceleration and acceleration lanes are provided on northbound Honoapi‘ilani Highway. A left-turn refuge is provided in the median for vehicles turning left out of Ehehene Street. The Ehehene Street approach is channelized with separate left- and right-turn lanes.

Honoapi‘ilani Highway/Pōhaku ‘Aeko Street

The Honoapi‘ilani Highway/Pōhaku ‘Aeko Street intersection is an unsignalized T-intersection with STOP-sign control on the Pōhaku ‘Aeko Street approach. An exclusive left-turn lane is provided for the southbound Honoapi‘ilani approach, and right-turn deceleration and acceleration lanes are provided on northbound Honoapi‘ilani Highway. A left-turn refuge is provided in the median for vehicles turning left out of Pōhaku ‘Aeko Street. The Pōhaku ‘Aeko Street approach is channelized with separate left- and right-turn lanes.

Honoapi‘ilani Highway/Ukumehame Firing Range Driveway

The Ukumehame Firing Range driveway is an unsignalized T-intersection with STOP-sign control on the driveway approach. No turn lanes are provided on Honoapi‘ilani Highway, and there is no channelization of the driveway approach.

3.14.3.3 Existing Public Transit

The Maui County Department of Transportation works with Roberts Hawaii to provide Maui Bus, which is an island-wide public bus transit system. The Lāhainā Islander Route, which connects the Kahului-Wailuku Area to Lāhainā, passes through the project area on Honoapi‘ilani Highway. No bus stops are located within the project area.

3.14.3.4 Existing Bicycle/Pedestrian Facilities

While no separate bike lanes or pedestrian facilities are currently provided within the project area, Honoapi‘ilani Highway is considered a shared access roadway. Bicyclists and pedestrians can use the highway’s paved shoulders.

3.14.3.5 Existing Roadway Data

Existing roadway data was identified and documented:

- Number of lanes and shoulder widths
- Intersection Lane configurations
- Bicycle facilities
- Pedestrian facilities and crosswalk locations
- Intersection traffic control
- Posted speed limits

3.14.3.6 Existing Segment Operations

With the purpose of identifying the relative quality of flow on the existing Honoapiʻilani Highway given the current traffic volume demand, traffic volumes on Honoapiʻilani Highway were collected and general segment operations were evaluated.

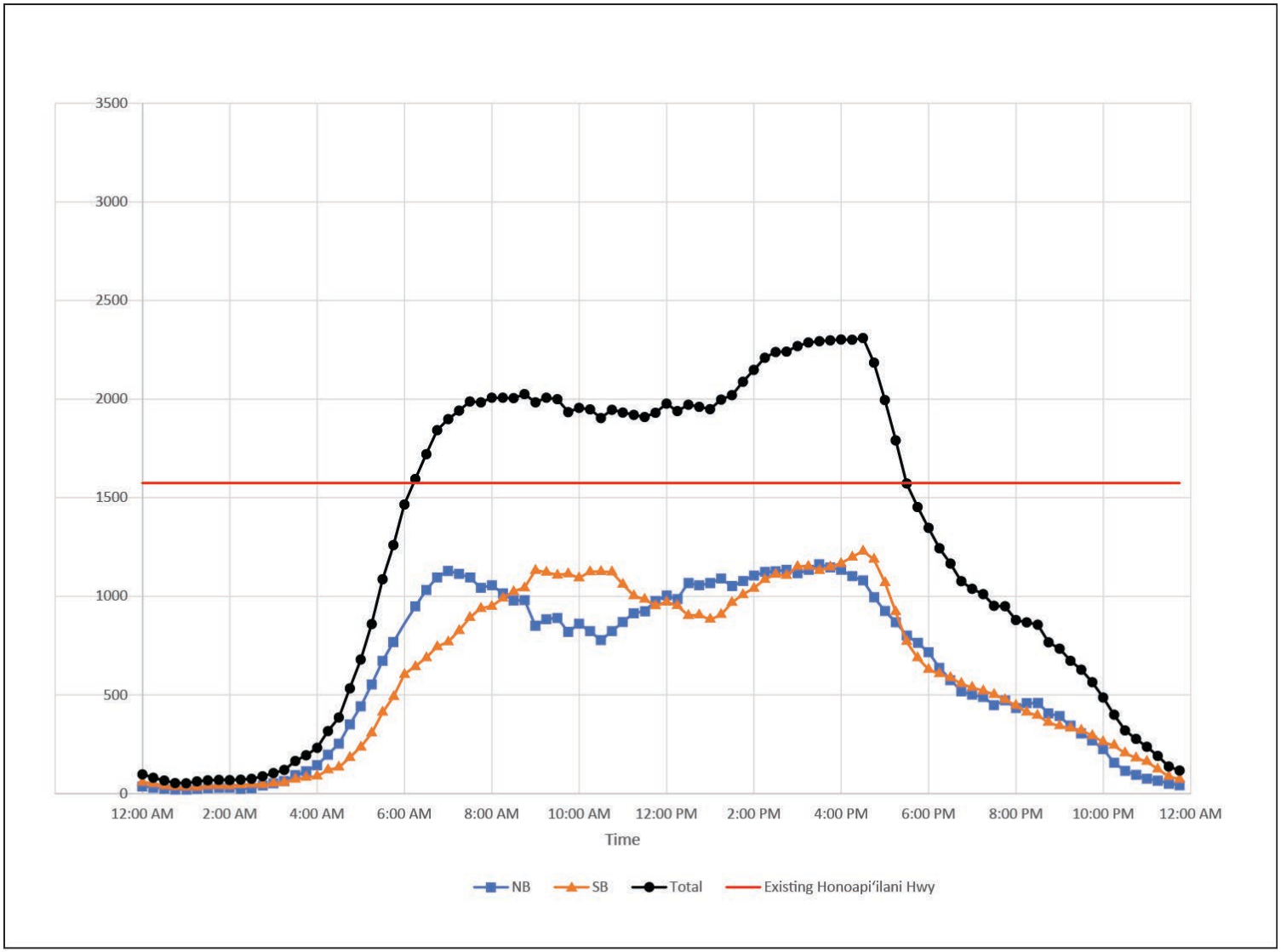
Corridor Traffic Volumes

Existing Honoapiʻilani Highway traffic volumes obtained from HDOT were augmented with counts recorded for the Project over 24 hours—May 3 through May 4, 2023—at the driveways of the Olowalu Recycling and Refuse Convenience Center and the Ukumehame Firing Range. For this analysis, these two intersections represent traffic volumes at the north and south ends of the project area, respectively, and FIGURE 3.14-5 and FIGURE 3.14-6 show their distributions—including both directional traffic volumes and the two-way totals. Additionally, reference lines indicate the maximum directional operational volume of Honoapiʻilani Highway based on its current level of access management and roadway geometrics. These maximum directional operational volumes are used as a measure of capacity, because through traffic on Honoapiʻilani Highway is largely unconstrained by intersecting street traffic.

Corridor Evaluation

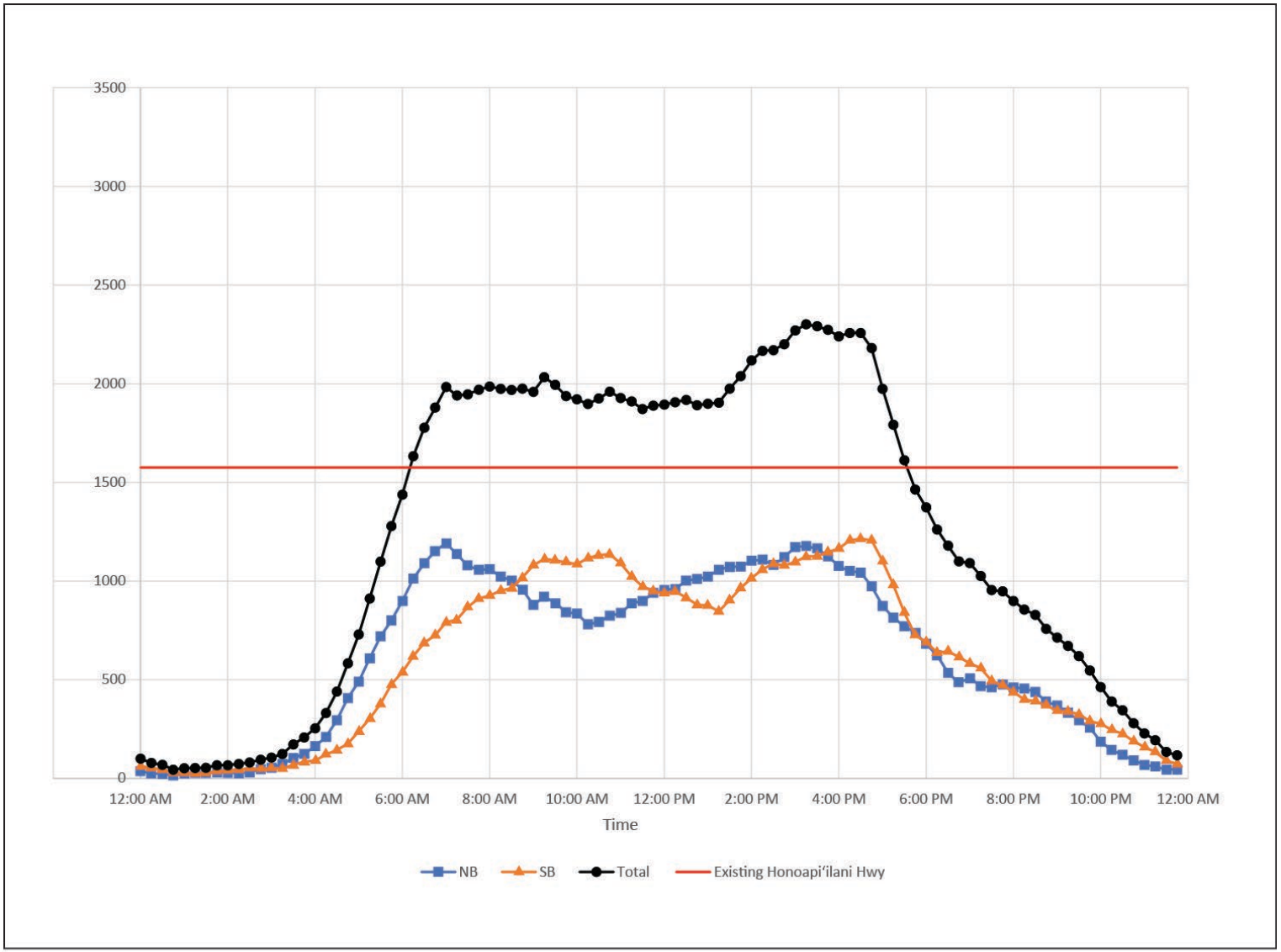
FIGURE 3.14-5 and FIGURE 3.14-6 show that both the Launiupoko and Ukumehame ends of Honoapiʻilani Highway within the project area experience peak-hour traffic volumes below the maximum directional operational volume. This is consistent with observations indicating that traffic on the highway is substantial but mostly flows well. Occasionally, and especially during the PM peak-hour in the southbound direction, there are minor operational disruptions at intersections that trigger congestion and result in vehicles queuing on Honoapiʻilani Highway. These events are intermittent and traffic flows well between them.

FIGURE 3.14-5. **Existing 2023 Honoapi‘ilani Highway Traffic Volumes at Launiupoko in the Vicinity of Milepost 16.5**



Existing 2023 Hourly Honoapiilani Highway Traffic Volume North of Project

FIGURE 3.14-6. **Existing 2023 Honoapi'ilani Highway Traffic Volumes at Ukumehame in the Vicinity of Milepost 11.5**



Existing 2023 Hourly Honoapiilani Highway Traffic Volume South of Project

3.14.3.7 Existing Intersection Operations

At 11 intersections on Honoapi‘ilani Highway, traffic turning-movement volumes were collected and peak-hour intersection operations were evaluated (FIGURE 3.14-2).

Intersection Turning Movement Traffic Volumes

Traffic turning-movement counts and pedestrian/bicycle counts for the Project were conducted on Wednesday, May 3, 2023, at the following numbered intersections:

1. Honoapi‘ilani Highway/Olowalu Recycling and Refuse Convenience Center
2. Honoapi‘ilani Highway/Olowalu General Store area, north driveway
3. Honoapi‘ilani Highway/Olowalu General Store area, north-middle driveway
4. Honoapi‘ilani Highway/Olowalu General Store area, middle/Camp Olowalu driveway
5. Honoapi‘ilani Highway/Olowalu General Store area, south driveway (right-in/right-out)
6. Honoapi‘ilani Highway/Luawai Street
7. Honoapi‘ilani Highway/Olowalu Village, middle access
8. Honoapi‘ilani Highway/Olowalu Village, south access
9. Honoapi‘ilani Highway/Ehehene Street
10. Honoapi‘ilani Highway/Pōhaku ‘Aeko Street
11. Honoapi‘ilani Highway/Ukumehame Firing Range Driveway

The AM and PM peak hours occurred from 8:45 a.m. to 9:45 a.m. and 3:15 p.m. to 4:15 p.m., respectively. FIGURE 3.14-7 shows the existing peak-hour traffic volumes at these intersections. The intersection numbers in this figure correspond to the intersection numbers shown in the intersection location map in FIGURE 3.14-2 and the list above.

Bicycle and pedestrian volumes were very low—less than five each per hour at any intersection during the peak-hour periods.

Intersection Peak-Hour Operations

The study intersections were analyzed with Synchro Studio 11 software using the methodologies for unsignalized intersections documented in the *Highway Capacity Manual, Sixth Edition: A Guide for Multimodal Mobility Analysis*. Because of the very low bicycle and pedestrian volumes, only vehicular mode operational analyses were conducted.

Unsignalized intersection analyses characterize operating conditions by assigning a scaled qualitative measure, level of service (LOS), to key traffic movements at an intersection. LOS ranges from A to F, with LOS A representing operations with low vehicular delays and LOS F representing operations with relatively high vehicular delays. TABLE 3.14-1 shows the scale of delays in terms of average number of seconds pe vehicle by unsignalized LOS levels.

FIGURE 3.14-7. **Existing Peak-Hour Traffic Volumes**

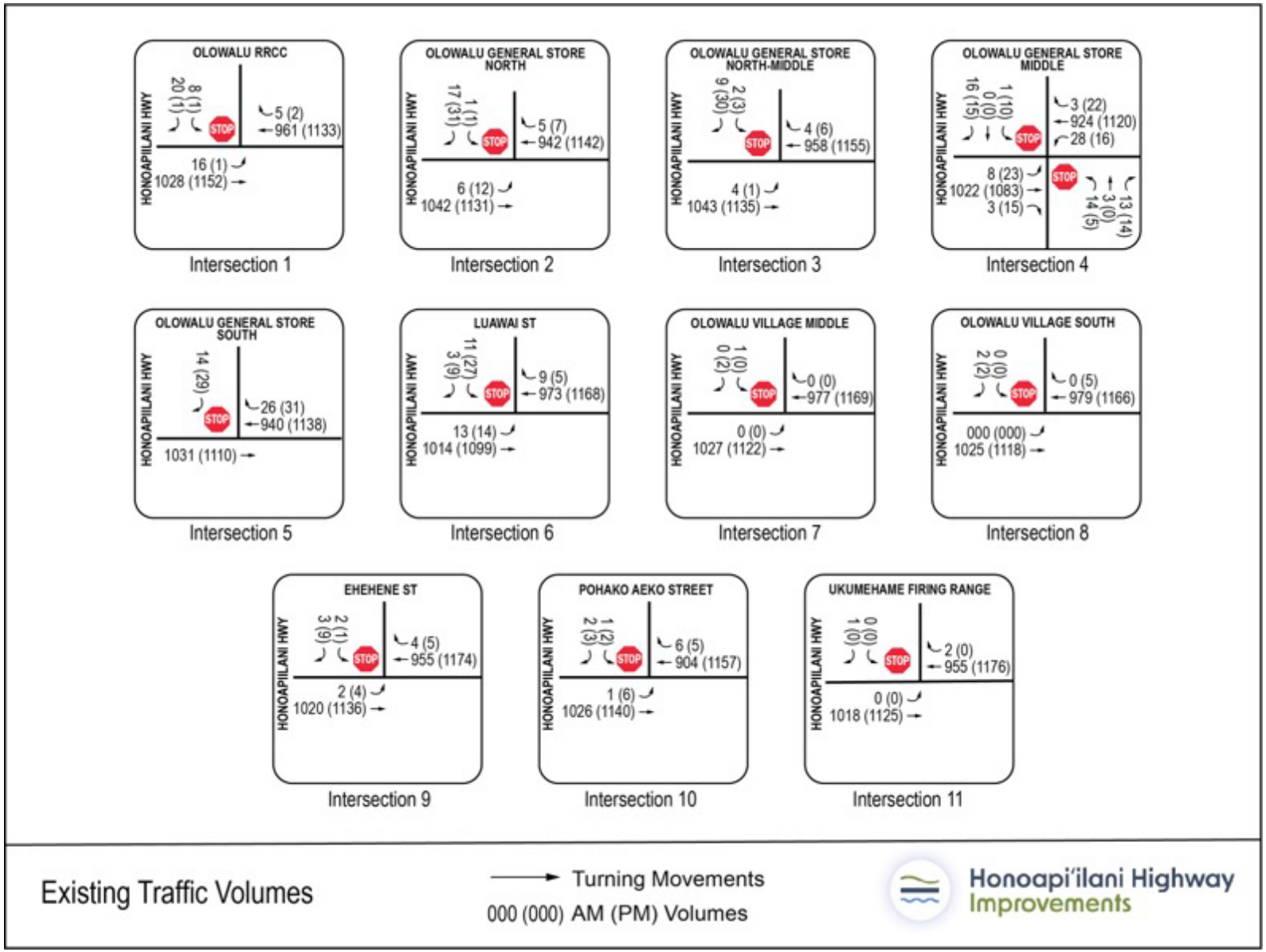


TABLE 3.14-1. **Unsignalized Intersection Level of Service Definition**

LEVEL OF SERVICE (LOS)	UNSIGNALIZED LOS DELAY THRESHOLDS (SECONDS/VEHICLE)
A	≤10
B	>10 to 15
C	>15 to 25
D	>25 to 35
E	>35 to 50
F	>50

Note: Highway Capacity Manual, Sixth Edition

All intersections analyzed for the Project are unsignalized two-way STOP-control (TWSC) with uninterrupted flow on Honoapi‘ilani Highway and STOP-control on the intersecting street approaches.

TABLE 3.14-2 displays key existing conditions operating LOS for each intersection. As shown in this table, the bolded intersections operate at LOS E or LOS F. The LOS shown relate to the left-turn movements out of the minor streets onto Honoapi‘ilani Highway. This is usually the most difficult movement to execute at an unsignalized intersection, especially when there is substantial traffic volume on the main roadway, as is the case with Honoapi‘ilani Highway. Appendix 3.14 includes tables with all of the evaluated traffic movements.

These intersections are incurring LOS E or F because they do not provide median refuge lanes for left turns out from the minor streets. Median refuge would allow these left-turning vehicles to execute the movement in two steps: first from the minor street into the median, and then from the median into the through traffic lane on Honoapi‘ilani Highway. Without this feature, traffic turning out from the minor street needs to feel comfortable in clearing traffic coming from both directions on Honoapi‘ilani Highway—a much more difficult task. Still, while delays result in LOS E or LOS F for these minor-street approaches, the movements involve a relatively small numbers of vehicles.

Intersections such as the Luawai Street, Ehehene Street, and Pōhaku ‘Aeko Street provide median refuge lanes and therefore operate at LOS D or better during both peak periods. Overall, traffic movements on mainline Honoapi‘ilani Highway operate well with very little delay.

TABLE 3.14-2. **Existing Year 2023 Intersection Level of Service**

			AM PEAK HOUR			PM PEAK HOUR		
INTERSECTION	TRAFFIC CONTROL	MOVEMENT	LOS	DELAY	V/C	LOS	DELAY	V/C
Honoapi‘ilani Highway/ Olowalu Recycling and Refuse Convenience Center	TWSC	Highest Delay Minor-Street Movement	E	40	0.22	F	75	0.17
Honoapi‘ilani Highway/ Olowalu General Store North	TWSC	Highest Delay Minor-Street Movement	D	34	0.16	E	45	0.30
Honoapi‘ilani Highway/ Olowalu General Store North-Mid	TWSC	Highest Delay Minor-Street Movement	D	33	0.06	D	31	0.21
Honoapi‘ilani Highway/ Olowalu General Store Middle	TWSC	Highest Delay Minor-Street Movement	F	151	0.63	F	254	0.83
Honoapi‘ilani Highway/ Olowalu General Store South	TWSC	Highest Delay Minor-Street Movement	C	18	0.05	C	24	0.14
Honoapi‘ilani Highway/ Luawai Street	TWSC	Highest Delay Minor-Street Movement	C	20	0.05	D	26	0.14
Honoapi‘ilani Highway/ Olowalu Village Middle	TWSC	Highest Delay Minor-Street Movement	E	48	0.11	F	77	0.18
Honoapi‘ilani Highway/ Olowalu Village South	TWSC	Highest Delay Minor-Street Movement	E	48	0.11	F	77	0.18
Honoapi‘ilani Highway/ Ehehene Street	TWSC	Highest Delay Minor-Street Movement	C	19	0.02	C	24	0.03
Honoapi‘ilani Highway/ Pōhaku ‘Aeko Street	TWSC	Highest Delay Minor-Street Movement	C	18	0.02	C	23	0.03
Honoapi‘ilani Highway/ Ukumehame Firing Range	TWSC	Highest Delay Minor-Street Movement	E	46	0.11	F	79	0.18

Note: Delay shown in seconds per vehicle
TWSC = Two-Way STOP-Controlled

3.14.3.8 Existing Crash Data

The Traffic Branch of HDOT’s Highways Division provided traffic crash data from 2020, 2021, and 2022. TABLE 3.14-3 shows the first and second actions of the crashes identified in the project area. In addition, a traffic crash inventory within the project area (milepost 11 to milepost 17) for the three most recent years of data available in a memorandum dated August 17, 2023.

TABLE 3.14-3. **Existing Crash Data First and Second Actions (2020, 2021, 2022)**

ACTION	SECOND ACTION											
	Overturn/Rollover off Roadway	Ran off Roadway	Cross Median	Collision with Guardrail	Collision with Tree	Collision with Other	Head On	Rear End	Angle (Opposite Direction)	Sideswipe (Opposite Direction)	None	TOTAL
Overturn/Rollover off Roadway											2	**2**
Ran off Roadway	1				1							**2**
Fell/Jumped from Motor Vehicle						1					2	**3**
Cross Centerline				1	1		4		2	3		**11**
Collision with Guardrail					1						1	**2**
Collision with Tree	1											**1**
Ped Darting Out											1	**1**
Rear End			1					5			12	**18**
Angle (Same Direction)											1	**1**
Broadside		1									1	**2**
Collision with Parked Motor Vehicle											1	**1**
Total	**2**	**1**	**1**	**1**	**3**	**1**	**4**	**5**	**2**	**3**	**21**	**44**

Of these 44 major traffic crashes reported, five were motorcycle crashes, one involved a pedestrian, and there were no bicycle crashes. There were 18 lane departure crashes, of which nine crashes involved speeding. There were two fatalities and 13 serious injuries.

As shown in TABLE 3.14-3, the two most prominent categories of crashes were rear end, with 18 occurrences, and crossing of the centerline, with 11 occurrences. Both reflect the characteristics of the existing Honoapi'ilani Highway as an undivided, two-lane roadway with low management of access and limited intersections with turning-movement lanes.

Rear-end crashes had the highest occurrence, 18 of the 44 reported incidents. Three of these 18 accidents were attributed to speeding and seven were attributed to distracted driving. Rear-end accidents could potentially be reduced by providing turning-movement turn lanes at intersections and providing more management of access.

There were 11 occurrences of vehicles crossing the centerline. Of these, four resulted in head-on collisions—potentially the most severe type of motor vehicle accident.

Finally, fourteen of the 44 major traffic crashes reported occurred at night. The existing highway is in a rural area and does not provide street lighting.

3.14.4 Environmental Consequences

This section discusses the data inputs and analyses used to evaluate the No Build and Build Alternatives for the Future Year 2045. For this analysis year, future traffic volumes used in the evaluation are established, and the No Build Alternative and the Build Alternatives are described, evaluated, documented, and summarized.

This section analyzes conditions with these future traffic volumes for the No Build Alternative (retaining the existing highway in its current configuration) as well as four build alternatives in Olowalu and three build alternatives in Ukumehame, which were grouped together as the four Build Alternatives for the Project. FIGURE 3.14-8 illustrates the Build Alternatives.

All of the evaluated roadway alternatives are approximately 6 miles long and extend from Ukumehame near the Pali to Launiupoko, where it joins the existing Lāhainā Bypass. The Build Alternatives would be constructed as principal arterials with paved shoulders—8-foot outside and 6-foot inside. The posted speed limit for the Build Alternatives would be 45 miles per hour to maintain consistency with the existing Lāhainā Bypass that has a posted speed limit of 45 miles per hour.

3.14.4.1 Future Year 2045 Travel Demand

The purpose and need for this project is to increase the resilience of Honoapi‘ilani Highway between Ukumehame and Launiupoko, and the primary way to accomplish this is to relocate the highway mauka out of the project sea-level rise areas. This relocated highway segment is proposed as a two-lane divided highway. However, to assure future reliability for handling unanticipated increases in traffic volumes, it is proposed to acquire enough right-of-way for expansion to a four-lane highway facility (depending on travel demand and the availability of funding).

Future Year 2045 was used to forecast travel demand within the project area to be consistent with the Maui MPO’s current updated travel demand model forecast, which is a component of the *Hele Mai Maui Long-Range Transportation Plan 2040*. This forecast includes assumptions of future land use that have been adopted for use in the model. A review of the model input indicated minimal growth in population and employment within the project area. Therefore, most of the growth in traffic volume forecast for the project area is attributable to regional traffic that is not directly associated with the project area. Should traffic volumes in the long-range future exceed the Future Year 2045 forecast, the corridor studied for this project has the ability to accommodate the increased volumes.

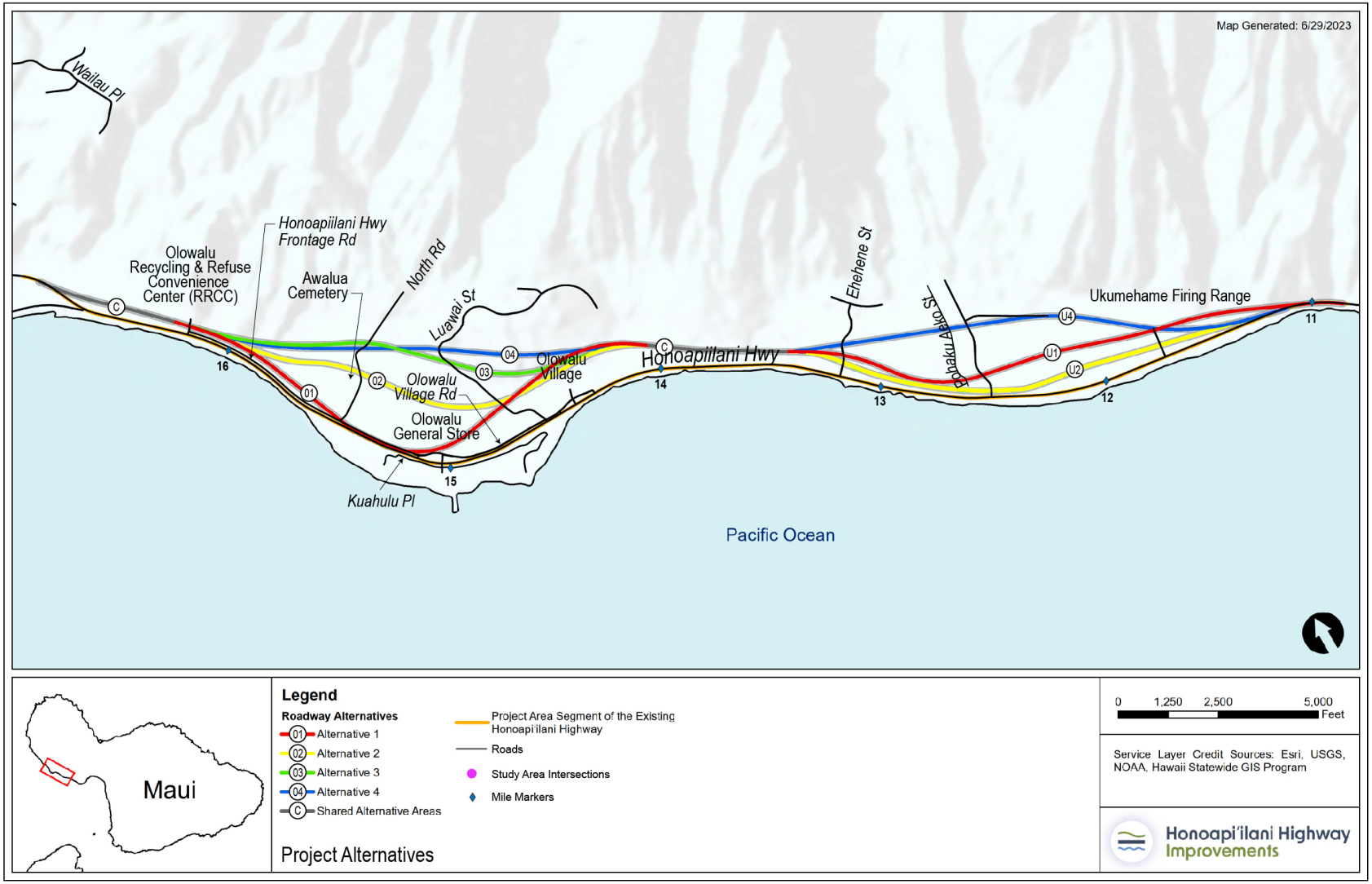
The Maui MPO travel demand forecasts were developed prior to the Lāhainā wildfire. Based on coordination with the MPO and given the extended period of reconstruction and rebound in economic activity, these projections are considered to be appropriate over the long-term. Still, the projections are likely conservatively high for the Future Year 2045, when future traffic volumes will likely be lower than the volumes used in the ~~Draft~~ Final EIS impact assessment.

3.14.4.2 Evaluation of the No Build Alternative and the Build Alternatives

Because of similar access configurations across the alternatives in Olowalu and Ukumehame, it would be feasible to combine an alternative in the Olowalu area with another one in the Ukumehame area to produce a composite Preferred Alternative. Therefore, to summarize the evaluation, four alternatives in Olowalu and three alternatives in Ukumehame were grouped as the Project’s Build

Alternatives. These five alternative roadway configurations, the No Build Alternative and the Build Alternatives, are illustrated in FIGURE 3.14-8 and described in the following sections.

FIGURE 3.14-8. **Build Alternatives**



No Build Alternative

The No Build Alternative reflects future conditions if the Project were not constructed. In this alternative, Honoapi‘ilani Highway would remain in its current alignment and configuration, and existing intersections and traffic control would remain unchanged.

Build Alternatives

Future Roadway Network and Access Assumptions Common to All Build Alternatives

The Build Alternatives differ primarily in roadway alignment but are similar in terms of design parameters and access. All the alternatives would construct a new, divided, two-lane highway with grading, drainage, and roadway structures designed for future expansion to four lanes (if conditions are appropriate and funding is available). Based on the project’s rural setting and applicable AASHTO standards in the AASHTO Roadway Lighting Design Guide, there is no continuous street lighting (although all intersections would include street lighting).

The Build Alternatives would be access-managed roadway facilities with access only allowed at designated intersections. The existing Honoapi‘ilani Highway would remain in place and be accessible from the new highway via cross streets that intersect the Build Alternatives. The existing highway would continue to provide access to adjacent properties and the beaches. All the Build Alternatives would intersect existing cross streets at Olowalu Recycling and Refuse Convenience Center, Luawai Street, Ehehene Street, and Pōhaku ‘Aeko Street.

The following are differences among the Build Alternatives:

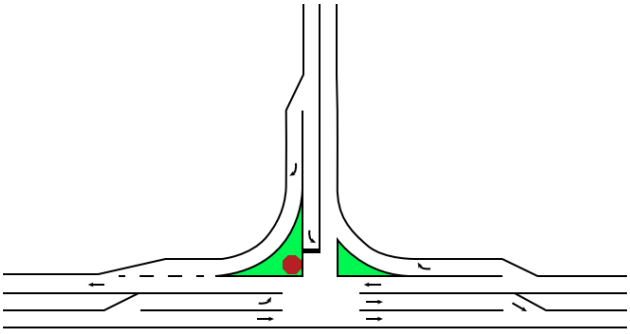
- Build Alternatives 2, 3, and 4 would intersect the new North Road, a subdivision roadway that is currently under construction north of the Olowalu General Store area. Build Alternative 1 would not intersect North Road.
- In Olowalu, to take advantage of the proximity of Build Alternative 1 to the Olowalu General Store area, there would be a four-legged intersection at a new roadway aligned to intersect the existing Honoapi‘ilani Highway near the existing main driveway to the store. To maintain intersection spacing, Build Alternative 1 would not have an intersection at the new North Road. So, Build Alternative 1 has the same number of intersections as the other Build Alternatives.
- While Build Alternatives 2 and 3 intersect the Ukumehame Firing Range driveway, Build Alternatives 1 and 4 do not. This is due to elevation differences between the viaducts in Build Alternatives 1 and 4 and the Ukumehame Firing Range access that make a direct connection difficult. As a result, Build Alternatives 1 and 4 would utilize the intersection at Pōhaku ‘Aeko Street to access the existing Honoapi‘ilani Highway, which would then allow access to the existing Ukumehame Firing Range Driveway.

Additional transportation analyses were conducted between the Draft and Final EIS to assess refinements of the Selected Alternative based on public comments received at the public hearing. The supplemental traffic analysis is in Appendix 3.14 and is discussed in more detail in Chapter 5, Selected Alternative.

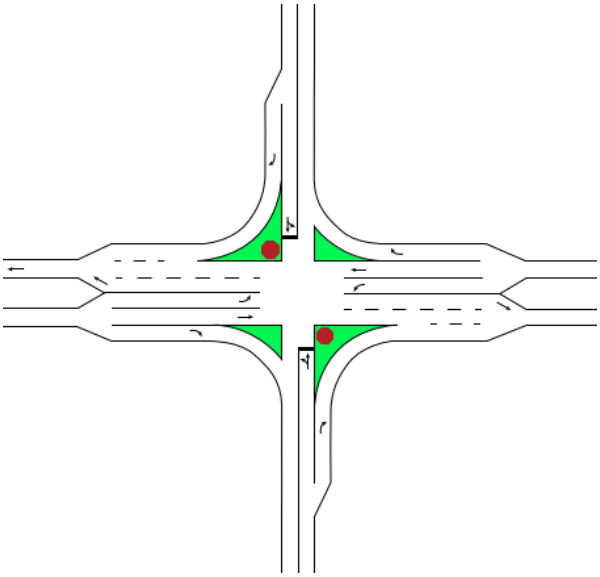
3.14.4.3 Evaluation of Intersections for the Build Alternatives

All intersections in the Build Alternatives would provide channelized minor-street approaches with separate left- and right-turn lanes. Exclusive right- and left-turn lanes would be part of the new Honoapi‘ilani Highway, as would median left-turn refuge lanes at all unsignalized intersections. FIGURE 3.14-9 shows typical layouts for three-legged (that is, T-intersections) and four-legged intersections.

FIGURE 3.14-9. **Build Alternatives – Typical Unsignalized Intersection Configuration**



Typical T-Intersection



Typical Four-Legged Intersection

The signal warrant analysis (Appendix 3.14) projects that one signalized intersection would be warranted for each of the Build Alternatives. For Build Alternative 1, this would be at the intersection with the proposed new road in the Olowalu General Store area. For Build Alternatives 2, 3, and 4, the signalized intersection would be at Luawai Street. The signalized intersections would help to accommodate the projected traffic that would be consolidated on the Luawai Street connection between the new highway and the existing highway.

FIGURE 3.14-10 through FIGURE 3.14-13 show the locations of the access intersections for each Build Alternative.

FIGURE 3.14-14 through FIGURE 3.14-24 illustrate the access intersections in more detail for each Build Alternative along with the detailed study area limits.

FIGURE 3.14-10. **Build Alternative 1: Access from Launiupoko to Ukumehame**

Legend

- Alternative 1
- Detailed Study Area Limits
- Roads (road is light gray over aerial)

Alternative 1 Intersections

0 500 1000 2000 3000 Feet

Service Layer Credit Sources: Esri, HERE, DeLorme, increment P Corp., NPS, NRCan, Ordnance Survey, © OpenStreetMap contributors, USGS, NGA, NASA, CGIAR, N

Honoapi'ilani Highway Improvements

FIGURE 3.14-11. **Build Alternative 2: Access from Launiupoko to Ukumehame**

Legend

Alternative 2

Detailed Study Area Limits

Roads (road is light gray over aerial)

Alternative 2 Intersections

0 500 1000 2000 3000 Feet

Service Layer Credit Sources: Esri, HERE, DeLorme, increment P Corp., NPS, NRCan, Ordnance Survey, © OpenStreetMap contributors, USGS, NGA, NASA, CGIAR, N

Honoapi'ilani Highway Improvements

FIGURE 3.14-12. **Build Alternative 3: Access from Launiupoko to Ukumehame**

Legend

Alternative 3

Detailed Study Area Limits

Roads (road is light gray over aerial)

Alternative 3 Intersections

0 500 1000 2000 3000 Feet

Service Layer Credit Sources: Esri, HERE, DeLorme, increment P Corp., NPS, NRCan, Ordnance Survey, © OpenStreetMap contributors, USGS, NGA, NASA, CGIAR, N

Honoapi'ilani Highway Improvements

FIGURE 3.14-13. **Build Alternative 4: Access from Launiupoko to Ukumehame**

Legend

Alternative 4

Detailed Study Area Limits

Roads (road is light gray over aerial)

Alternative 4 Intersections

0 500 1000 2000 3000 Feet

Service Layer Credit Sources: Esri, HERE, DeLorme, increment P Corp., NPS, NRCan, Ordnance Survey, © OpenStreetMap contributors, USGS, NGA, NASA, CGIAR, N

Honoapi'ilani Highway Improvements

FIGURE 3.14-14. **Olowalu – Build Alternatives 1 through 4: Olowalu Recycling and Refuse Convenience Center Access**

FIGURE 3.14-15. **Olowalu –Build Alternative 1: Access between North Road and Luawai Street Intersections**

FIGURE 3.14-16. **Olowalu – Build Alternative 2: Access between North Road and Luawai Street Intersections**

FIGURE 3.14-17. **Olowalu – Build Alternative 3: Access between North Road and Luawai Street Intersections**

FIGURE 3.14-18. **Olowalu – Build Alternative 4: Access between North Road and Luawai Street Intersections**

FIGURE 3.14-19. **Ukumehame – Build Alternative 1: Access between Ehehene Street and Pōhaku 'Aeko Street Intersections**

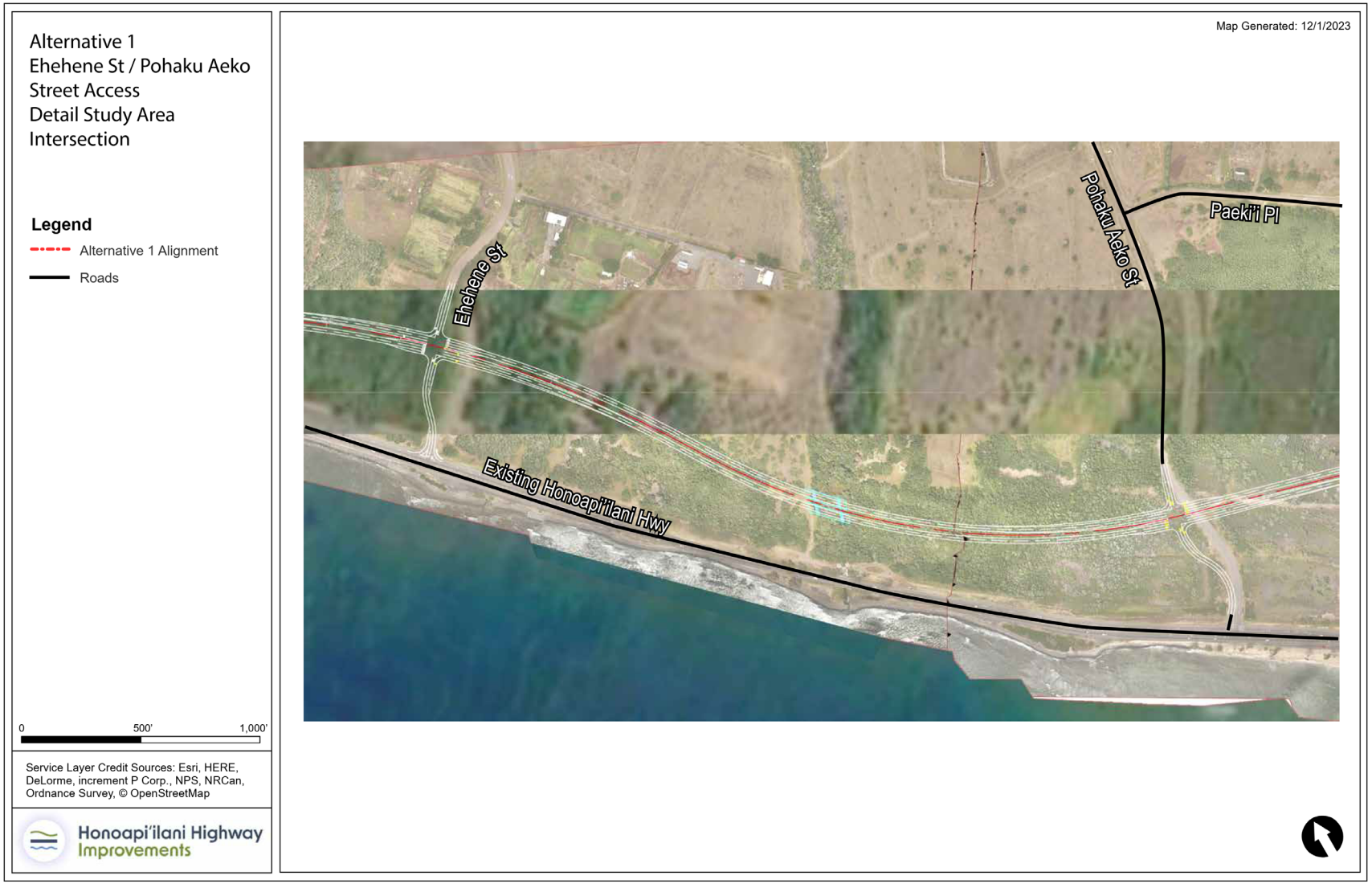


FIGURE 3.14-20. **Ukumehame – Build Alternatives 2 and 3: Access between Ehehene Street and Pōhaku 'Aeko Street Intersections**

FIGURE 3.14-21. **Ukumehame – Build Alternative 4: Access between Ehehene Street and Pōhaku 'Aeko Street Intersections**

FIGURE 3.14-22. **Ukumehame – Build Alternative 1: Ukumehame Firing Range Access**

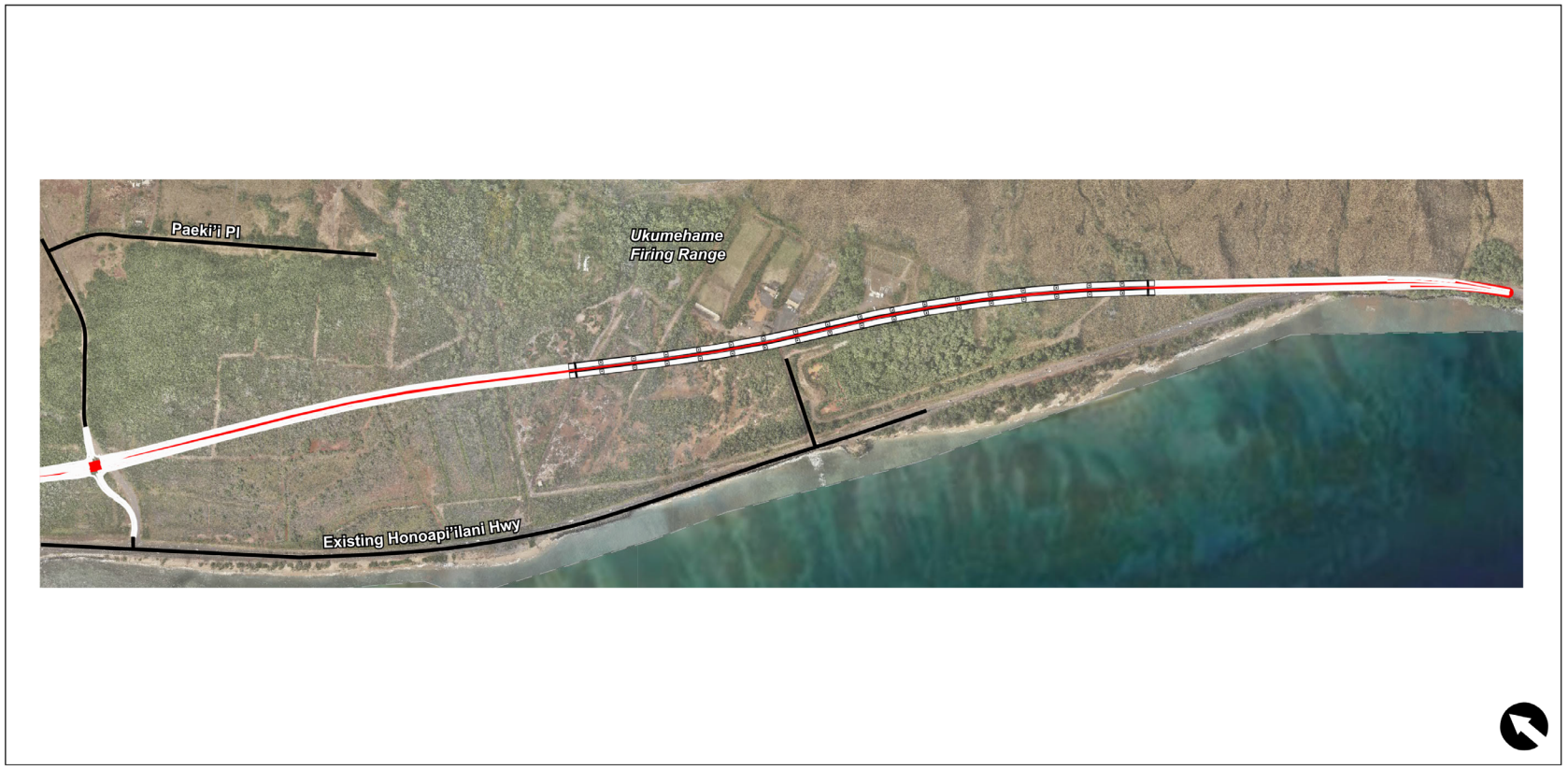


FIGURE 3.14-23. **Ukumehame – Build Alternatives 2 and 3: Ukumehame Firing Range Access**

Alternatives 2/3 Pohaku Aeko St / Ukumehame Firing Range Access Detail Study Area Intersection

Legend

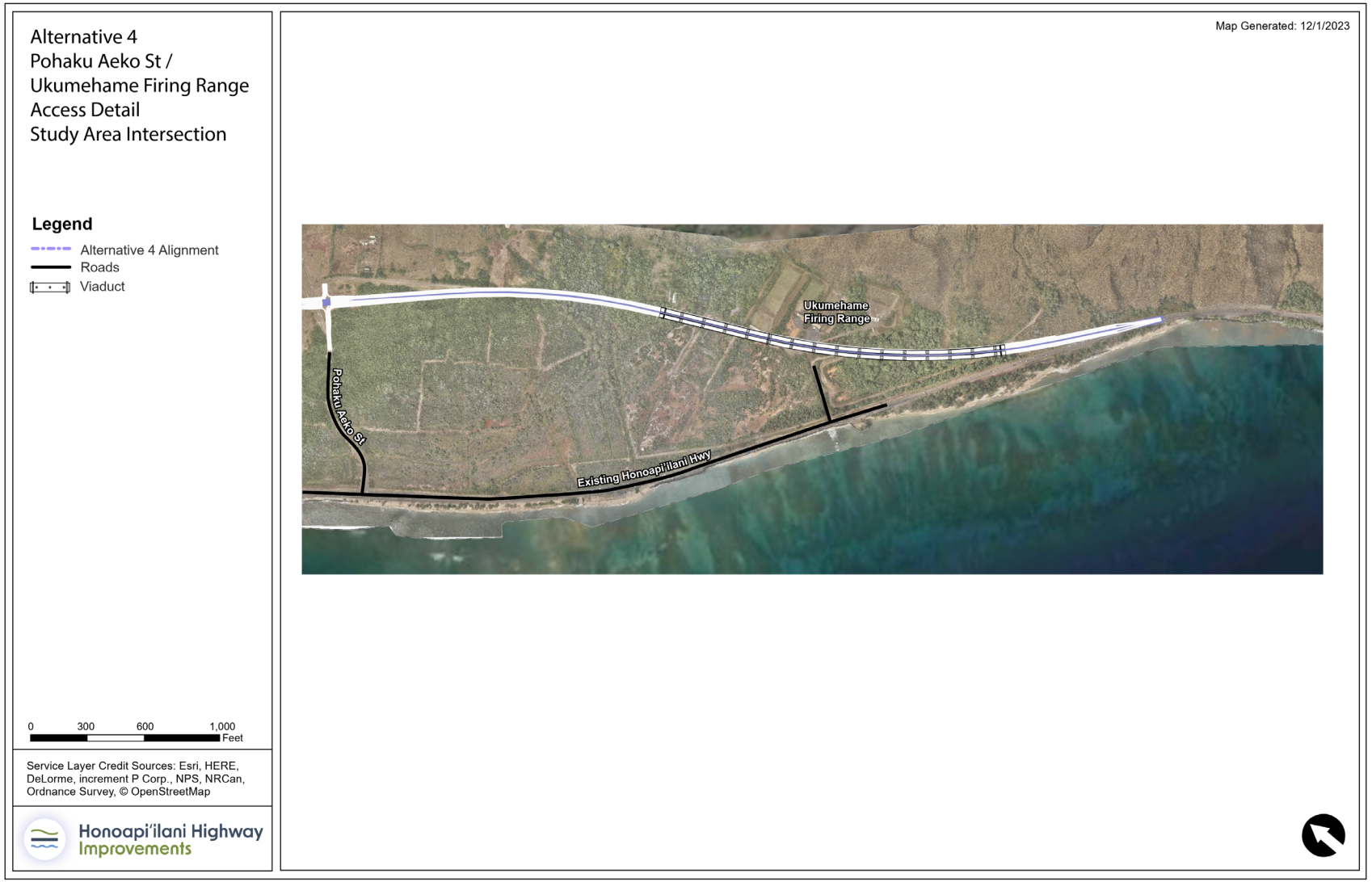
- Alternatives 2/3
- Roads
- Viaduct

0 500 1000 Feet

Service Layer Credit Sources: Esri, HERE, DeLorme, increment P Corp., NPS, NRCan, Ordnance Survey, © OpenStreetMap contributors, USGS, NGA, NASA, CGIAR, N

Honoapi'ilani Highway Improvements

FIGURE 3.14-24. **Ukumehame – Build Alternative 4: Ukumehame Firing Range Access**



3.14.4.4 Transit Service

No significant changes to transit service are anticipated within the project area.

3.14.4.5 Bicycle/Pedestrian Facilities

The ~~Project does not~~ Draft EIS did not include bicycle lanes or other bicycle or pedestrian facilities for any of the Build Alternatives. The Build Alternatives are intended to reallocate regional traffic from the existing Honoapiʻilani Highway to the new Honoapiʻilani Highway, thereby substantially reducing traffic on the existing highway and making it more conducive to biking on a shared road basis (as it is currently designated).

Further, the *West Maui Greenway Plan* currently being developed by the Maui County Department of Parks and Recreation includes concepts of a greenway trail roughly paralleling the existing Honoapiʻilani Highway. Although formal plans have not been developed, the proposed greenway could provide opportunities for new bicycle and pedestrian facilities.

Comments were received at the public hearings requesting that a shared-use path be included as part of the project (see Chapter 8 Public Involvement and Agency Coordination). Based on these comments, this Final EIS includes a parallel shared use path adjacent to the relocated highway as well as two intersections with the relocated highway that support multimodal crossings (see Chapter 5, Selected Alternative).

3.14.4.6 Projected Segment Operations

Projected Future Year 2045 roadway segment and intersection turning-movement volumes for the AM and PM peak-hour periods were used to evaluate highway and intersection operations on both the existing and future Honoapiʻilani Highway.

Project Area Traffic Volumes

Future traffic volumes were based on the Maui MPO 2045 modeled travel demand. This model forecast an average annual traffic growth rate of 0.8%. The 2023 pre-Lāhainā wildfire traffic volumes were used as a baseline and the Maui MPO model growth rate was applied to develop the future condition. The Maui MPO model land use data forecast minimal growth within the project area, so this growth in traffic volume is attributable primarily to regional through traffic. The same traffic volumes projected for the project area were used for the No Build Alternative and the Build Alternatives. However, there are minor localized differences among the Build Alternatives as alignments differ slightly in where and how they would intersect with existing cross streets.

FIGURE 3.14-25 and FIGURE 3.14-26 illustrate the projected Future Year 2045 traffic volumes at the Olowalu Recycling and Refuse Convenience Center and Ukumehame Firing Range driveways, respectively. As described in Section 3.14.3, these figures illustrate the distribution of hourly traffic volumes over a 24-hour period by direction as well as for the two-way total. Reference lines indicate the maximum directional operational volumes for both the existing Honoapiʻilani Highway—based on its current level of access management and roadway geometrics—and for the new Honoapiʻilani Highway, with improved access management and roadway geometrics. Because through traffic on Honoapiʻilani Highway is largely unconstrained by intersecting street traffic, these maximum

directional operational volumes were assumed to be a measure of through capacity. Signalized intersections, if implemented, would be timed to prioritize movement and maintain capacity for this though traffic on the new Honoapi‘ilani Highway.

Project Area Evaluation

As shown in FIGURE 3.14-25 and FIGURE 3.14-26, both AM and PM peak-hour Future Year 2045 volumes on Honoapi‘ilani Highway are projected to be less than the maximum directional operational volume for both the existing and new Honoapi‘ilani Highway. The maximum directional operational volume is estimated at 1,575 vehicles per hour (vph) for the existing Honoapi‘ilani Highway and 1,900 vph for the new Honoapi‘ilani Highway. This higher maximum directional operational volume for the new highway is projected because of better management of the number of accesses and improved roadway segment and intersection configurations. These design elements are recommended to ensure that future volumes and associated LOS are maintained by managing the number of future accesses along the new highway to minimize traffic conflicts. This will assist in maintaining the integrity of the highway's functional classification.

The ratio of this demand volume to the maximum directional operational volume is analogous to a volume/capacity (V/C) ratio. Using the projected Future Year 2045 traffic volumes, the maximum directional operational volume for existing Honoapi‘ilani Highway at 1,440 vph, and the maximum directional operational volume for the new Honoapi‘ilani Highway at 1,900 vph, the V/C for the alternatives would be as follows:

- No Build Alternative: V/C = 0.91 LOS E
- All Build Alternatives: V/C = 0.76 LOS C

This indicates that while the existing Honoapi‘ilani Highway could accommodate projected Future Year 2045 traffic volumes, compared to any of the Build Alternatives, it will experience higher delays and be more vulnerable to any traffic event that interferes with the flow of through traffic.

3.14.4.7 Projected Future Year 2045 Intersection Traffic Operations

FIGURE 3.14-27 through FIGURE 3.14-31 show the intersection numbering used for each alternative to evaluate intersections in the operational summary. The intersections were analyzed using Synchro Studio 11 software and methodologies for signalized and unsignalized intersections outlined in the *Highway Capacity Manual (Sixth Edition)*.

FIGURE 3.14-32 summarizes the projected Year 2045 AM and PM peak hour intersection turning movements at these intersections.

FIGURE 3.14-4 and FIGURE 3.14-5 compare the projected Future Year 2045 peak-hour LOS for each intersection by alternative for the AM and PM peak hours, respectively. For the Build Alternatives, both proposed and existing Honoapi‘ilani Highway intersections are evaluated, with the greatest difference in operations projected to occur at the intersections on the existing highway. For the unsignalized intersections, the LOS shown relate to the left-turn movements out of the minor streets onto Honoapi‘ilani Highway. This is usually the most difficult movement to execute at an unsignalized intersection, especially when there is substantial traffic volume on the main roadway (as is the case

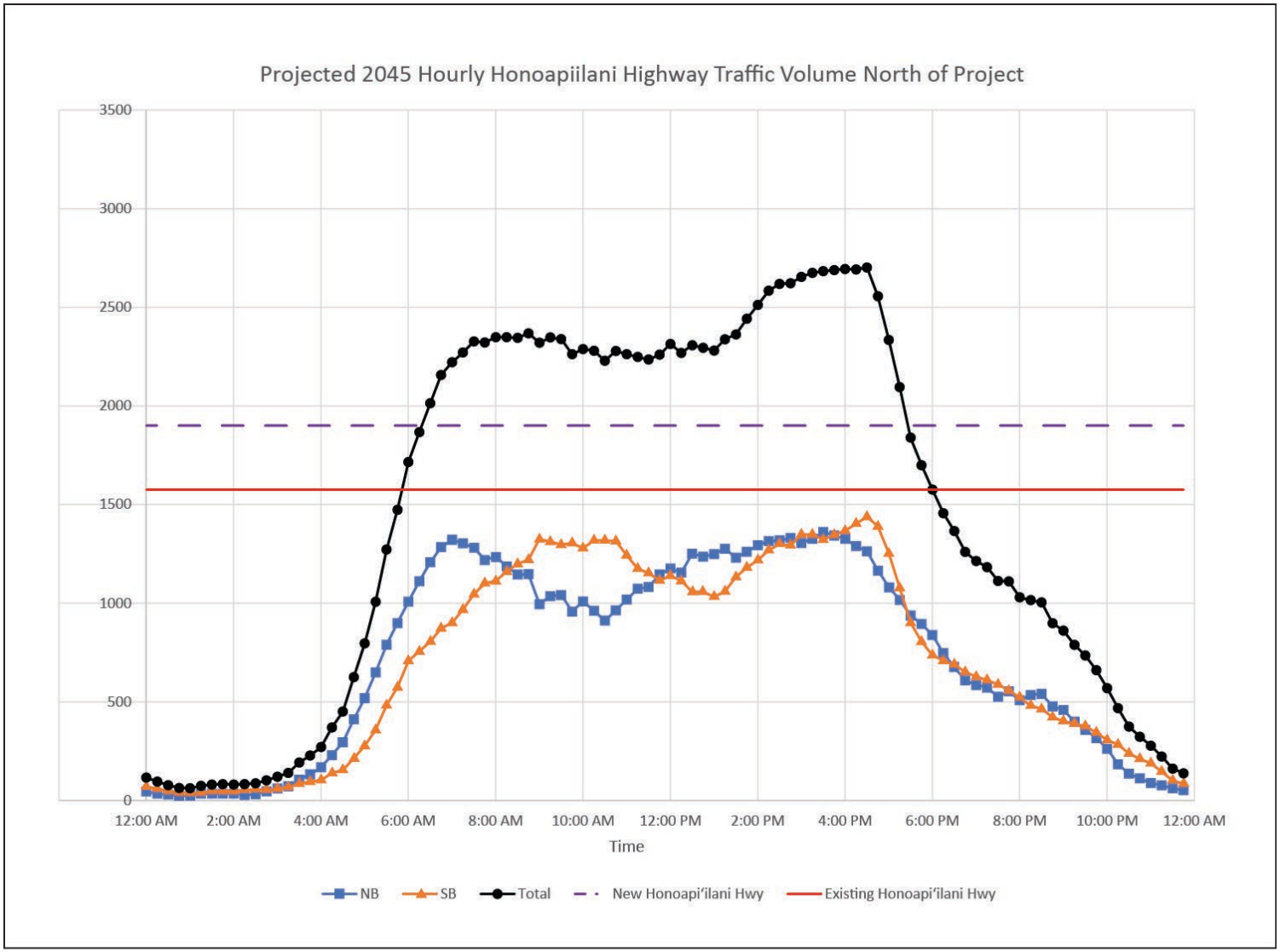
with both the existing and future highway). Appendix 3.14 includes tables with all of the evaluated traffic movements.

Future through traffic is projected to primarily utilize the alignments of the Build Alternative, thereby substantially reducing the traffic volume on the existing Honoapiʻilani Highway. This reduced traffic volume on the existing highway would in turn reduce side-street delays for vehicles accessing the highway from locations like beaches and the Olowalu General Store.

For the No Build Alternative, through traffic would remain on the existing Honoapiʻilani Highway, which would result in increased delays on side-street approaches of intersections and increased LOS E and F operations for minor-street traffic movements.

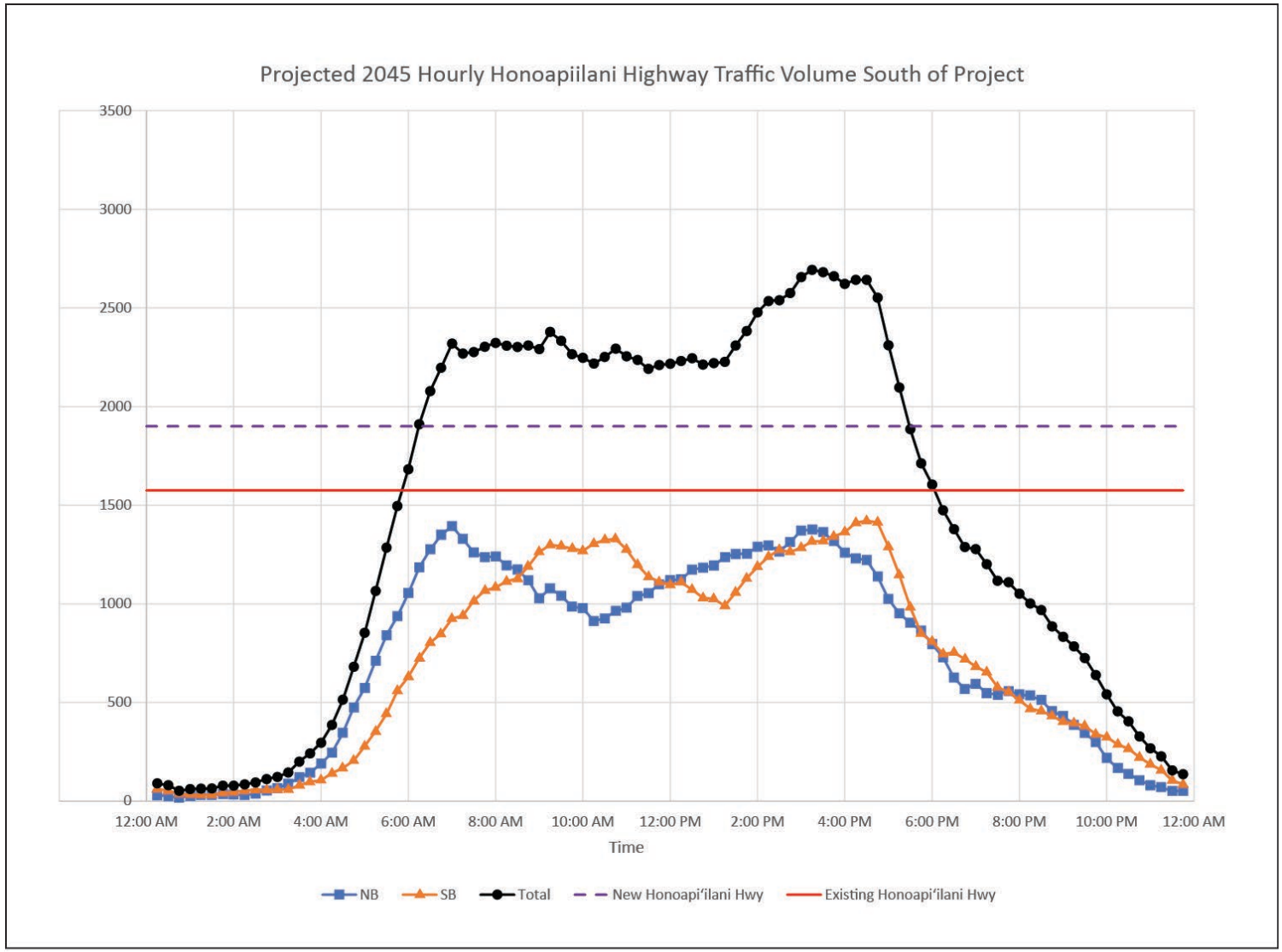
For the Build Alternatives, all intersections on the new Honoapiʻilani Highway are projected to operate during the peak-hour periods at LOS D or better, which are typically considered acceptable intersection operational levels for peak-hour conditions. This includes the overall LOS D for the one proposed signalized intersection at the Olowalu General Store intersection for Build Alternative 1 and the Luawai Street intersection for Build Alternatives 2, 3, and 4.

FIGURE 3.14-25. **Future Year 2045 Honoapi'ilani Highway Traffic Volumes at Launiupoko in the Vicinity of Milepost 16.5**



Projected 2045 Hourly Honoapiilani Highway Traffic Volume North of Project

FIGURE 3.14-26. **Future Year 2045 Honoapi'ilani Highway Traffic Volumes at Ukumehame in the Vicinity of Milepost 11.5**



Projected 2045 Hourly Honoapiilani Highway Traffic Volume South of Project

FIGURE 3.14-27. **Future Year 2045 No Build Alternative Intersection Locations**

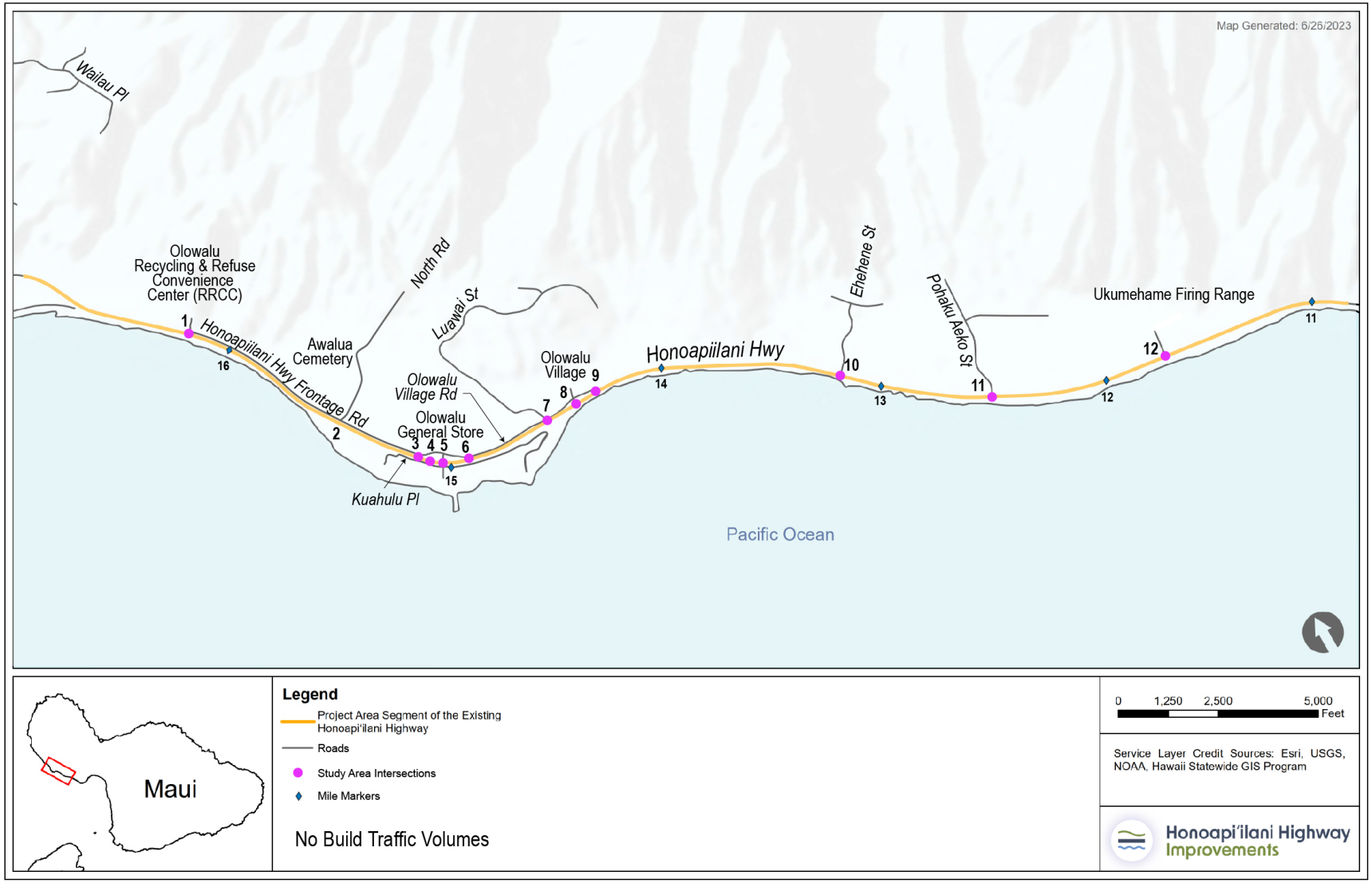


FIGURE 3.14-28. **Future Year 2045 Build Alternative 1 Intersection Locations**

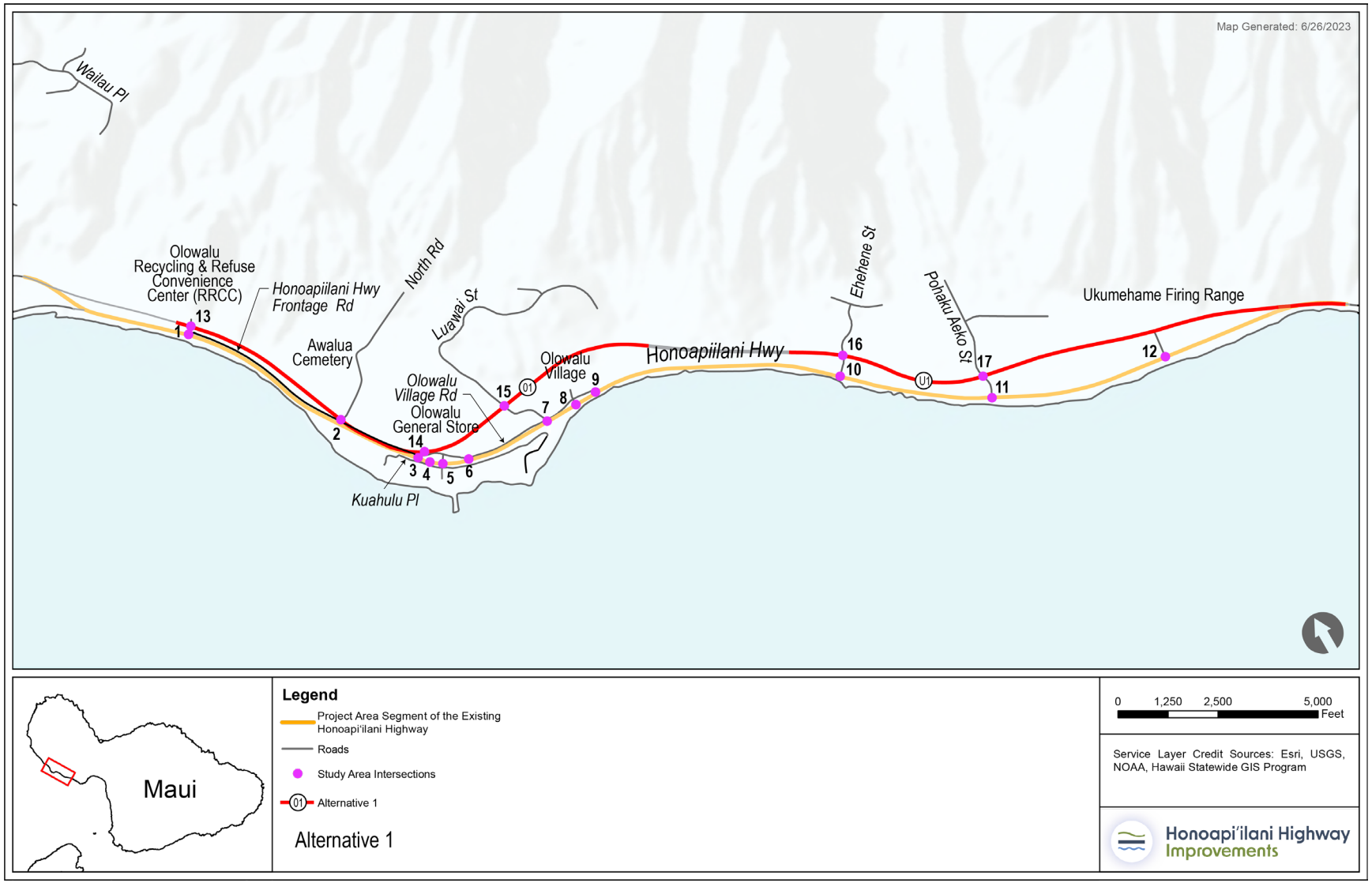


FIGURE 3.14-29. **Future Year 2045 Build Alternative 2 Intersection Locations**

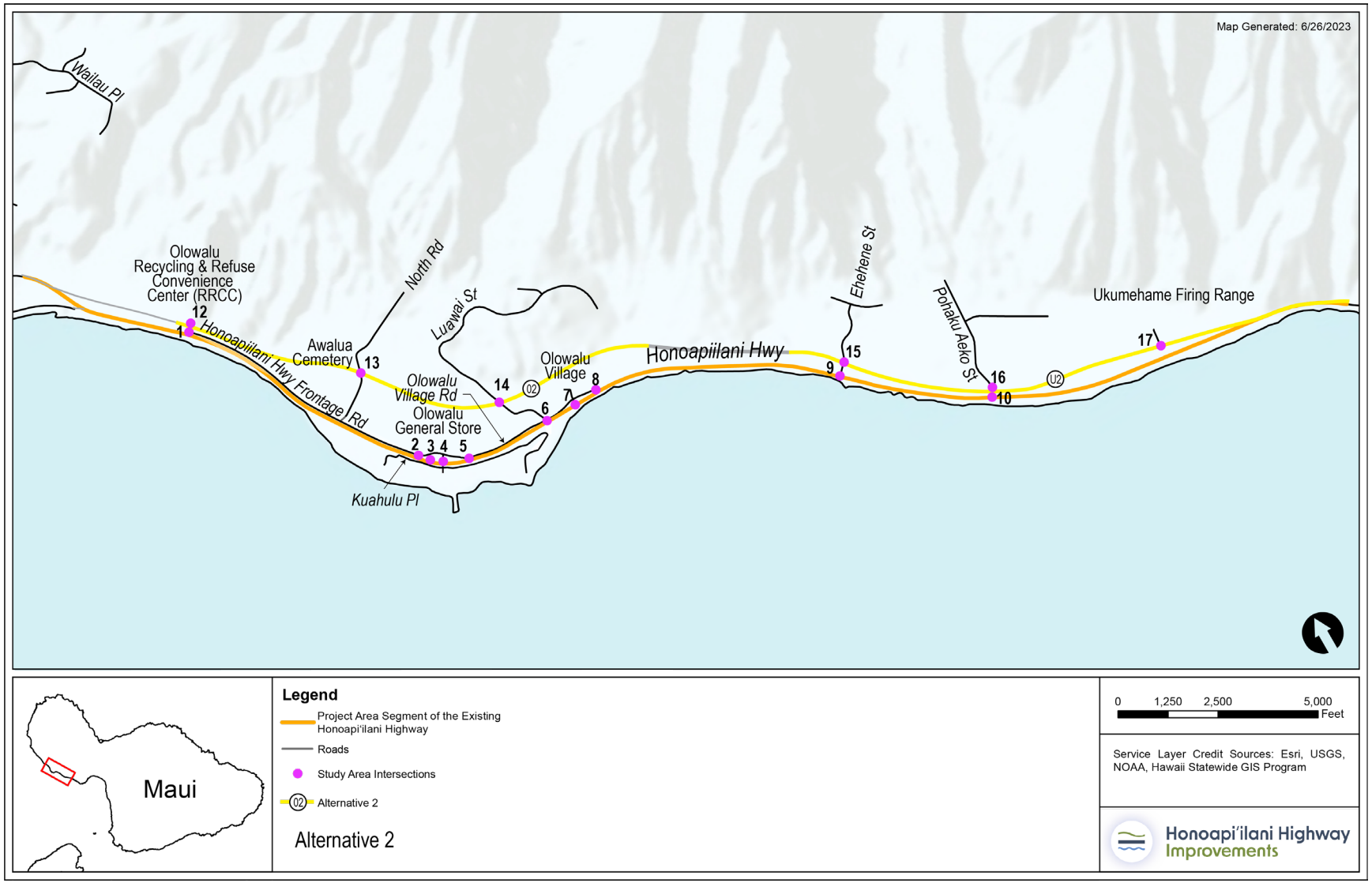


FIGURE 3.14-30. **Future Year 2045 Build Alternative 3 Intersection Locations**

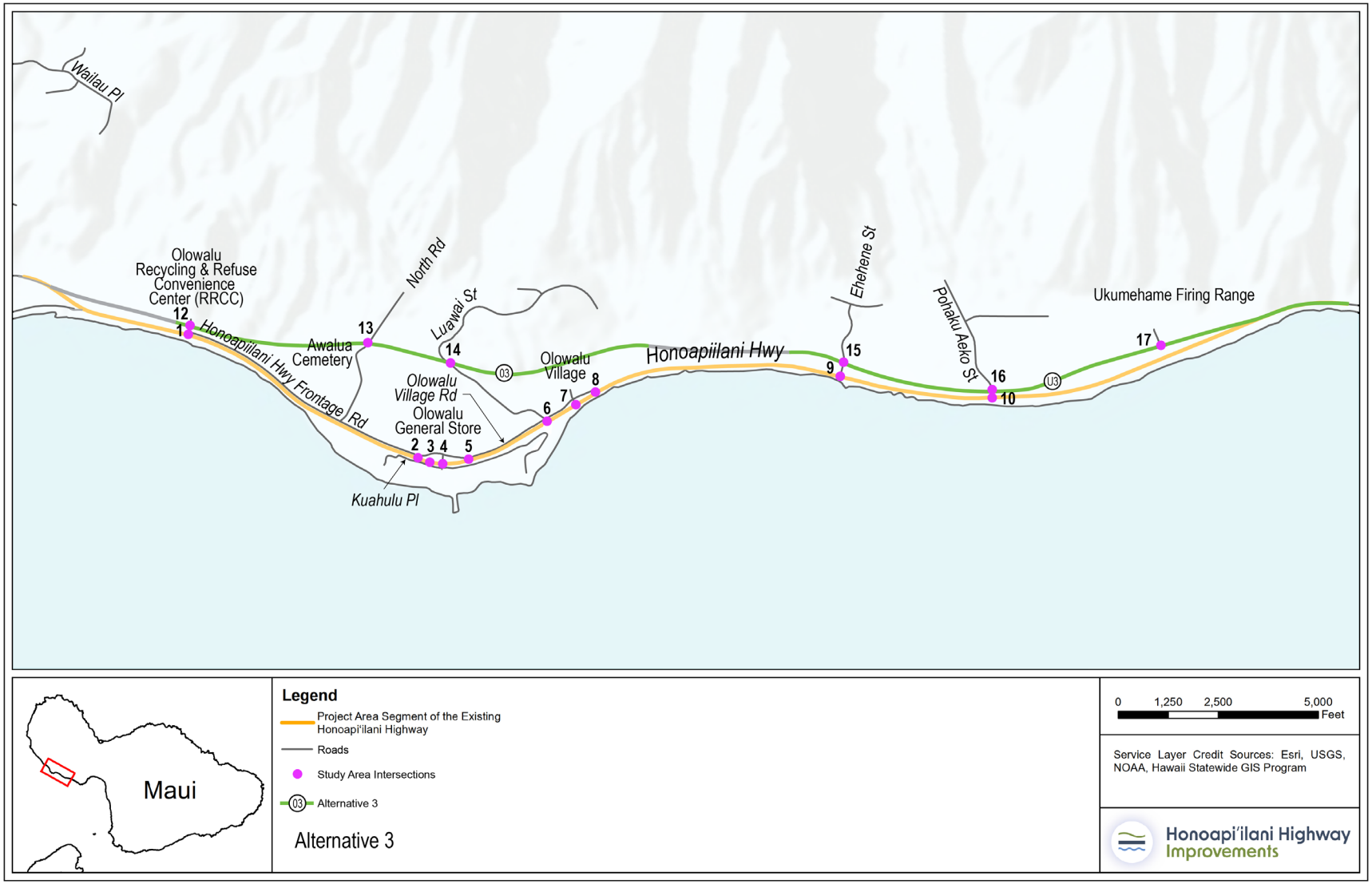


FIGURE 3.14-31. **Future Year 2045 Build Alternative 4 Intersection Locations**

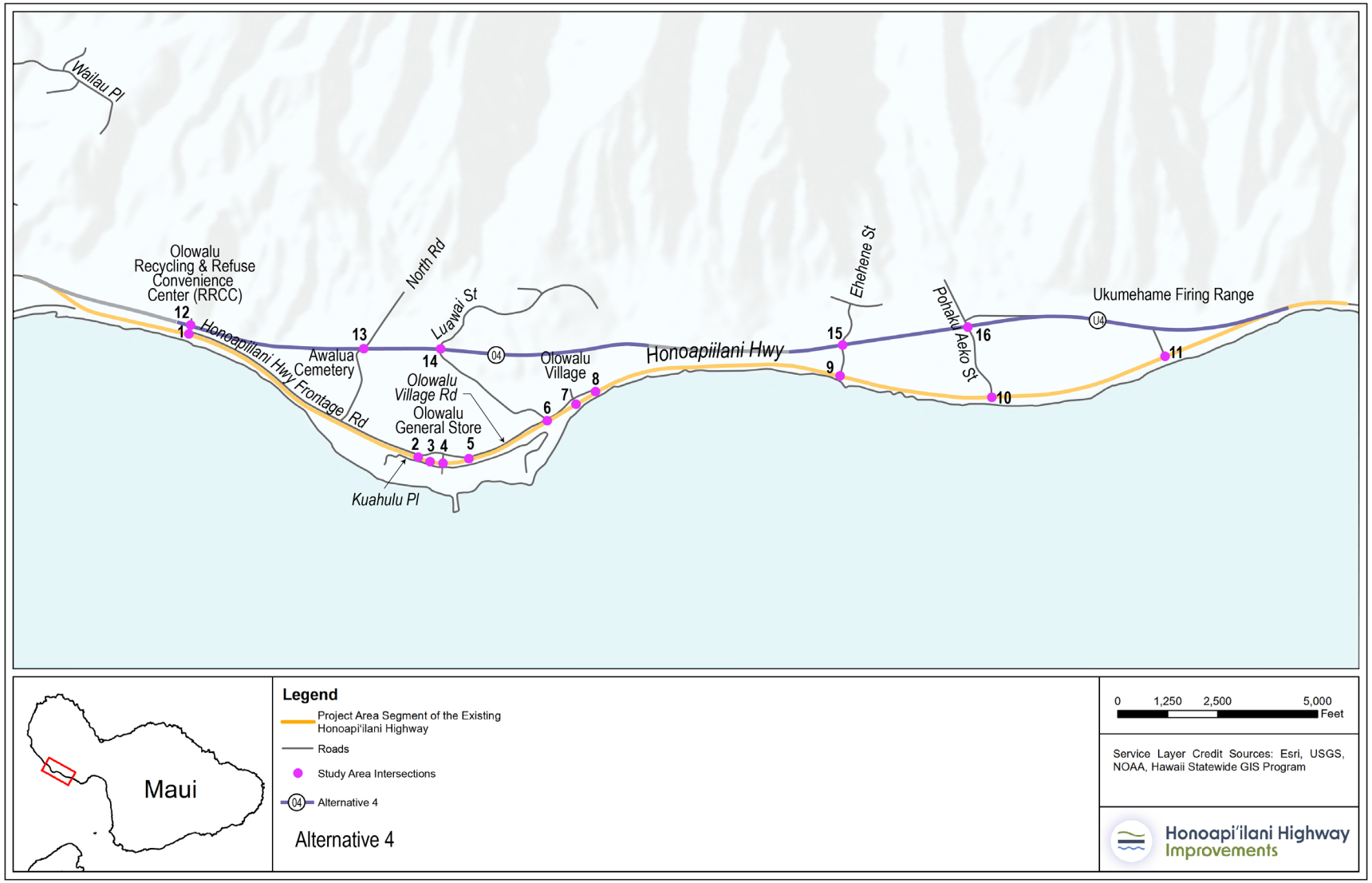


FIGURE 3.14-32 **Projected Year 2045 No Build Peak Hour Traffic Volumes**

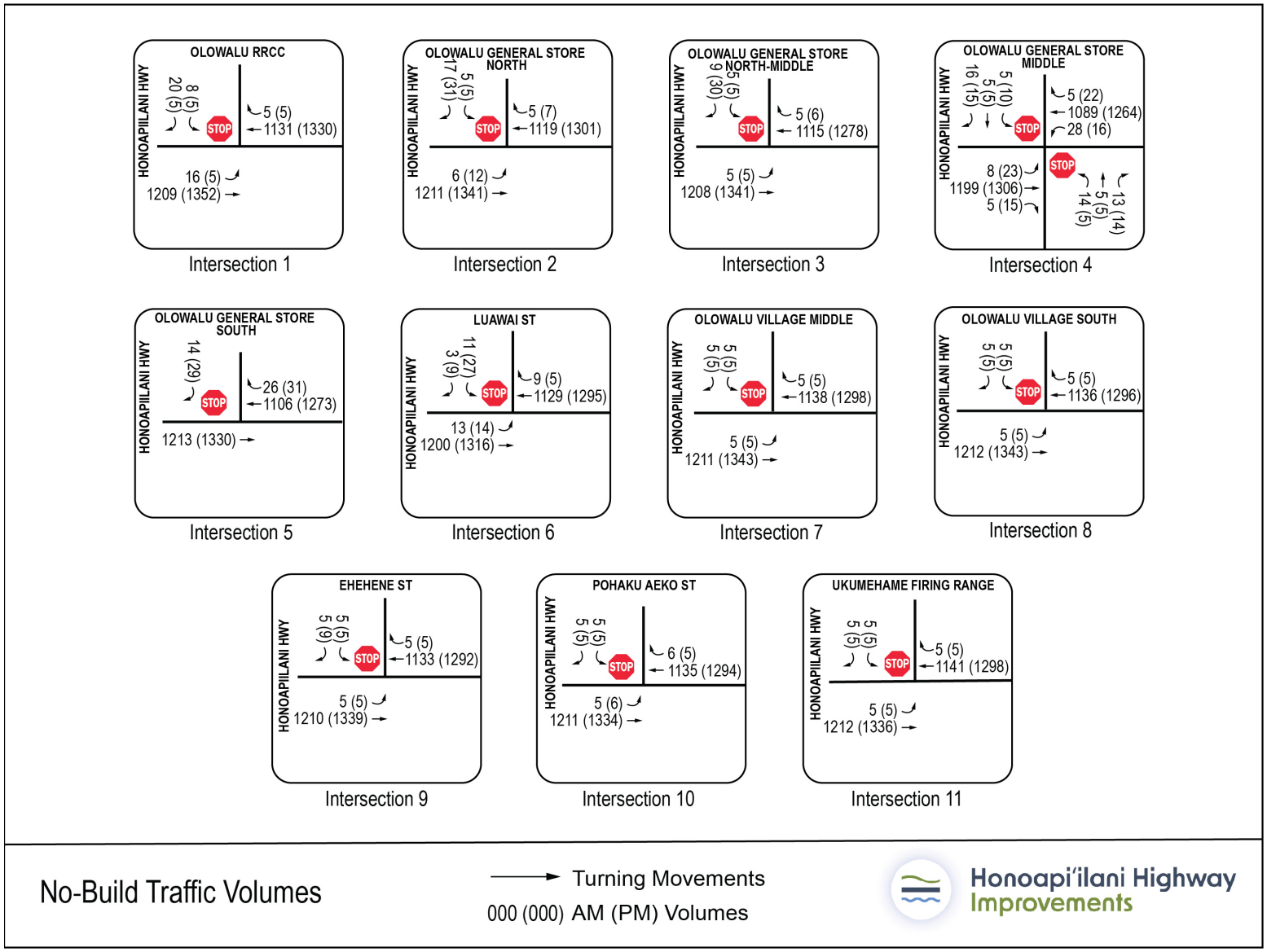


FIGURE 3.14-33. **Projected Year 2045 Alternative 1 Peak Hour Traffic Volumes**

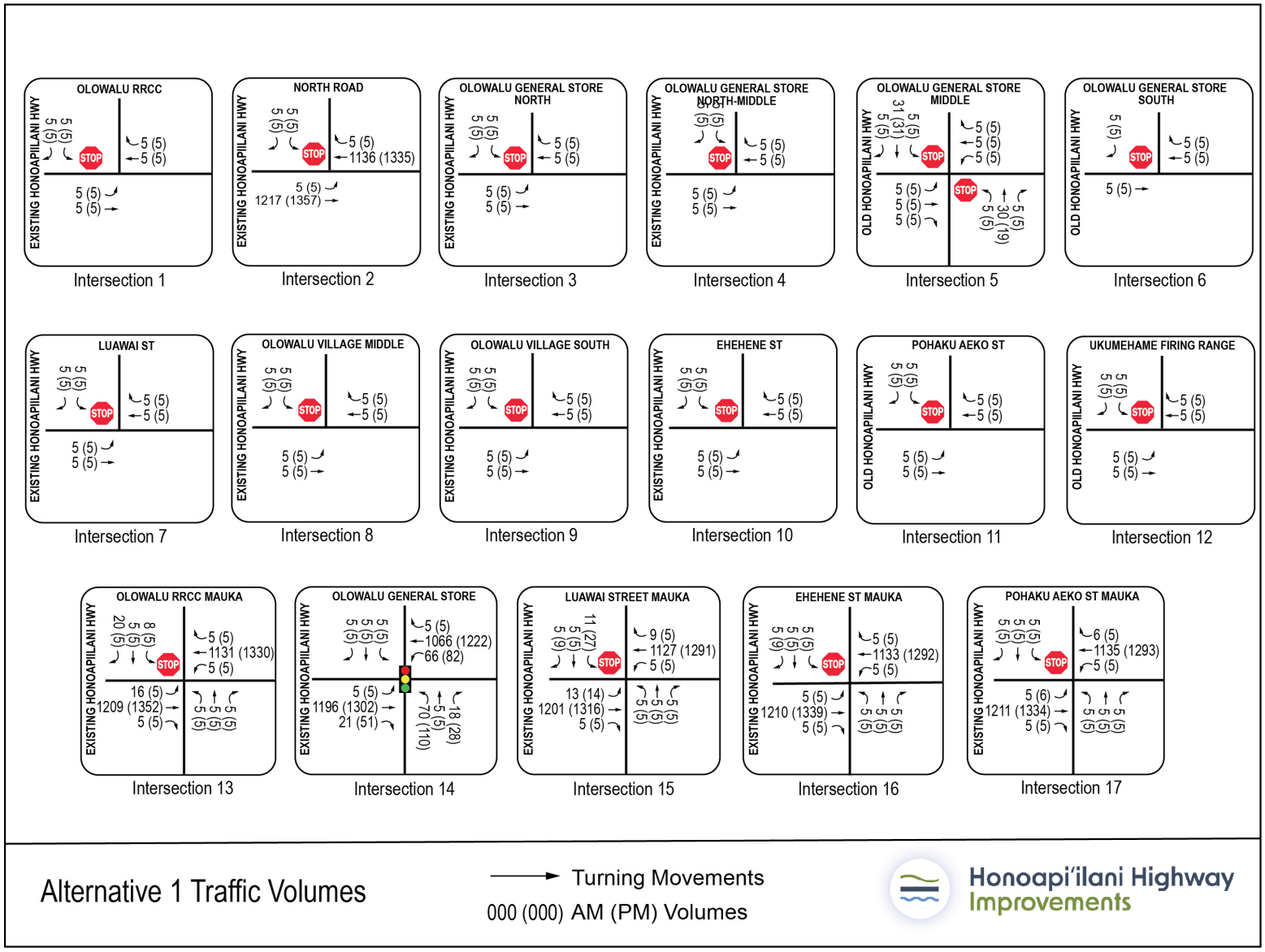


FIGURE 3.14-34. **Projected Year 2045 Alternative 2 Peak Hour Traffic Volumes**

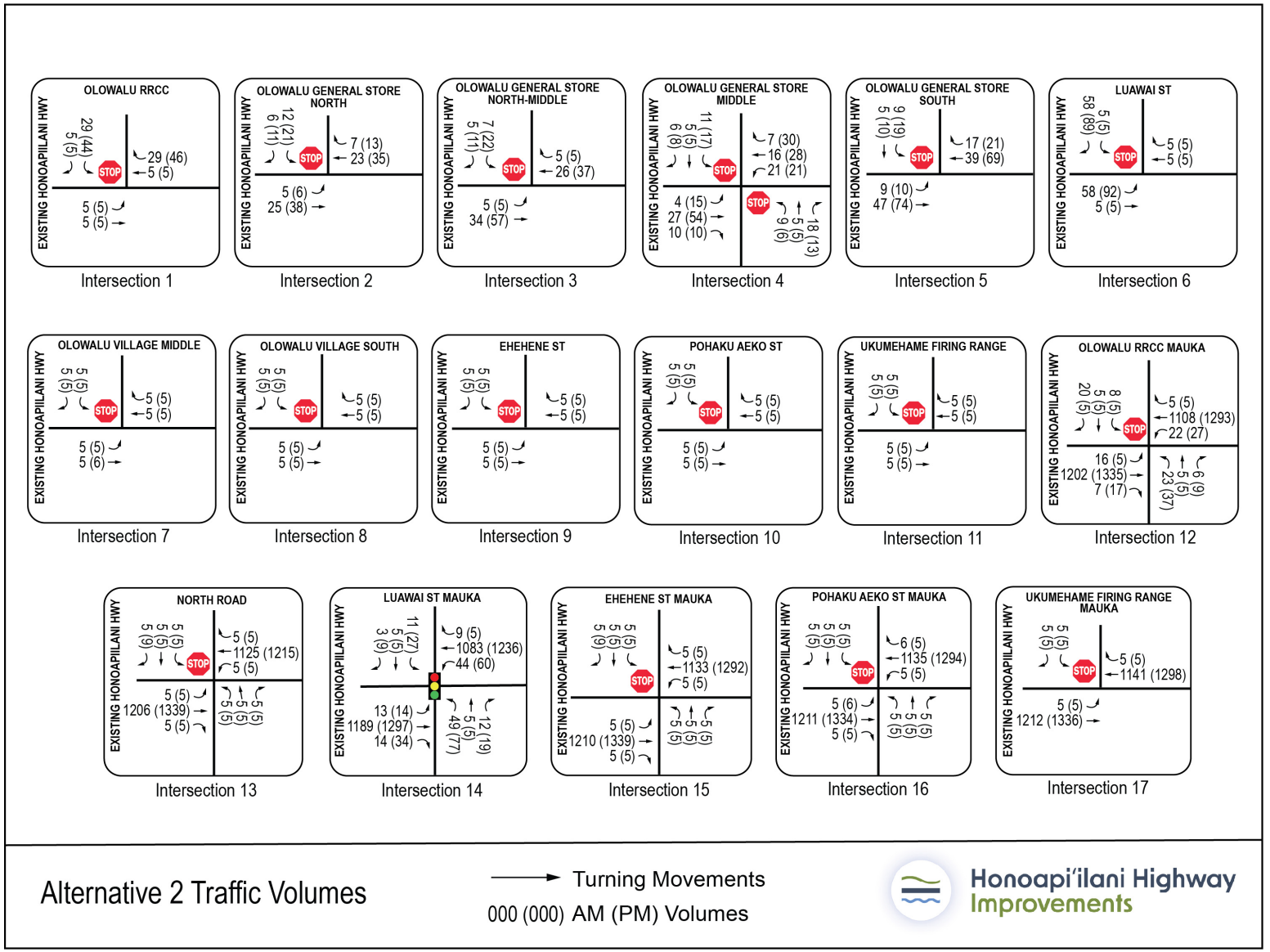


FIGURE 3.14-35. **Projected Year 2045 Alternative 3 Peak Hour Traffic Volumes**

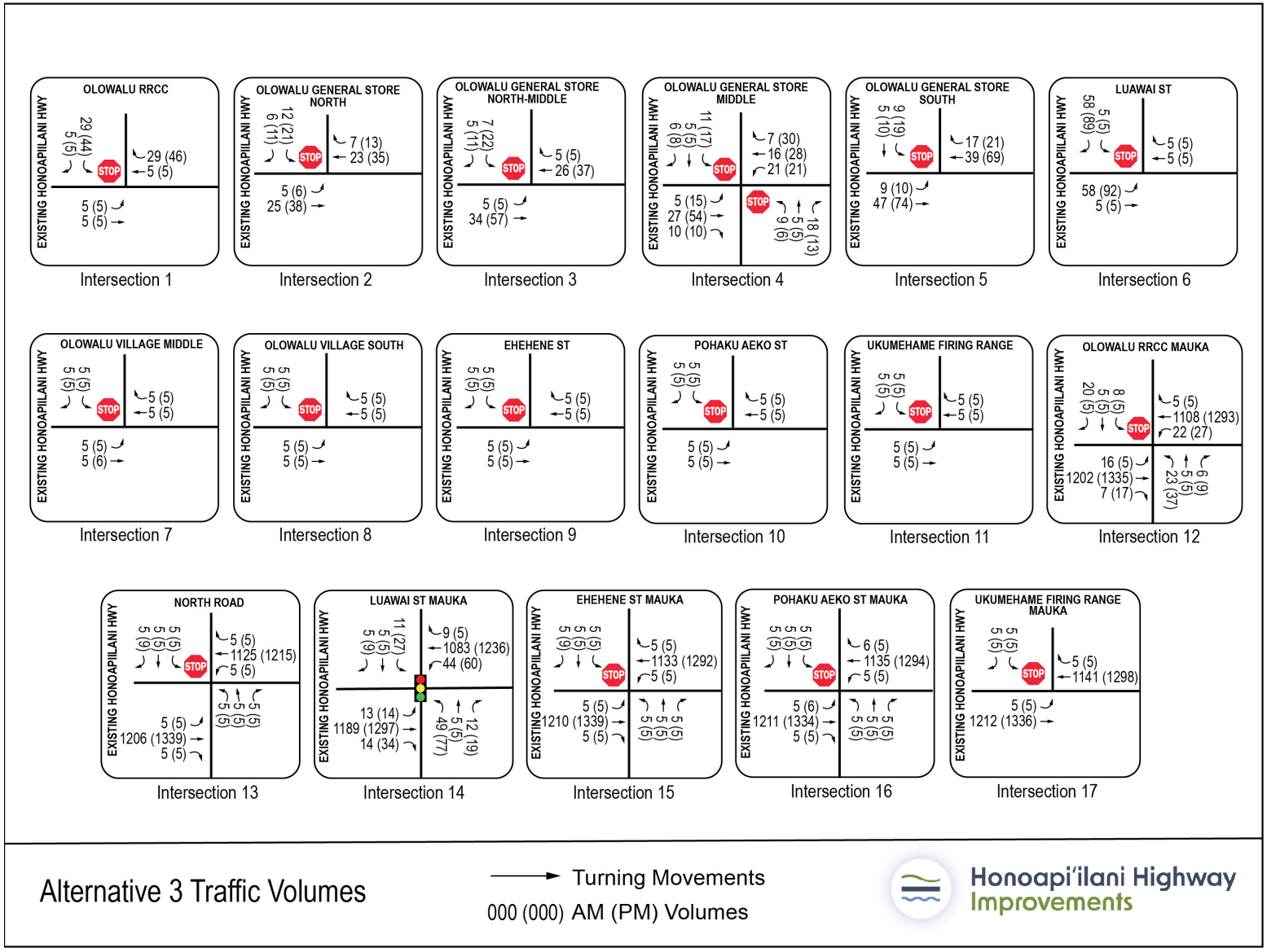


FIGURE 3.14-36. **Projected Year 2045 Alternative 4 Peak Hour Traffic Volumes**

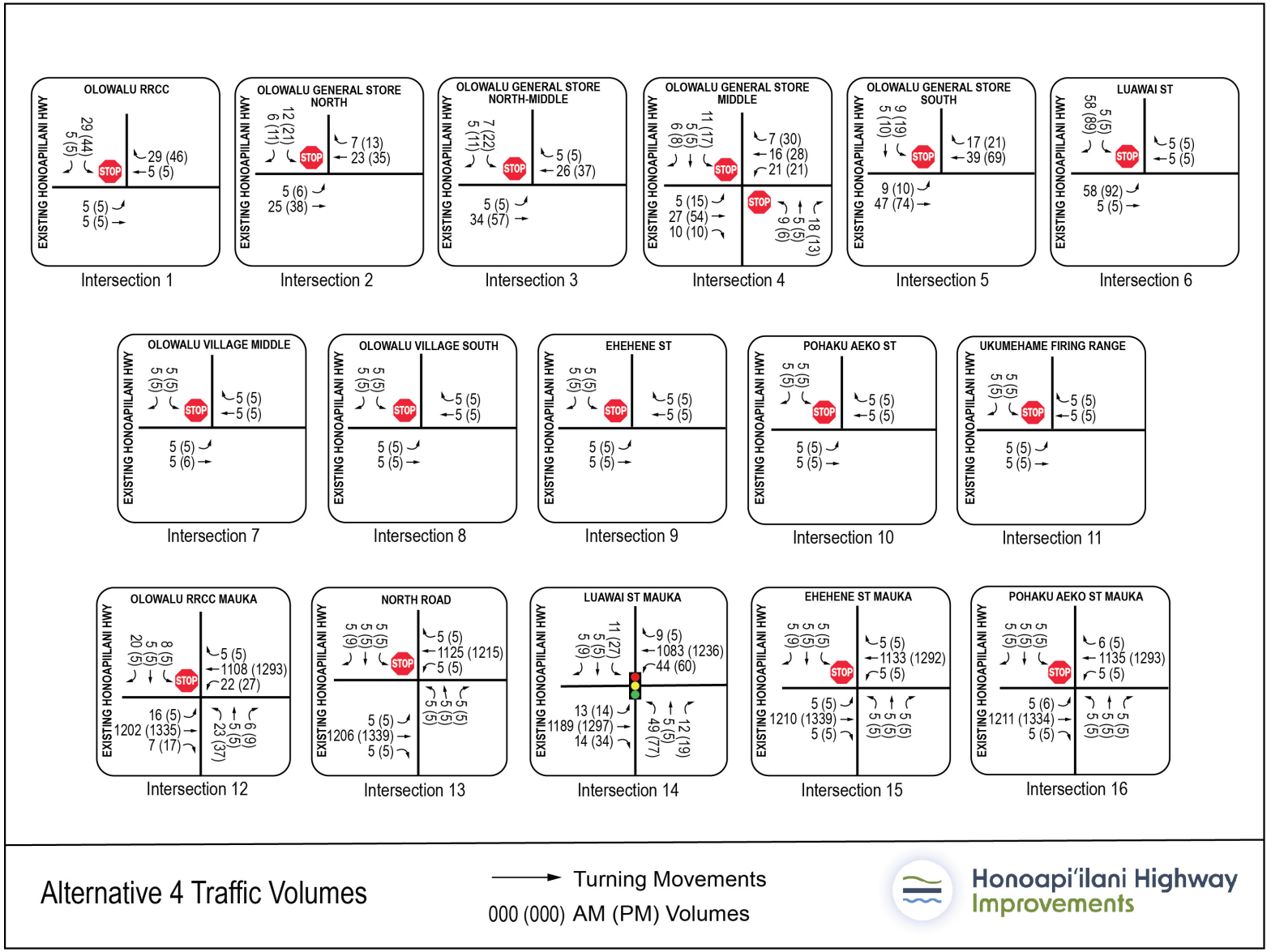


TABLE 3.14-4. **Year 2045 No Build Alternative and Build Alternatives AM Peak-Hour LOS Comparison**

INTERSECTION	TRAFFIC CONTROL	MOVEMENT	NO BUILD	ALT 1	ALT 2	ALT 3	ALT 4
Honoapi'ilani Highway/Olowalu Recycling and Refuse Convenience Center	TWSC	Highest Delay Minor Street	**F**	C	C	C	C
Honoapi'ilani Highway/North Road	TWSC	Highest Delay Minor Street	N/A	N/A	C	C	C
Honoapi'ilani Highway/Olowalu General Store	Traffic Signal*	Overall*	N/A	B*	N/A	N/A	N/A
Honoapi'ilani Highway/Luawai Street	TWSC/ Traffic Signal*	Highest Delay Minor Street/ Overall*	C	C	B*	B*	B*
Honoapi'ilani Highway/Ehehene Street	TWSC	Highest Delay Minor Street	C	C	C	C	C
Honoapi'ilani Highway/Pōhaku 'Aeko Street	TWSC	Highest Delay Minor Street	C	C	C	C	C
Honoapi'ilani Highway/Ukumehame Firing Range	TWSC	Highest Delay Minor Street	**F**	N/A	C	C	N/A
Old Honoapi'ilani Highway/Olowalu Recycling and Refuse Convenience Center	TWSC	Highest Delay Minor Street	**F**	A	A	A	A
Old Honoapi'ilani Highway/Olowalu General Store North	TWSC	Highest Delay Minor Street	**F**	A	A	A	A
Old Honoapi'ilani Highway/Olowalu General Store North-Mid	TWSC/Alt 1 Traffic Signal	Highest Delay Minor Street	**E**	B*	A	A	A
Old Honoapi'ilani Highway/Olowalu General Store Middle	TWSC	Highest Delay Minor Street	**F**	A	A	A	A
Old Honoapi'ilani Highway/Olowalu General Store South	TWSC	Highest Delay Minor Street	C	A	A	A	A
Old Honoapi'ilani Highway/Luawai Street	TWSC	Highest Delay Minor Street	C	A	A	A	A
Old Honoapi'ilani Highway/Olowalu Village Middle	TWSC	Highest Delay Minor Street	**F**	A	A	A	A
Old Honoapi'ilani Highway/Olowalu Village South	TWSC	Highest Delay Minor Street	**F**	A	A	A	A
Old Honoapi'ilani Highway/Ehehene Street	TWSC	Highest Delay Minor Street	C	A	A	A	A
Old Honoapi'ilani Highway/Pōhaku 'Aeko Street	TWSC	Highest Delay Minor Street	C	A	A	A	A
Old Honoapi'ilani Highway/Ukumehame Firing Range	TWSC	Highest Delay Minor Street	**F**	A	N/A	N/A	A

Note: TWSC = Two-Way STOP-Controlled, NB = Northbound, SB = Southbound, EB = Eastbound, WB = Westbound, * = signalized intersection, N/A=not applicable

TABLE 3.14-5. **2045 No Build Alternative and Build Alternatives PM Peak-Hour LOS Comparison**

INTERSECTION	TRAFFIC CONTROL	MOVEMENT	NO BUILD	ALT 1	ALT 2	ALT 3	ALT 4
Honoapi'ilani Hwy/Olowalu Recycling and Refuse Convenience Center	TWSC	Highest Delay Minor Street	F	D	D	D	D
Honoapi'ilani Hwy/North Road	TWSC	Highest Delay Minor Street	N/A	N/A	D	D	D
Honoapi'ilani Hwy/Olowalu General	Traffic Signal*	Overall*	N/A	C*	N/A	N/A	N/A
Honoapi'ilani Hwy/Luawai Street	TWSC/ Traffic Signal*	Highest Delay Minor Street/ Overall*	D	D	C*	C*	C*
Honoapi'ilani Hwy/Ehehene Street	TWSC	Highest Delay Minor Street	D	D	D	D	D
Honoapi'ilani Hwy/Pōhaku 'Aeko Street	TWSC	Highest Delay Minor Street	D	D	D	D	D
Honoapi'ilani Hwy/Ukumehame Firing Range	TWSC	Highest Delay Minor Street	F	N/A	D	D	N/A
Old Honoapi'ilani Hwy/ Olowalu Recycling and Refuse Convenience Center	TWSC	Highest Delay Minor Street	F	A	A	A	A
Old Honoapi'ilani Hwy/Olowalu General Store North	TWSC	Highest Delay Minor Street	F	A	A	A	A
Old Honoapi'ilani Hwy/Olowalu General Store North-Mid	TWSC	Highest Delay Minor Street	E	A	A	A	A
Old Honoapi'ilani Hwy/Olowalu General Store Middle	TWSC	TWSC/Alt 1 Traffic Signal	F	C*	A	A	A
Old Honoapi'ilani Hwy/Olowalu General Store South	TWSC	Highest Delay Minor Street	D	A	A	A	A
Old Honoapi'ilani Hwy/Luawai Street	TWSC	Highest Delay Minor Street	D	A	A	A	A
Old Honoapi'ilani Hwy/Olowalu Village Middle	TWSC	Highest Delay Minor Street	F	A	A	A	A
Old Honoapi'ilani Hwy/Olowalu Village South	TWSC	Highest Delay Minor Street	F	A	A	A	A
Old Honoapi'ilani Hwy/Ehehene Street	TWSC	Highest Delay Minor Street	D	A	A	A	A
Old Honoapi'ilani Hwy/Pōhaku 'Aeko Street	TWSC	Highest Delay Minor Street	D	A	A	A	A
Old Honoapi'ilani Hwy/Ukumehame Firing Range	TWSC	Highest Delay Minor Street	F	A	N/A	N/A	A

Note: TWSC = Two-Way Stop-Controlled, NB = Northbound, SB = Southbound, EB = Eastbound, WB = Westbound, * = signalized intersection, NJ/A=not applicable

3.14.4.8 Crash Data Discussion

A safety analysis was performed on the Honoapi'ilani Highway corridor using the AASHTO *Highway Safety Manual* predicted crash frequency methodology. This analysis focused on the existing Honoapi'ilani Highway as this is where the difference between the No Build Alternative and the Build Alternatives can be best evaluated. The analysis primarily focused on vehicular safety as there are few non-vehicular users (as described in Table 3.8-6, Types of Travelers).

The predicted average crash frequency represents the number of crashes a similar intersection or roadway segment is anticipated to experience on average. It is calculated with safety performance functions, which are equations derived from empirical data based on a facility's characteristics such as geometry, lighting, traffic control, and traffic volumes.

The safety analysis was conducted using existing and projected Future Year 2045 traffic volumes applied to the No Build and Build Alternatives. Build Alternative 1 was evaluated separately from the other Build Alternatives because it has a unique access plan for the Olowalu General Store area. Build Alternatives 2, 3, and 4 are combined into a single set of values due to their similarity. TABLE 3.14-6 Predicted Crash Frequency shows these results.

TABLE 3.14-6. **Predicted Crash Frequency**

	PREDICTED AVERAGE CRASH FREQUENCY (CRASHES/YEAR)		
	NPREDICTED (TOTAL)	*NPREDICTED (FI)*	*NPREDICTED (PDO)*
Existing Conditions	*56.4*	*19.1*	*37.2*
Future Year 2045 No Build Alternative	*66.7*	*22.7*	*44.0*
Build Alternative 1	*0.7*	*0.3*	*0.5*
Build Alternatives 2, 3, 4	*1.8*	*0.7*	*1.1*

FI: Fatalities/Injuries; PDO: Property Damage Only

While the No Build Alternative shows an increase in predicted crashes from existing conditions, the Build Alternatives show a clear reduction—with Build Alternative 1 predicted to show the greatest reduction. The reduction in crashes for the Build Alternatives is due to the projected reduction in through traffic volumes on the existing Honoapi'ilani Highway. Even under existing conditions, the number of expected crashes is lower than the number of predicted crashes, which indicates that the highway's safety performance is better than that of similar facilities. Note that expected crash frequencies were determined based on the reported and available crash data.

While all of the Build Alternatives would shift traffic volume from the existing highway to the new highway, this is not equivalent to shifting expected crashes to the new highway—because the new highway will be constructed in ways that improve safety. While the existing Honoapi'ilani Highway is undivided, the new highway will be divided with opposite directions of travel separated by a median, which has the potential to reduce crashes by 30% (based on the applicable crash reduction factor).

3.14.5 Construction Effects

The Project is in a section of Honoapiʻilani Highway designated as rural principal arterial that has limited multimodal infrastructure and transit accessibility. During project construction, the existing highway would remain open and operational because the Build Alternatives are not on the existing alignment with one exception, Build Alternative 1 in the Olowalu area.

Build Alternative 1 differs from the other alternatives because its alignment would overlap a segment of the existing Honoapiʻilani Highway north of Olowalu. As a result, approximately 2.5 miles of Build Alternative 1 will be constructed in sub-phases requiring lane closures and causing some traffic congestion along the highway corridor.

Additionally, all Build Alternatives will have lane closures and construction phasing when construction occurs at intersections and where at the north and south ends of the project area, where the new roadway would connect to the existing roadway.

Construction of intersections, bridges and viaducts (where proposed) would cause temporary disruption of traffic on the cross streets. Best practices for maintenance of traffic would be employed during construction.

While construction-related vehicles (including for commuting) would temporarily increase traffic on the existing Honoapiʻilani Highway, there will be measures in place to optimally focus these increases during non-peak-hour periods.

During project construction, the design-builder would develop a traffic management plan to minimize traffic congestion and maintain efficiency in the project area.

3.14.6 Indirect Effects

Most of the indirect effects on traffic from the Build Alternatives would be beneficial, attributed to a reduction in through traffic volume on the existing Honoapiʻilani Highway. Qualitative indirect effects could include enhanced experiences for visitors to the beach parks that are adjacent to the existing highway. And while destinations such as the Olowalu General Store could see a reduction in drive-by business, reduced traffic volumes in the area would improve the store's visitor experience (Section 3.19, Environmental Justice and Socioeconomic Conditions).

3.14.7 Anticipated Beneficial Effects

The Build Alternatives are designed to optimize traffic operations and safety, including the following:

- All intersections on the new Honoapi‘ilani Highway would have exclusive turn lanes and channelized minor-street approaches that separate right-turn movements from left-turn and through movements. The intersections would also incorporate improved geometric features such as median left-turn refuges at unsignalized intersections, which would mitigate the delays that are currently experienced at some of the intersections.
- To maintain operational delays and improve safety for minor-street vehicles, traffic signals are projected to be warranted on the realigned Honoapi‘ilani Highway at its intersection with Luawai Street for Build Alternatives 2, 3, and 4, and at its intersection with the Olowalu General Store Driveway for Build Alternative 1.
- Regional through traffic on the existing highway would be reallocated to a new, divided, access-managed Honoapi‘ilani Highway, which would improve intersection operations on the existing highway and in turn substantially reduce vehicle delays on the minor-street approaches for the Build Alternatives.
- The volume of traffic would be greatly reduced on the existing Honoapi‘ilani Highway—which would remain as a local road—improving operations and increasing safety with a substantial reduction in predicted traffic crashes.
- The Build Alternatives would construct a new divided highway with opposite directions of travel separated by a median, which has the potential to reduce crashes by 30% (based on the applicable crash reduction factor).

As a result, and as evaluated in this ~~Draft~~ Final EIS, there are no adverse effects anticipated with any of the Build Alternatives and no additional mitigation is required.

3.14.8 Build Alternatives Comparative Assessment

The evaluation of alternatives indicates that all the Build Alternatives are projected to perform better than the No Build Alternative based on roadway operations, intersection operations, and traffic safety.

Roadway operations, intersection operations, and traffic safety are comparable across the Build Alternatives. Build Alternatives 2, 3, and 4 appear to be less disruptive during construction because their alignments interact less with the existing Honoapi‘ilani Highway. On the other hand, Build Alternative 1 would require substantial coordination during construction to maintain regional traffic flow because part of its alignment is shared with the existing Honoapi‘ilani Highway, between Olowalu and Launiupoko.

Both the No Build Alternative and the Build Alternatives would be able to accommodate the projected Future Year 2045 peak-hour traffic volumes within the project area. The Build Alternatives are projected to operate at LOS C—compared to LOS E for the No Build Alternative on a segment capacity basis—indicating that the No Build Alternative would be more susceptible to disruption to regional traffic flow from events within the corridor.

The Build Alternatives are projected to reallocate regional traffic from the existing Honoapi‘ilani Highway to the new Honoapi‘ilani Highway. This would result in a substantial reduction in future traffic volume on the existing Honoapi‘ilani Highway, directly benefitting its intersections operations. For the No Build Alternative, regional traffic would only increase from current levels, resulting in increased delays for minor-street vehicles.

Reduced future traffic volumes on the existing Honoapi‘ilani Highway also reduces the number of predicted traffic crashes for the Build Alternatives, while the No Build Alternative is projected to experience a slight increase from current levels. The overall predicted number of highway crashes is expected to be reduced substantially due to the enhanced safety design features of the new roadway alignment. Given that there are relatively low fatalities as reported in Section 3.14.3 (two over a three-year period), the predicted reduction in overall crashes would minimize the potential for fatalities.

All Build Alternatives are projected to be similar from a traffic operational perspective. As noted in Section 3.14.5, Build Alternative 1 has greater construction impacts than the other Build Alternatives. Chapter 5, Selected ~~Preferred~~ Alternative, includes a discussion that results in a recommendation for a preferred Build Alternative.