Addendum 01 to the Noise and Vibration Technical Report Honolulu High-Capacity Transit Corridor Project

October 1, 2009

Prepared for:
City and County of Honolulu

Summary

This addendum supplements materials in the *Honolulu High-Capacity Transit Corridor Project Noise and Vibration Technical Report* dated October 1, 2008. Unless stated otherwise in this addendum, the background, methodology, and affected environment descriptions in the Noise and Vibration Technical Report also apply to this addendum. In any case where this addendum differs from the technical report (or any previous addenda to the report), the information in this addendum supersedes that of the technical report (and any previous addenda to the report).

1 Background

No change

2 Studies and Coordination

No change

3 Methodology

Change Replace Section 3.1 with the following:

3.1 Transit Noise Assessment Methodology

The project-related noise levels for the Build Alternatives were based on FTA reference sound levels. An SEL of 82 dBA was used for Rapid Rail vehicles. The operations assumptions (speed, headways, and schedule) used in the noise analysis were the same as those used in estimating ridership, fare revenue, and other impacts of the Project.

The Project design includes a parapet wall at the edge of guideway, which is included in the results presented in this Addendum. The effects of wheel skirts have been moved from the effects analysis to mitigation evaluation. Wheel skirts can reduce vehicle noise levels by 6 to 10 dBA in an open soundfield (FTA 2006). Because the parapet wall will alter the sound path from the Project, wheel skirts are anticipated to reduce vehicle noise levels by 3 to 5 dBA beyond the reduction provided by the parapet. For this analysis, a reduction of 3 dBA has been used.

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The noise impact analysis was performed by combining project-related noise levels from the Project with existing noise levels. The resulting change in anticipated noise levels was compared to the FTA criteria. Based on the identification of potential project-related impacts, appropriate and reasonable mitigation measures were evaluated.

Noise impacts from rail transit operations are generated from the interaction of wheels on track, motive power, and the operation of TPSSs. The interaction of steel wheels on rails generates three different types of noise, depending on track work. These include: (1) noise generated by pass-by trains operating on tangent track sections, (2) noise generated from wheel squeal on tightly curved track, and (3) noise generated on special trackway sections, such as at crossovers or turnouts. The noise impact analysis considered these different sources.

Potentially noise-sensitive land uses and vibration-sensitive buildings were identified, as well as appropriate locations for noise and vibration monitoring. Noise levels were measured at locations along the proposed alternative alignments and near proposed transit station locations to establish the most sensitive existing environment. All noise measurements were made in accordance with ANSI procedures for community noise measurements.

To assess the potential noise impacts of the transit operations, long-term (24-hour) measurements were conducted at up to 28 sites that include residences and other buildings where people normally sleep. These measurement locations were supplemented with 22 short-term (15-minute) noise measurements, as needed to determine existing noise levels at typical recreational, institutional, and commercial land uses with primarily daytime and evening activity.

To assess the potential noise impact of the transit operations on building floors above the elevation of the proposed guideway, six additional measurements were taken at upper floors of buildings with four or more stories. The sound level measurements performed in the upper floors were conducted at the same time as ground level measurements.

Project noise levels for the measurement below the elevation of the guideway were predicted by following the FTA's *Guidance Manual for Transit Noise and Vibration Impact Assessment* and FTA CREATE model (FTA 2006). Building floors above the guideway were also modeled using the FTA Guidance Manual. The 3D noise model SoundPLAN, from Braunstein + Berhdt GmbH, was also used to provided a more detailed future noise profile of these buildings.

The SoundPLAN calculations used the FTA reference emission source levels for light rail transit vehicles as input into the ISO 9163 industrial noise model. Sound power levels for the three different operational speeds were calculated by comparing the noise levels at 50 feet in the SoundPLAN model to the noise levels generated in the FTA CREATE model (FTA 2006).

A base model was constructed using the SoundPLAN, from Braunstein + Berhdt, and Geographic Information System (GIS) data layers from the City and County of

Honolulu for building footprints with height and elevation data. The proposed transit alignment and design elevations were input into the model as a line source of data and the structure platform was input as a floating screen. The structure's proposed noise barriers were also input on top of the screen to simulate outside and inside barriers. Noise levels were modeled for every floor of the sensitive high-rise buildings. Figure 3-1 shows a cross section of one downtown high rise location. Predicted noise levels from SoundPLAN were generally at the same levels as the predicted noise levels generated by the FTA method.

Potential noise impacts that may be associated with project-related park-and-ride lots and vehicle maintenance and storage facility operations were also analyzed.

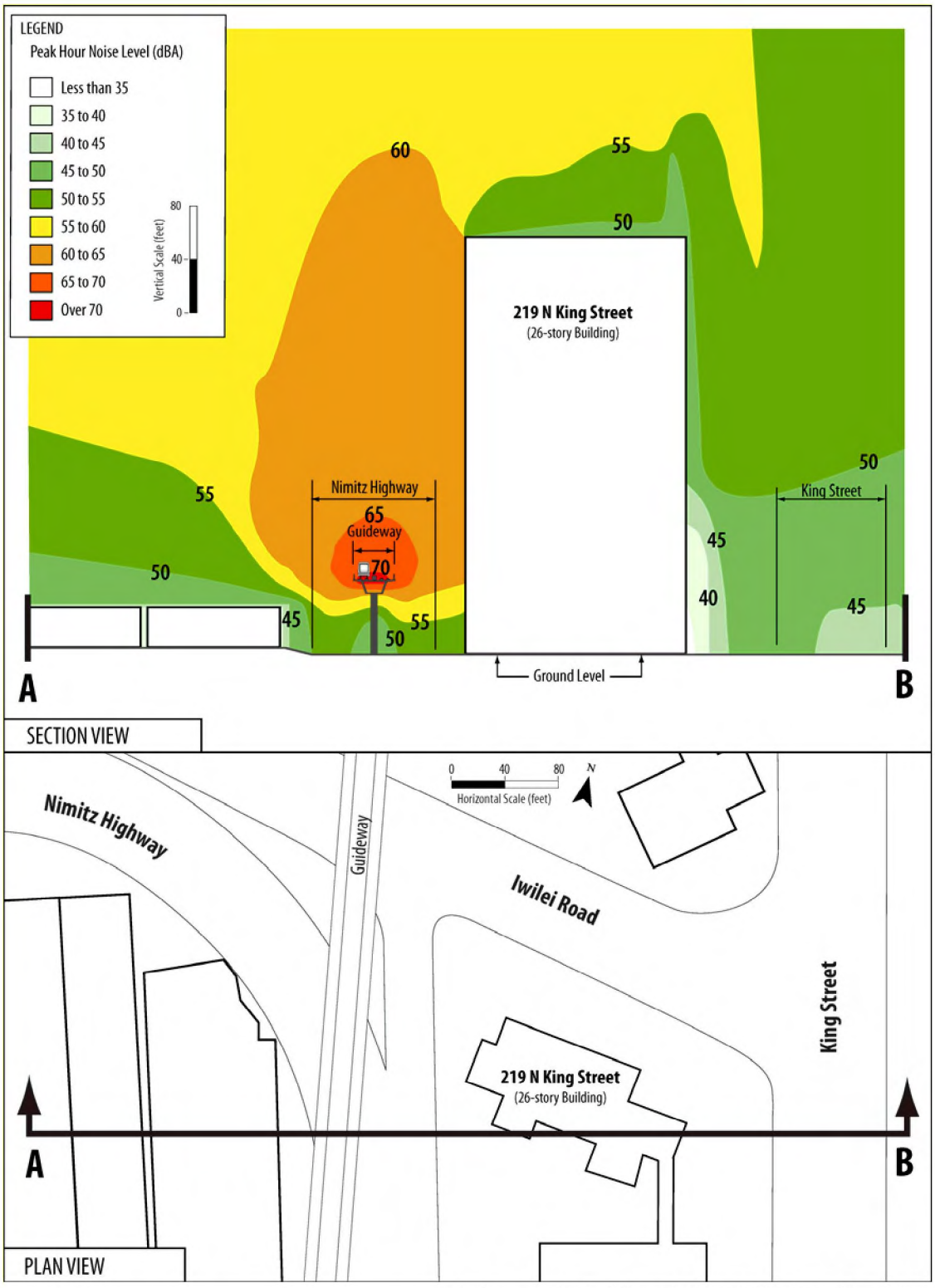

Figure 3-1: King Street Noise Section

4 Affected Environment

Change	Replace first two paragraphs of Chapter 4 with the following:

Prior to performing the analysis of future noise and vibration levels, it was necessary to establish existing baseline noise levels along the study corridor. This was accomplished by performing a series of measurements at representative locations along the corridor. This Addendum provides details on the noise survey used to establish baseline conditions.

Noise measurements were performed at 50 noise-sensitive locations along the study corridor. These locations were evaluated in accord with FTA guidelines (FTA 2006) and deemed to be representative of all noise-sensitive land uses along the corridor. Most of the measurements were taken at ground floor elevations, except in locations that included buildings of four or more stories with sensitive land uses. Six additional measurements were taken at upper floors of buildings with four or more stories. The sound level measurements performed in the upper floors were conducted at the same time as ground level measurements. Twenty eight long-term (24-hour) noise measurements and 22 short-term (15-minute) measurements were conducted at the locations shown on Figure 4-1 through Figure 4-4 and listed in Table 4-1 and Table 4-2, provided at the end of this chapter. This chapter discusses the existing land use and the noise environments for properties located between the proposed station locations along the proposed alignments. Subsequent to the Draft EIS, additional measurements were taken in between Aloha Stadium Station and Pearl Harbor Naval Base Station (Sites AZM-1 through AZM-3 and NH-1 through NH-3 in this Addendum) and between Pearl Harbor Naval Base Station and Honolulu International Airport Station (Sites NH-4 and NH-5 in this Addendum).

Ambient vibration levels were not measured as part of this study. However, FTA Vibration Impact Criteria were used to identify locations where potential impacts might occur based on existing land use and project activity. As necessary, ambient vibration levels will be measured at locations that exceed the FTA Vibration Impact Criteria as part of the Project's final engineering and design phase.

Change	Replace Figures 4-1 through 4-4 with the following:

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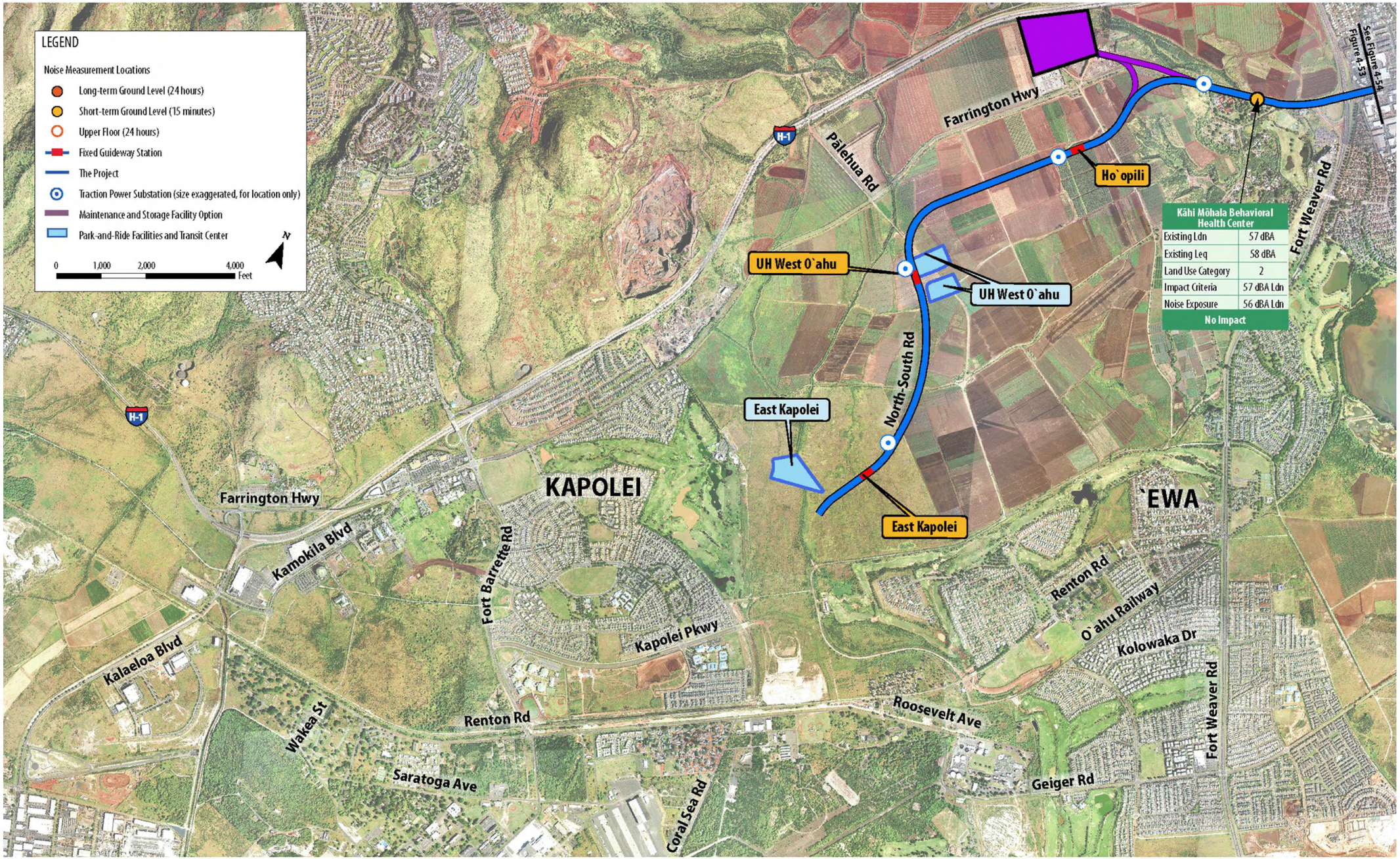

Figure 4-1: Noise Measurements Locations (East Kapolei to Fort Weaver Road)

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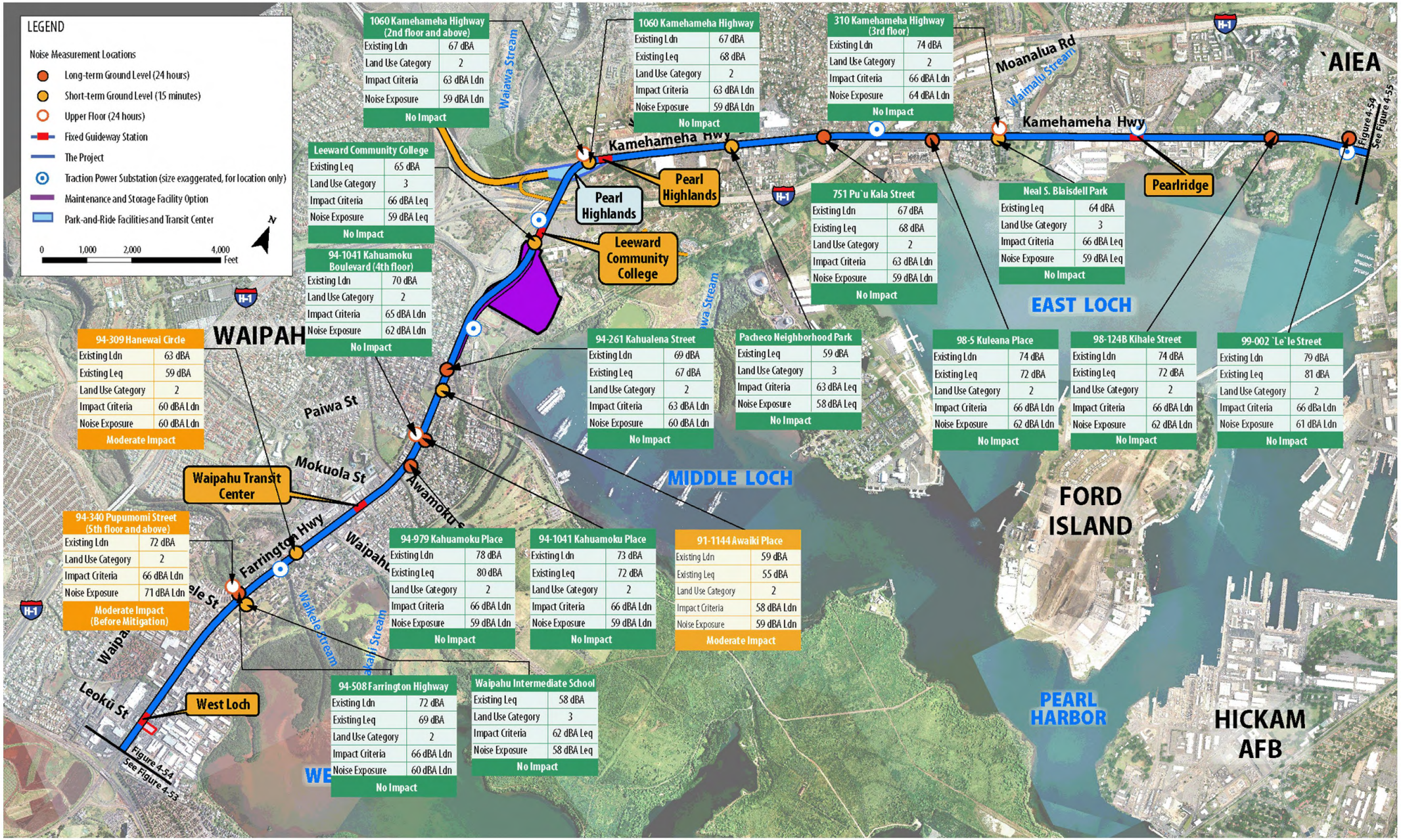

Figure 4-2: Noise Measurement Locations (Fort Weaver Road to Aloha Stadium)

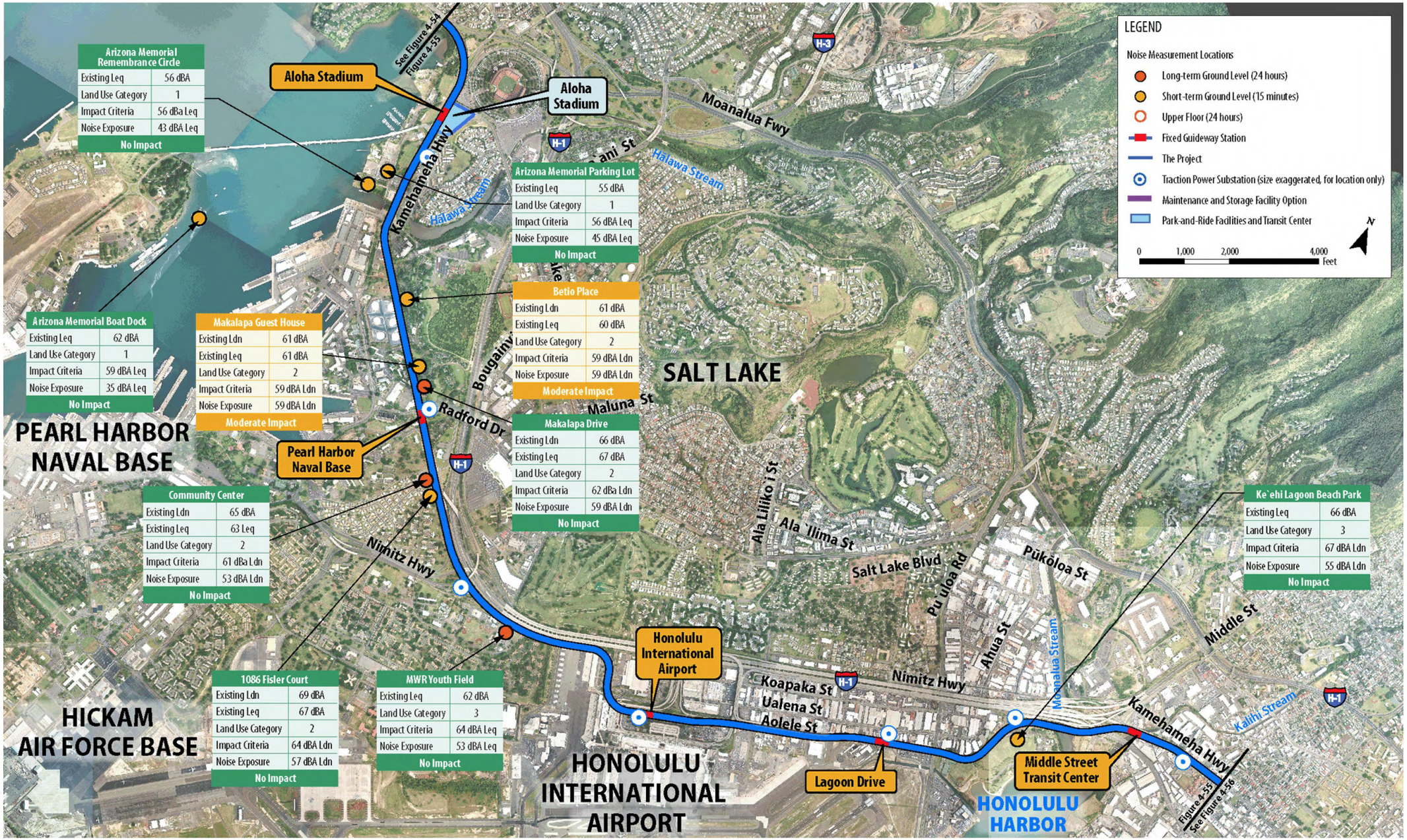

Figure 4-3: Noise Measurement Locations (Aloha Stadium to Kalihi)

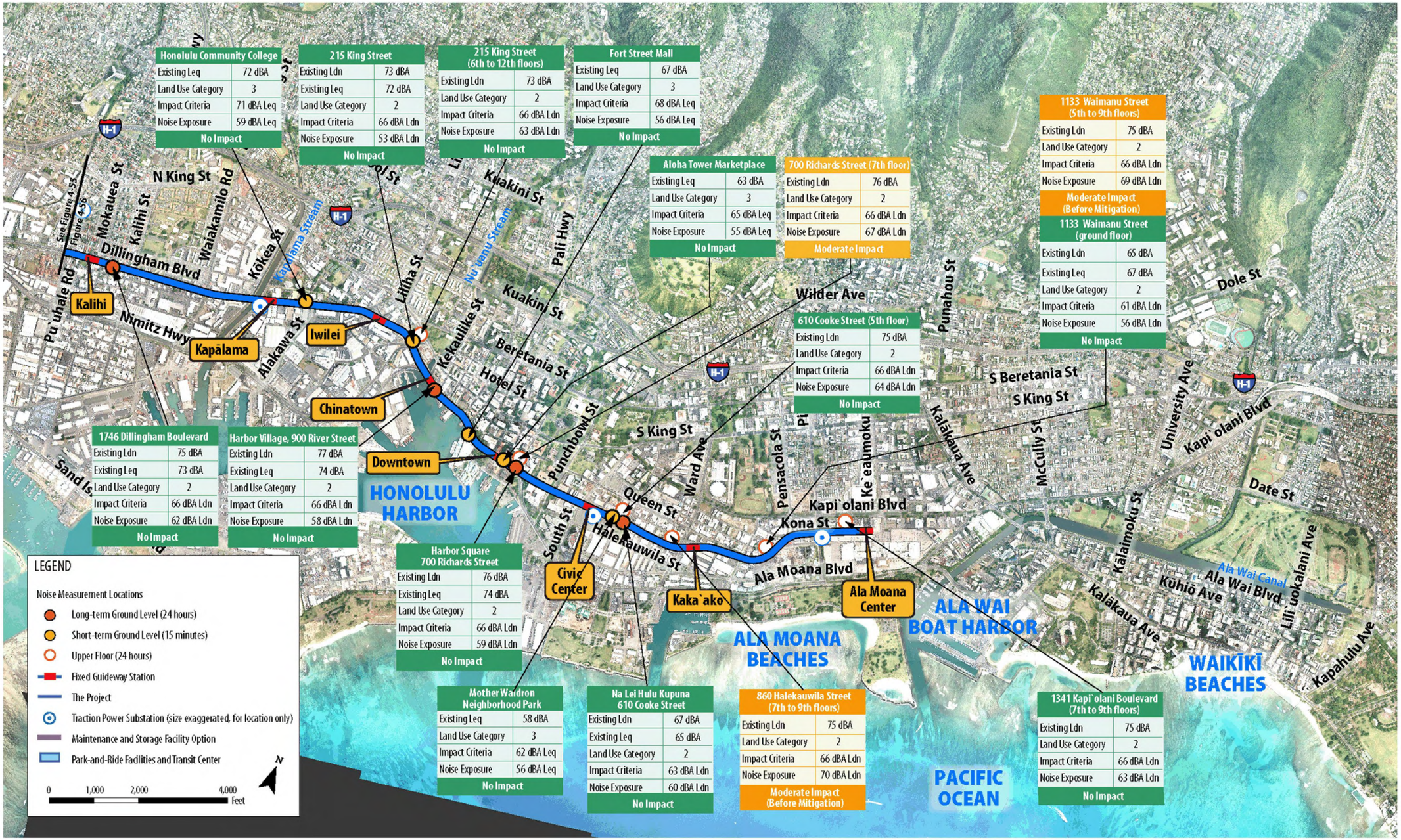

Figure 4-4: Noise Measurement Locations (Kalihi to Ala Moana Center)

Change	Replace Section 4.13 with the following:

4.13 Pearlridge to Aloha Stadium

Land uses between the Pearlridge Station and the Aloha Stadium Station are a mixture of commercial (not categorized as sensitive), residential areas (Category 2), and Aloha Stadium (Category 3). Monitoring Locations J and AD represent the existing noise environment for the 33 residential buildings along Kamehameha Highway, with maximum-hour L_{eq} noise levels ranging from 72 to 81 dBA and L_{dn} levels ranging from 74 to 79 dBA. Kamehameha Highway is the dominant noise source in the area.

Delete	Section 4.14 and Section 4.15

Change	Replace Section 4.16 with the following:

4.16 Aloha Stadium to Pearl Harbor Naval Base

Land uses between the Aloha Stadium Station and the Peal Harbor Naval Base Station are a mix of commercial and industrial (not categorized as sensitive), Naval housing (Category 2), and the Arizona Memorial (Category 1). Monitoring Locations AZM-1, AZM-2, and AZM-3 represent sensitive areas of the Arizona Memorial: Future Refection Area (AZM-1), Remembrance Circle (AZM-2), and the Memorial Dock (AZM-3). Maximum-hour L_{eq} in the Arizona Memorial ranged from 62 dBA at AZM-3 to 55 dBA at AZM-1. Monitoring Locations NH-1, NH-2, and NH-3 represent the Naval housing (Category 2) Koko Head of Kamehameha Highway. Maximum-hour noise levels ranged from 61 to 66 dBA L_{eq}, with an L_{dn} of 60 and 67 dBA at these homes.

Change	Replace Section 4.17 with the following:

4.17 Pearl Harbor Naval Base to Honolulu International Airport

Land uses between the Pearl Harbor Naval Base Station and the Honolulu International Airport Station are predominantly commercial and industrial (not categorized as sensitive), with military housing (Category 2) ‘Ewa of the H-1 Freeway, and baseball park (Category 3). Measurements at Sites NH-4 and 13 describe existing noise levels at the 11 residential buildings. Maximum-hour noise levels ranged from 63 to 67 dBA L_{eq}, with an L_{dn} of 65 and 69 dBA, at these buildings. Site NH-5 describes the MWR Youth Field, with a maximum-hour noise level of 62 dBA L_{eq}.

Change	Replace Section 4.27 with the following:

4.27 Kaka‘ako to Ala Moana Center

Land uses between the Kaka‘ako Station and the Ala Moana Center Station are predominantly commercial and industrial (Category 3), with two residential high-rises: 1113 Waimanu and Uraku Tower. Site AE represents the noise levels at 1113 Waimanu. Maximum hour L_{eq} noise levels range from 67 dBA on the ground floor to 68 dBA on the fifth floor and above. L_{dn} noise levels range from 65 dBA on the ground floor to 67 dBA on the fifth floor and above. Site AF represents the noise levels at Uraku Tower. There are no sensitive uses below the seventh floor of the Uraku Tower. Maximum hour L_{eq} noise levels range from 74 dBA on the seventh floor to 69 dBA on the thirtieth Floor. L_{dn} noise levels range from 80 dBA on the seventh floor to 75 dBA on the twenty-sixth Floor.

Table 4-1: Existing Long-Term Noise Measurements (Build Alternative)

Site I.D.	Site Description	FTA Land Use Category[1]	Measured Maximum-Hour L_{eq} (dBA)	Measured L_{dn}[2] (dBA)	Stations
A	*Saratoga Avenue/Franklin Avenue*	*2*	*60*	*59*	*Kapolei Transit Center to Fort Barrette Road*
B	*4235 Independence Road*	*2*	*75*	*74*	*Fort Barrette Road to Kapolei Parkway*
C	*91-1005 Koahi Street*	*2*	*57*	*54*	*Kapolei Parkway to East Kapolei Parkway*
D	*94-508 Farrington Highway*	*2*	*69*	*72*	*West Loch to Waipahu Transit*
E	94-979 Kahuamoku Place	2	80	78 Ground floor; 70 4th Floor	Waipahu Transit to Leeward Community College
F	94-1041 Kahua Moku	2	72	73	Waipahu Transit to Leeward Community College
G	94-261 Kahualena	2	67	69	Waipahu Transit to Leeward Community College
H	751 Pu‘u Kala	2	71	66	Pearl Highlands to Pearlridge
I	98-5 Kuleana Place	2	72	74	Pearl Highlands to Pearlridge
J	98-124B Kihale Street	2	72	74	Pearlridge to Aloha Stadium
AD*	92-002 ‘Ie‘Ie Street	2	81	79	Pearlridge to Aloha Stadium
NH-1*	Betio Place	2	60	61	Aloha Stadium to Pearl Harbor Naval Base
NH-2*	Makalapa Guest House	2	61	61	Aloha Stadium to Pearl Harbor Naval Base
NH-4*	Community Center	2	63	65	Pearl Harbor Naval Base to Honolulu International Airport
Q	1746 Dillingham Boulevard	2	73	75	Middle Street Transit Center to Kapālama
AA	Harbor Village, 900 River Street	2	74	77	Chinatown to Downtown
AB	Harbor Square, 700 Richards Street	2	74	No Apartment below 7th floor, 74 7th Floor, 73 26th Floor	Downtown to Civic Center
AC	Na Lei Kupuna, 610 Cooke Street	2	65	67 on Ground Floor, 75 on 5th Floor	Civic Center to Kaka‘ako
AE	1113 Waiamu	2	68	Ground floor, 65 7th Floor, 67 5th Floor and above	Kaka‘ako to Ala Moana Center
AF	92-002 ‘Ie‘Ie Street	2	74	No Apartment below 7th floor, 80 7th Floor, 75 26th Floor	Kaka‘ako to Ala Moana Center

Table 4-2: Existing Short-Term Noise Measurements (Build Alternative) (continued)

Site I.D.	Site Description	FTA Land Use Category[1]	Measured Maximum-Hour L_{eq} (dBA)	Measured L_{dn}[2] (dBA)	Stations
S	2148 Kapiʻolani Boulevard	2	72	74	Convention Center to McCully
T	2232 Kapiʻolani Boulevard	2	72	75	McCully to Date Street
U	630 University Avenue	2	66	68	McCully to Date Street
V	801 University Avenue	2	66	68	Date Street to Mōʻiliʻili
W	1880 Kalākaua Avenue	2	73	73	Convention Center to Kālaimoku Street
X	1911 Kalākaua Avenue	2	77	77	Convention Center to Kālaimoku Street
Y	2406 Kūhiō Avenue	2	75	75	Kālaimoku Street to Liliʻuokalani Avenue
Z	2520 Kūhiō Avenue	2	76	75	Kālaimoku Street to Liliʻuokalani Avenue

[1] FTA land use category descriptors: 1 = buildings or parks where quiet is an essential element of their purpose;
2 = residences and other buildings where people sleep, such as hotels, apartments, and hospitals
3 = institutional land uses with primarily daytime and evening use, including schools, libraries, and churches.
With few exceptions (e.g., recording studio) FTA does not categorize commercial and industrial uses as sensitive.

[2] L_{dn} is used for land uses with nighttime sensitivity to noise and for residential areas where FTA rather than FHWA noise procedures are applicable. Maximum-hour L_{eq} is used for commercial, industrial, and other land uses that do not have nighttime noise sensitivity.

* Additional measurement, subsequent to the Draft EIS

Table 4-2: Existing Short-Term Noise Measurements (Build Alternative)

Site I.D.	Site Description	FTA Land Use Category[1]	Measured Maximum-Hour L_{eq} (dBA)	Estimated L_{dn}[2] (dBA)	Stations
1	Kahi Mohala Mental Health Facility	2	58	57	Hoʻopili to West Loch
2	Waipahu Intermediate School	3	58	NA	West Loch to Waipahu Transit
3	94-309 Hanewai Circle	2	59	63	West Loch to Waipahu Transit
4	91-1144 Awaiki Place	2	55	59	Waipahu Transit to Leeward Community College
5	Leeward Community College	3	65	NA	Leeward Community College to Pearl Highlands
6	1060 Kamehameha Highway	2	68	67	Leeward Community College to Pearl Highlands
7	Pacheco Neighborhood Park—Pearlridge Elementary School	3	59	NA	Pearl Highlands to Pearlridge
8	Neal S. Blaisdell Park	3	64	NA	Pearl Highlands to Pearlridge
9	Kauhale Street	2	55	57	Pearlridge to Aloha Stadium
AZM-1*	Arizona Memorial Parking Lot (Future Refection Area)	1	55	NA	Aloha Stadium to Pearl Harbor Naval Base
AZM-2*	Arizona Memorial Remembrance Circle	1	56	NA	Aloha Stadium to Pearl Harbor Naval Base
AZM-3*	Arizona Memorial Boat Dock	1	62	NA	Aloha Stadium to Pearl Harbor Naval Base
NH-3*	Makalapa Drive	2	67	66	Aloha Stadium to Pearl Harbor Naval Base
13	1086 Fisler Court	2	67	69	Pearl Harbor Naval Base to Honolulu International Airport
NH-5*	MWA Youth Field	3	62	NA	Pearl Harbor Naval Base to Honolulu International Airport
21	Keʻehi Lagoon Beach Park	3	66	NA	Lagoon Drive to Middle Street Transit Center
18	Honolulu Community College	3	72	NA	Kapālama to Iwilei
19	215 King Street	2	72	73 at Ground Floor and 6th Floor, 70 on 26th Floor	Iwilei to Chinatown
20	King Kalākaua Park	3	70	NA	Convention Center to Kālaimoku Street
22	Fort Street Park	3	67	NA	Chinatown to Downtown
23	Aloha Tower Marketplace	3	63	NA	Chinatown to Downtown
24	Mother Waldron Park	3	58	NA	Civic Center to Kakaʻako

NA—These sites do not have sleep activity. L_{dn} existing noise levels are not applicable at these sites.

Each 15-minute noise measurement is compared to the closest 24-hour measurement site at the same hour of the day. The 15-minute noise levels are then adjusted relative to the 24-hour levels, to develop a maximum Leq and Ldn for each of the 15-minute measurement locations.

[1] FTA land use category descriptors: 1 = buildings or parks where quiet is an essential element of their purpose
2 = residences and other buildings where people sleep, such as hotels, apartments, and hospitals
3 = institutional land uses with primarily daytime and evening use, including schools, libraries, and churches

[2] 24-hour noise levels at these locations were estimated based upon short-term noise samples, which were compared to the closest 24-hour noise measurement locations.

* Additional measurement, subsequent to the Draft EIS

Change	Replace Table 5-1 and Table 5-2 with the following:

Table 5-1: Fixed Guideway Operations

Stations	Speed	Hours of Operation	Peak-Hour Headways	Off-Peak Headways	Nighttime-Headways (8:00 p.m. to 12:00 a.m.)
Kapolei Transit Center to Fort Barrette Road	50	4 a.m. to 12 a.m.	3 minute	6 minute	10 minute
Fort Barrette Road to Kapolei Parkway	55	4 a.m. to 12 a.m.	3 minute	6 minute	10 minute
Kapolei Parkway to East Kapolei Parkway	50	4 a.m. to 12 a.m.	3 minute	6 minute	10 minute
Hoʻopili to West Loch	55	4 a.m. to 12 a.m.	3 minute	6 minute	10 minute
West Loch to Waipahu Transit Center	55	4 a.m. to 12 a.m.	3 minute	6 minute	10 minute
Waipahu Transit Center to Leeward Community College	55	4 a.m. to 12 a.m.	3 minute	6 minute	10 minute
Leeward Community College to Pearl Highlands	45	4 a.m. to 12 a.m.	3 minute	6 minute	10 minute
Pearl Highlands to Pearlridge	55	4 a.m. to 12 a.m.	3 minute	6 minute	10 minute
Pearlridge to Aloha Stadium	55	4 a.m. to 12 a.m.	3 minute	6 minute	10 minute
Aloha Stadium to Honolulu International Airport	55	4 a.m. to 12 a.m.	3 minute	6 minute	10 minute
Lagoon Drive to Middle Street Transit Center	45	4 a.m. to 12 a.m.	3 minute	6 minute	10 minute
Middle Street Transit Center to Kapālama	50	4 a.m. to 12 a.m.	3 minute	6 minute	10 minute
Kapālama to Iwilei	50	4 a.m. to 12 a.m.	3 minute	6 minute	10 minute
Iwilei to Chinatown	45	4 a.m. to 12 a.m.	3 minute	6 minute	10 minute
Chinatown to Downtown	45	4 a.m. to 12 a.m.	3 minute	6 minute	10 minute
Downtown to Civic Center	45	4 a.m. to 12 a.m.	3 minute	6 minute	10 minute
Civic Center to Kakaʻako	45	4 a.m. to 12 a.m.	3 minute	6 minute	10 minute
Ala Moana Center to Convention Center	45	4 a.m. to 12 a.m.	3 minute	6 minute	10 minute
Convention Center to McCully	45	4 a.m. to 12 a.m.	3 minute	6 minute	10 minute
McCully to Date Street	45	4 a.m. to 12 a.m.	3 minute	6 minute	10 minute
Date Street to Mōʻiliʻili	45	4 a.m. to 12 a.m.	3 minute	6 minute	10 minute
Convention Center to Kālaimoku Street	45	4 a.m. to 12 a.m.	6 minute	12 minute	12 minute
Kālaimoku Street to Liliʻuokalani Avenue	45	4 a.m. to 12 a.m.	6 minute	12 minute	12 minute

Table 5-2: Fixed Guideway Noise Impacts by Station

Stations	Representative Noise Site(s)	Impacts
Build Alternative		
West Kapolei to Kapolei Transit Center	No receptors in area	N/A
Kapolei Transit Center to Kalaeloa	A	No impacts
Kalaeloa to Fort Barrette Road	A	No impacts
Fort Barrette Road to Kapolei Parkway	B	No impacts
Kapolei Parkway to East Kapolei	C	No impacts
East Kapolei to UH West Oʻahu	No receptors in area	N/A
UH West Oʻahu to Hoʻopili	No receptors in area	N/A
Hoʻopili to West Loch	1	No impacts
West Loch to Waipahu Transit Center	D, 2, 3	Moderate impacts to the 5th to 9th floors of 1 Apartment Building (Waikele Tower) and Site 3
Waipahu Transit Center to Leeward Community College	E, F, 4, G	Moderate impacts at Site 4
Leeward Community College to Pearl Highlands	5, 6	No Impacts
Pearl Highlands to Pearlridge	7, H, I, 8	No Impacts
Pearlridge to Aloha Stadium	J, AD	No Impacts
Aloha Stadium to Pearl Harbor Naval Base	AZM-1, AZM-2, AZM-3, NH-1, NH-2, NH-3	Moderate Impacts at Sites NH-1 and NH-2
Pearl Harbor Naval Base to Honolulu International Airport	13, NH-4, NH-5	No impacts
Honolulu International Airport to Lagoon Drive	No receptors in area	N/A
Lagoon Drive to Middle Street Transit Center	21	No impacts
Middle Street Transit Center to Kalihi	Q	No impacts
Kalihi to Kapālama	Q	No impacts
Kapālama to Iwilei	18	No impacts
Iwilei to Chinatown	19	No impacts
Chinatown to Downtown	AA, 22, 23	No impacts
Downtown to Civic Center	AB	Moderate impacts to the 7th to 11th Floors
Civic Center to Kakaʻako	AC, 24, 800 Halekauwila	Moderate impacts to the 5th to the 14th floors of 800 Halekauwila.
Kakaʻako to Ala Moana Center	AE, AF	Moderate impacts to the 5th through 9th Floors of Site AE. No impacts at Site AF
Ala Moana Center to Convention Center	R	No impacts at ground level to height of guideway; moderate impacts to sensitive uses above guideway.
Convention Center to McCully	S	None
McCully to Date Street	S, T, U	None
Date Street to Mōʻiliʻili	V	None
Convention Center to Kālaimoku	W, X, 20	No impacts at ground level to height of guideway; moderate impacts to sensitive uses above guideway.
Kālaimoku to Liliʻuokalani	Y, Z	No impacts at ground level to height of guideway; moderate impacts to sensitive uses above guideway.

Change:	Replace Sections 5.3.2, 5.3.3, and 5.3.4 with the following:

5.3.2 Kapolei Transit Center to Kalaeloa

The existing noise exposure of the 15 residences between the Kapolei Transit Center Station and Kalaeloa Station, represented by Site A, is an L_{dn} of 59 dBA. Project noise exposure between L_{dn} 58 and 63 dBA would cause a moderate noise impact; project noise exposure above L_{dn} 63 dBA would cause a severe noise impact. The project noise exposure would be 57 dBA L_{dn}. Thus, no noise impacts to the 15 residences are predicted.

5.3.3 Kalaeloa to Fort Barrette Road

The existing noise exposure of the seven residences between Kalaeloa Station and Fort Barrette Road Station, represented by Site A, is an L_{dn} of 59 dBA. Project noise exposure between L_{dn} 58 and 63 dBA would cause a moderate noise impact; project noise exposure above L_{dn} 63 dBA would cause a severe noise impact. The project noise exposure would be 57 dBA L_{dn}. Thus, no noise impacts to the seven residences are predicted.

5.3.4 Fort Barrette Road to Kapolei Parkway

The existing noise exposure of the ten residences between the Fort Barrette Road Station and the Kapolei Parkway Station, represented by Site B, is an L_{dn} of 74 dBA. Project noise exposure between L_{dn} 66 and 72 dBA would cause a moderate noise impact; project noise exposure above L_{dn} 72 dBA would cause a severe noise impact. The project noise exposure would be 59 dBA L_{dn}. Thus, no noise impacts to the ten residences are predicted.

Delete:	Sections 5.3.5, 5.3.6, and 5.3.7

Change:	Replace Sections 5.3.8 through 5.3.28 with the following:

5.3.5 Ho‘opili to West Loch

The existing noise exposure of the two residential buildings between Ho‘opili Station and West Loch Station, represented by Site 1, is an L_{dn} of 57 dBA. Project noise exposure between L_{dn} 57 and 62 dBA would cause a moderate noise impact; project noise exposure above L_{dn} 62 dBA would cause a severe noise impact. The project noise exposure would be 56 dBA L_{dn}. Thus, no noise impacts are predicted for the two residential buildings.

5.3.6 West Loch to Waipahu Transit Center

The existing noise exposure of the 20 residential buildings, represented by Site 3, is an L_{dn} of 63 dBA. Project noise exposure between 60 and 65 dBA would cause a

moderate noise impact; project noise exposure above 65 dBA would cause a severe noise impact.

The existing noise exposure of the 40 residential buildings between West Loch Station and the Waipahu Transit Center Station, represented by Site D, is an L_{dn} of 72 dBA. Project noise exposure between L_{dn} 66 and 71 dBA would cause a moderate noise impact; project noise exposure above L_{dn} 71 dBA would cause a severe noise impact.

The existing noise exposure of Waipahu Intermediate School, represented by Site 2, is a maximum-hour L_{eq} of 63 dBA. Project noise exposure between 65 and 70 dBA L_{eq} would cause a moderate noise impact; project noise exposure above 70 dBA would cause a severe noise impact.

The project noise exposure would be 60 dBA L_{dn} at Site 3; and 58 dBA maximum-hour L_{eq} at Site 2 (Waipahu Intermediate School). At Site D, project noise exposure at ground level would be 60 dBA $L_{dn.}$ The second floor level would be 61 dBA $L_{dn.}$ Third and fourth floor levels would be 62 dBA $L_{dn.}$ The fifth through the ninth floor levels would be 71 dBA $L_{dn.}$ Moderate noise impacts are predicted for one residential building (Waikele Tower) from the fifth to the ninth floor and at the 20 residential buildings represented by Site 3.

5.3.7 Waipahu Transit Center to Leeward Community College

The existing noise exposure of the 16 residential buildings between the Waipahu Transit Center Station and the Leeward Community College Station, represented by Site E, is an L_{dn} of 78 dBA. Project noise exposure between L_{dn} 66 and 75 dBA would cause a moderate noise impact; project noise exposure above L_{dn} 75 dBA would cause a severe noise impact.

The existing noise exposure of the 15 residential buildings, represented by Site F, is an L_{dn} of 73 dBA. Project noise exposure between L_{dn} 66 and 71 dBA would cause a moderate noise impact; project noise exposure above L_{dn} 71 dBA would cause a severe noise impact.

The existing noise exposure of the 18 residential buildings, represented by Site 4, is an L_{dn} of 59 dBA. Project noise exposure between L_{dn} 58 and 63 dBA would cause a moderate noise impact; project noise exposure above L_{dn} 62 dBA would cause a severe noise impact.

The existing noise exposure of the 21 residential buildings, represented by Site G, is an L_{dn} of 69 dBA. Project noise exposure between L_{dn} 64 and 69 dBA would cause a moderate noise impact; project noise exposure above L_{dn} 69 dBA would cause a severe noise impact.

The existing noise exposure of Waipahu High School, represented by Site G, is a maximum-hour L_{eq} of 67 dBA. Project noise exposure between 68 and 73 dBA L_{eq} would cause a moderate noise impact; project noise exposure above 73 dBA L_{eq} would cause a severe noise impact.

The project noise exposure would be 59 to 62 dBA L_{dn} at Site E and 59 to 60 dBA L_{dn} at Sites F, 4, and G. Thus, no noise impacts are predicted for the 52 residential buildings (Sites, E, F, and G), and a moderate noise impact is predicted for 18 buildings (Site 4).

5.3.8 Leeward Community College to Pearl Highlands

The existing noise exposure of Leeward Community College between the Leeward Community College Station and the Pearl Highlands Station, represented by Site 5, is a maximum-hour L_{eq} of 65 dBA. Project noise exposure between 66 and 71 dBA L_{eq} would cause a moderate noise impact; project noise exposure above 71 dBA L_{eq} would cause a severe noise impact.

The existing noise exposure of the one residential building, represented by Site 6, is an L_{dn} of 68 dBA. Project noise exposure between L_{dn} 63 and 68 dBA would cause a moderate noise impact; project noise exposure above L_{dn} 67 dBA would cause a severe noise impact.

The project noise exposure would be 52 to 60 dBA L_{dn} at Site 6 and 59 dBA maximum-hour L_{eq} at Site 5. Thus, no noise impacts are predicted in this area.

5.3.9 Pearl Highlands to Pearlridge

The existing noise exposure of the Pearl Ridge Elementary School/Pacheco Neighborhood Park between the Pearl Highlands Station and the Pearlridge Station, represented by Site 7, is a maximum-hour L_{eq} of 59 dBA. Project noise exposure between 63 and 68 dBA L_{eq} would cause a moderate noise impact; project noise exposure above 68 dBA L_{eq} would cause a severe noise impact.

The existing noise exposure of the 13 residential buildings, represented by Site H, is an L_{dn} of 66 dBA. Project noise exposure between L_{dn} 66 and 67 dBA would cause a moderate noise impact; project noise exposure above L_{dn} 67 dBA would cause a severe noise impact.

The existing noise exposure of the 22 residential buildings, represented by Site I, is an L_{dn} of 74 dBA. Project noise exposure between L_{dn} 66 and 72 dBA would cause a moderate noise impact; project noise exposure above L_{dn} 72 dBA would cause a severe noise impact.

The existing noise exposure at Neal S. Blaisdell Park, represented by Site 8, is a maximum-hour L_{eq} of 64 dBA. Project noise exposure between 66 and 70 dBA L_{eq} would cause a moderate noise impact; project noise exposure above 70 dBA L_{eq} would cause a severe noise impact.

The project noise exposure would be a maximum-hour L_{eq} noise exposure level of 58 dBA at Site 7, and a maximum-hour L_{eq} noise exposure level of 59 dBA at Site 8. Project L_{dn} noise exposure is predicted to be 59 at Site H and range between 62 to 65 at Site I. Thus, no noise impacts are predicted for Pearl Ridge Elementary School/Pacheco Neighborhood Park (Site 7), for Neal S. Blaisdell Park (Site 8), the

13 residential buildings represented by Site I, or the 22 residential buildings represented by Site H.

5.3.10 Pearlridge to Aloha Stadium

The existing noise exposure of the 19 residential buildings between the Pearlridge Station and the Aloha Stadium Station, represented by Site J, is an L_{dn} of 74 dBA. Project noise exposure between L_{dn} 66 and 72 dBA would cause a moderate noise impact; project noise exposure above L_{dn} 72 dBA would cause a severe noise impact.

The existing noise exposure of the 14 residential buildings, represented by Site AD, is an L_{dn} of 79 dBA. Project noise exposure between L_{dn} 66 and 75 dBA would cause a moderate noise impact; project noise exposure above L_{dn} 75 dBA would cause a severe noise impact.

The project noise exposure would be 62 dBA L_{dn} at Site J and 61 dBA L_{dn} Site AD. Thus, no noise impact is predicted for the 19 residential buildings represented by Site J or the 14 residential buildings represented by Site AD.

5.3.11 Aloha Stadium to Pearl Harbor Naval Base

The existing noise exposures of the Arizona Memorial are represented by Sites AZM-1, AZM-2, and AZM -3. The maximum-hour L_{eqs} range from 55 to 59 dBA. Project noise exposure between 56 and 63 dBA L_{eq} would cause a moderate noise impact; project noise exposure above 61 dBA L_{eq} would cause a severe noise impact.

The existing noise exposure of the naval residential buildings between the Aloha Stadium to Pearl Harbor Naval Base Station, represented by Sites NH-1, NH-2, and NH-3, range from an L_{dn} of 61 dBA for Sites NH-1 and NH-2 to an L_{dn} of 66 dBA for Site NH-3 . Project noise exposure between L_{dn} 59 and 64 dBA would cause a moderate noise impact; project noise exposure above L_{dn} 64 dBA would cause a severe noise impact at Sites NH-1 and NH-2. At Site NH-3, project noise exposure between L_{dn} 62 and 67 dBA would cause a moderate noise impact; project noise exposure above L_{dn} 67 dBA would cause a severe noise impact

The project noise exposure would be maximum-hour noise levels at the Arizona Memorial, Sites AZM-1, AZM-2 and AZM-3, ranging from 45 to 35 dBA L_{eq}. Thus, no noise impacts are predicted. A project noise exposure level of 59 dBA L_{dn} is predicted for Sites NH-1and NH-2. Thus, moderate noise impacts are predicted for 12 buildigns. A project noise exposure level from 59 dBA L_{dn} is predicted for site NH-3. Thus, no noise impacts are predicted.

5.3.12 Pearl Harbor Naval Base to Honolulu International Airport

The existing noise exposure of the 11 residential buildings between the Pearl Harbor Naval Base Station and the Honolulu International Airport Station, represented by Sites NH-4 and 13, range from an L_{dn} of 65 dBA at Site NH-4 to 69 dBA at Site 13.

Project noise exposure between L_{dn} 64 and 69 dBA would cause a moderate noise impact; project noise exposure above L_{dn} 69 dBA would cause a severe noise impact. Site NH-5 represents the noise exposure at the MWR Youth Baseball Field, with a maximum-hour L_{eq} of 62 dBA. Project noise exposure between 59 and 64 dBA L_{eq} would cause a moderate noise impact; project noise exposure between 61 and 64 dBA L_{eq} would cause a severe noise impact.

A project noise exposure level of 53 dBA L_{dn} is predicted for Site NH-4. Thus, no noise impacts are predicted. A project noise exposure level of 57 dBA L_{dn} is predicted for Site 13. Thus, no noise impacts are predicted. A project noise exposure level of 53 dBA L_{eq} is predicted for Site NH-5. Thus, no noise impacts are predicted.

5.3.13 Lagoon Drive to Middle Street Transit Center

The existing noise exposure at Keʻehi Lagoon Beach Park, represented by Site 21, is a maximum-hour L_{eq} of 66 dBA. Project noise exposure between 67 and 72 dBA L_{eq} would cause a moderate noise impact; project noise exposure above 72 dBA L_{eq} would cause a severe noise impact.

The project noise exposure would be a maximum-hour noise level of 55 dBA L_{eq} at Site 21. Thus, no noise impacts are predicted.

5.3.14 Middle Street Transit Center to Kalihi

The existing noise exposure of the 10 residential buildings between the Middle Street Transit Center Station and the Kalihi Station, represented by Site Q, is an L_{dn} of 75 dBA. Project noise exposure between L_{dn} 66 and 73 dBA would cause a moderate noise impact; project noise exposure above L_{dn} 73 dBA would cause a severe noise impact.

The project noise exposure would be 62 dBA L_{dn} at Site Q. Thus, no noise impacts are predicted for the 10 residential buildings.

5.3.15 Kalihi to Kapālama

The existing noise exposure of the 20 residential buildings between the Kalihi Station and the Kapālama Station, represented by Site Q, is an L_{dn} of 75 dBA. The maximum-hour L_{eq} for the elementary school is 73 dBA. Project noise exposure between 66 and 73 dBA L_{eq} would cause a moderate noise impact; project noise exposure above 73 dBA L_{eq} would cause a severe noise impact at the residential buildings. Project noise exposure between 71 and 76 dBA L_{eq} would cause a moderate noise impact, and project noise above 76 dBA L_{eq} would be a severe impact for the school.

The project noise exposure would be 62 dBA L_{dn} at Site Q. Thus, no noise impacts are predicted for the 20 residential buildings. A project maximum-hour L_{eq} of 52 dBA is predicted for the school site. Thus, no impacts would occur at the school.

5.3.16 Kapālama to Iwilei

The existing noise exposure of the Kapālama buildings between the Kapālama Station and the Iwilei Station, represented by Site 18, is a maximum-hour L_{eq} of 72 dBA. Project noise exposure between 71 and 75 dBA L_{eq} would cause a moderate noise impact; project noise exposure above 75 dBA L_{eq} would cause a severe noise impact at the residential buildings.

The project noise exposure would be a maximum-hour L_{eq} of 59 dBA at Site 18. Thus, no noise impacts would occur.

5.3.17 Iwilei to Chinatown

The existing noise exposure of the one residential building between the Iwilei Station and the Chinatown Station, represented by Site 19, is an L_{dn} of 73 dBA at ground floor and 70 dBA at the twenty-sixth floor. Project noise exposure between L_{dn} 65 and 71 dBA would cause a moderate noise impact; project noise exposure above L_{dn} 71 dBA would cause a severe noise impact.

The project noise exposure would be 53 dBA L_{dn} from ground floor to the sixth floor, 63 dba from the sixth to the twelfth floors, and 62 dBA L L_{dn} or less from the thirteenth to the twenty-sixth floor at Site 19. Thus, no noise impacts would occur.

5.3.18 Chinatown to Downtown

The existing noise exposure of the one residential building between the Chinatown Station and the Downtown Station, represented by Site AA, is an L_{dn} of 77 dBA. Project noise exposure between L_{dn} 66 and 74 dBA would cause a moderate noise impact; project noise exposure above L_{dn} 74 dBA would cause a severe noise impact. Sites 22 and 23 represent Fort Street Park and Aloha Tower Marketplace. Site 22 has an existing maximum-hour L_{eq} of 67 dBA. Project noise exposure between 68 and 72 dBA L_{eq} would cause a moderate noise impact; project noise exposure above 72 L_{eq} dBA would cause a severe noise impact. Site 23 has an existing maximum-hour L_{eq} of 63 dBA. Project noise exposure between 65 and 70 dBA L_{eq} would cause a moderate noise impact; project noise exposure above 70 dBA L_{eq} would cause a severe noise impact.

The project noise exposure would be 58 dBA L_{dn} at Site AA. Maximum-hour project noise exposure L_{eq} levels of 56 and 55 dBA are predicted for Sites 22 and 23, respectively. Thus, no noise impacts are predicted for the residential building represented by Site AA or for the two parks.

5.3.19 Downtown to Civic Center

The existing noise exposure of the one residential building between the Downtown Station and the Civic Center Station on Nimitz Highway is represented by Site AB, with existing L_{dn} levels of 76 dBA at the seventh floor and 73 dBA at the twenty-sixth floor. No apartments exist below the seventh floor. Project noise exposure to the seventh floor or above, between L_{dn} 66 and 71 dBA, would cause a moderate noise

impact; project noise exposure above L_{dn} 71 dBA would cause a severe noise impact. The project noise exposure would be 67 dBA L_{dn} on the seventh floor, 66 dBA L_{dn} from the eighth to the eleventh floors and 65 dBA L_{dn} or below from the twelfth to twenty-sixth floors. Moderate noise impacts are predicted for floors seven to eleven in the residential building represented by Site AB.

5.3.20 Civic Center to Kaka'ako

Site AC and 800 Halekauwila represents the existing noise exposure of the two residential buildings on Halekauwila Street, with an existing L_{dn} level of 67 dBA at ground level and 75 dBA at the fifth floor and above. Project noise exposure between L_{dn} 63 and 67 dBA would cause moderate noise impacts from ground floor to fourth floor, levels between 66 and 73 dBA would cause moderate noise impacts at the fifth floor and higher. Project noise exposure above L_{dn} 67 dBA would cause severe noise impacts for the ground to the fourth floor, while project noise level above 73 dBA would cause severe noise impacts for the fifth and higher floors. Site 24 represents the existing noise exposure at Mother Waldron Park, with a maximum-hour L_{eq} of 58 dBA. Project noise exposure between 62 and 67 L_{eq} dBA would cause a moderate noise impact; project noise exposure above 67 L_{eq} dBA would cause a severe noise impact.

Project noise levels range from 60 dBA L_{dn} at the ground floor to 64 dBA L_{dn} at the fifth floor for Site AC. A project noise level of 58 dBA L_{dn} is predicted at ground floor for 800 Halekauwila. Project noise levels of 59 dBA are predicted for the second floor, 60 for the third floor, 63 for the fourth floor, 66 for the fifth floor, 68 for the sixth floor, 70 for the seventh to ninth floors, 69 for the tenth floor, 68 for the eleventh floor, and 67 dBA for the twelfth and thirteenth floors. Noise levels from the fourteenth floors would be 66 dBA and lower. Noise levels from the fifteen to the thirtieth floors would be 65 dBA and lower. A project maximum-hour L_{eq} of 56 dBA is predicted for Site 24. Thus, a moderate noise impact is predicted for the seventh to eleventh floors of 800 Halekauwila. No noise impacts are predicted at Site AC or the park

5.3.21 Kaka'ako to Ala Moana Center

Sites AE and AF represent the existing noise exposure of the two residential buildings between the Kaka'ako Station and the Ala Moana Center Station. Site AE, 1133 Waimanu Street, has an existing L_{dn} range of 65 dBA from ground to the fourth floor to 75 dBA from the fifth floor and above. Project noise exposure between L_{dn} 61 and 66 dBA would cause a moderate noise impact; project noise exposure above 66 L_{dn} dBA would cause a severe noise impact for residential units below the fifth floor. Project noise exposure between 66 and 73 dBA would cause a moderate noise impact; project noise exposure above 73 dBA would cause a severe noise impact for residential units on the fifth floor and above. Site AF, the Uraku Tower, has no apartments below the seventh floor and an L_{dn} range of 74 dBA on the seventh floor to 69 dBA on the thirtieth floor. Project noise exposure between L_{dn} 64 and 72 dBA would cause a moderate noise impact; project noise exposure above 72 L_{dn} dBA would cause a severe noise impact.

The project noise exposure, for site AE, would be a project noise level of 59 dBA L_{dn} for the fourth floor and below, and project L_{dn} levels for the fifth floor and above are predicted to be 69 dBA. Thus, moderate noise impacts are predicted for Site AE. Project noise exposure, for Site AF, would be a project noise level of 63 dBA L_{dn} for the seventh to tenth floors, and project L_{dn} levels for the eleventh to thirtieth floors are predicted to be 60 dBA or less. Thus, no noise impacts are predicted for the Uraku Tower (Site AF).

5.3.22 Ala Moana Center to Convention Center

The existing noise exposure of the one residential building between the Ala Moana Center Station and the Convention Center Station, represented by Site R, is an L_{dn} of 72 dBA at ground level. Project noise exposure between L_{dn} 66 and 71 dBA would cause a moderate noise impact; project noise exposure above 71 L_{dn} dBA would cause a severe noise impact.

The project noise exposure would be a project noise level of 49 dBA L_{dn} at the floor below the project for Site R. At floors above the project, noise levels are predicted to be at most 60 dBA. Thus, no noise impacts are predicted for the building.

5.3.23 Convention Center to McCully

The existing noise exposure of the 16 residential buildings between the Convention Center Station and McCully Station, represented by Site S, is an L_{dn} of 74 dBA. Project noise exposure between L_{dn} 66 and 72 dBA would cause a moderate noise impact; project noise exposure above L_{dn} 72 dBA would cause a severe noise impact.

A project noise exposure of 62 dBA L_{dn} is predicted for Site S. Thus, no noise impacts are predicted for the 16 residential buildings.

5.3.24 McCully to Date Street

The existing noise exposure of the 12 residential buildings between the McCully Station and the Date Street Station on Kapiʻolani Boulevard, represented by Site S, is an L_{dn} of 74 dBA. Project noise exposure between L_{dn} 66 and 72 dBA would cause a moderate noise impact; project noise exposure above L_{dn} 72 dBA would cause a severe noise impact.

The existing noise exposure of the 18 residential buildings between McCully Station and the Date Street Station on Kapiʻolani Boulevard, represented by Site T, is an L_{dn} of 75 dBA. Project noise exposure between L_{dn} 66 and 73 dBA would cause a moderate noise impact; project noise exposure above L_{dn} 73 dBA would cause a severe noise impact.

The existing noise exposure of the 20 residential buildings between the McCully Station and the Date Street Station on University Avenue, represented by Site U, is an L_{dn} of 68 dBA. Project noise exposure between L_{dn} 63 and 68 dBA would cause a

moderate noise impact; project noise exposure above L_{dn} 68 dBA would cause a severe noise impact.

A project noise exposure of 62 dBA L_{dn} is predicted for Site S; an L_{dn} of 61 dBA is predicted for Site T; and a project noise level of 63 dBA L_{dn} is predicted for Site U. Thus, no noise impacts are predicted for the 30 residential buildings on Kapiʻolani Boulevard represented by Sites S and T. No noise impacts are predicted for the 20 residential buildings on University Avenue represented by Site U.

5.3.25 Date Street to Mōʻiliʻili

The existing noise exposure of the 25 residential buildings between the Date Street Station and the Mōʻiliʻili Station on University Avenue, represented by Site V, is an L_{dn} of 68 dBA. Project noise exposure between L_{dn} 63 and 68 dBA would cause a moderate noise impact; project noise exposure above L_{dn} 68 dBA would cause a severe noise impact.

A project noise exposure level of 61 dBA L_{dn} is predicted for Site V. Thus, no noise impacts are predicted for the 25 residential buildings on University Avenue represented by Site V.

5.3.26 Convention Center to Kālaimoku Street

The existing noise exposure of the 10 residential buildings mauka of Kalākaua and Kūhiō Avenues between the Convention Center Station and the Kālaimoku Street Station, represented by Site W, is an L_{dn} of 73 dBA at ground level. Project noise exposure between L_{dn} 66 and 71 dBA would cause a moderate noise impact; project noise exposure above L_{dn} 71 dBA would cause a severe noise impact.

The existing noise exposure of the three residential buildings makai of Kalākaua Avenue between the Convention Center Station and the Kālaimoku Street Station, represented by Site X, is an L_{dn} of 77 dBA at ground level. Project noise exposure between L_{dn} 66 and 75 dBA would cause a moderate noise impact; project noise exposure above L_{dn} 75 dBA would cause a severe noise impact.

The existing noise exposure of the park at the intersection of Kalākaua and Kūhiō Avenues, represented by Site 20, is a maximum-hour L_{eq} of 70 dBA. Project noise exposure between 70 and 74 dBA L_{eq} would cause a moderate noise impact; project noise exposure above 74 dBA L_{eq} would cause a severe noise impact.

A project noise exposure level of 59 dBA for floors below the guideway and at most 68 dBA L_{dn} for floors above the guide way are predicted for Site W, and an L_{dn} of 53 dBA is predicted for floors below the guideway and at most 64 dBA is predicted for floors above the guideway at Site X. Site 20 has a predicted maximum-hour L_{eq} of 55 dBA. Thus, no noise impacts are predicted for building floors below the guideway or the park. Moderate noise impacts are predicted at floors above the guideway for the 10 residential buildings represented by Site W. Current engineering plans do not have a profile of the project in this area, so the floor level and number of floors cannot be determined at this time. A more detailed study of the land uses of

the high-rise building in this area will need to be conducted when this extension is funded.

5.3.27 Kālaimoku Street to Lili'uokalani

The existing noise exposure of the 31 residential buildings on Kūhiō Avenue between the Kālaimoku Street Station and the Lili'uokalani Station, represented by Sites Y and Z, is an L_{dn} of 75 dBA at ground level. Project noise exposure between L_{dn} 66 and 73 dBA would cause a moderate noise impact; project noise exposure above L_{dn} 73 dBA would cause a severe noise impact.

Project noise exposure levels of 59 and 58 dBA L_{dn} are predicted below the guideway for Sites Y and Z. For the building floors above the guideway, a 70 dBA L_{dn} is predicted for Site Y and an L_{dn} of 69 dBA is predicted for Site Z. Thus, no noise impacts are predicted for building floors below the guideway. Moderate noise impacts are predicted for the 31 residential buildings with floors above the guideway represented by Sites Y and Z. Current engineering plans do not have a profile of the project in this area, so the floor level and number of floors cannot be determined at this time. A more detailed study of the land uses of the high-rise building in this area will need to be conducted when this extension is funded.

Delete:	Sections 5.4, 5.5, and 5.6

6 Mitigation

Change:	Replace Section 6.2 with the following:

6.2 All Build Alternatives

By incorporating a solid, 3-foot-high parapet wall above the top-of-rail at the edge of the guideway structure as part of the design, severe noise impacts that would have occurred with an open guideway have been avoided for all sites. With the parapet wall, seven sites will experience moderate noise impacts. By adding wheel skirts to the transit vehicles, the project noise levels for Sites 3, 4, NH-1 and NH-2 will be reduced to less than the impact criteria. Three of these areas are on floors above the guideway at three high-rise apartments. In these areas the parapet wall will have a limited benefit at floors above the guideway. However, the wheel skirts on the transit vehicles will reduce noise levels at the floors above the guideway by approximately 3 dBA.

At the three buildings where moderate noise impacts are predicted to occur even with wheel skirts in use, use of sound absorptive material on the guideway horizontal surface adjacent to and perhaps between the tracks in these three areas are expected to reduce the project noise levels at the upper floors to below the impact level. The specific material has not been selected. However, it is expected to be a mat or pad approximately 1 to 1½ inch thick that is unaffected by rain and sun and

can be walked on by occasional maintenance workers (and by passengers if required for emergency egress from a train). The acoustic absorption NRC value would be approximately 0.60. Similar products made of recycled rubber are utilized on floor surfaces of firing ranges and noisy shop facilities for control of reflected noise. FTA data indicates that track ballast on an aerial guideway can reduce noise levels by 5 dBA. The evaluated sound absorptive material would be more effective than track ballast and would provide a reduction of at least 3 dBA.

Approximately 800 linear feet of sound absorptive material, from Pupukahi Street to Pupupuhi Street, would be needed for 94-340 Pupumomi Street. For the building at 860 Halekauwila Street, sound absorptive material would be needed from approximately 200 feet ‘Ewa of Ward Avenue to approximately 100 feet Koko Head of Ward Avenue, a total of approximately 300 linear feet. 1133 Waimanu would require the sound absorptive material to be installed between Kamake‘e Street and Waimanu Street, a total of approximately 920 linear feet.

Change: Replace Appendix A with the following:

Appendix A
Predicted Project Noise Exposure Levels

Rec.	Receptor Description	# Bldgs	Existing Noise Level (dBA)	Project Noise Exposure without walls and wheel skirt in the design (dBA)	Project Noise Exposure with current design (dBA)	Project Noise Exposure with current design and wheel skirts (dBA)
A	Saratoga Ave/ Franklin Ave	22	59	67	57	54
B	4235 Independence Rd	20	74	68	59	56
C	91-1005 Koahi St	6	54	54	48	45
1	Kahi Mohala Mental Health Facility	2	57	64	56	54
D	94-508 Farrington Hwy	40	72 Ground Floor	72 Ground floor; 73 2nd, to 4th Floors ; 72 5th, 6th and 7th Floors; 71 8th and 9th Floors	60 Ground floor; 61 2nd Floor,62 3rd and 4th Floors; 71 5th, 6th and 9th Floors	57 Ground floor;58 2nd Floor, 60 3rd and 4th Floors; 68 5th, 6th and 9th Floors
2	Waipahu Intermediate	2	63	67	58	55
3	94-309 Hanewai Circle	20	63	72	60	57
E	94-979 Kahuamoku Pl	16	78	71	59	57
F	94-1041 Kahuamoku Pl	15	73 Ground Floor, 70 4th Floor	71 Ground Floor; 72 2nd to 4th Floor	59 Ground Floor; 60 2nd Floor; and 3rd Floor; 62 4th Floor	56 Ground Floor; 58 2nd Floor; and 3rd Floor; 59 4th Floor
4	91-1144 Awaiki Pl	18	59	71	59	56
G	94-261 Kahualena	21	69	72	60	58
5	Leeward Community College	1	65	64	59	56
6	1060 Kamehameha Hwy	1	67	61 Ground Floor; to 5th floor; 60 6th to 9th floor; 59 10th to 13th floor, 58 14th to 66th floors, 57 17th to 20th floor, 56 dBA or less 21 to 46th Floor	52 Ground Floor; 59 2nd to 5th floor; 60 6th to 9th floor; 59 10th to 13th floor, 58 dba or less 14th to 46th floors	49 Ground Floor; 56 2nd to 5th floor; 57 6th to 9th floor; 56 10th to 13th floor, 55 dba or less 14th to 46th floors
7	Pacheco Neighborhood Park—Pearl Ridge Elementary School	3	59	69	58	56
H	751 Pu‘u Kala	22	66	71	59	56

Rec.	Receptor Description	# Bldgs	Existing Noise Level (dBA)	Project Noise Exposure without walls and wheel skirt in the design (dBA)	Project Noise Exposure with current design (dBA)	Project Noise Exposure with current design and wheel skirts (dBA)
I	98-5 Kuleana Pl	13	74	71 Ground Floor to 4th floor	62 Ground Floor; 63 2nd floor; 64 3rd floor; 65 4th floor	59 Ground Floor; 60 2nd floor; 61 3rd floor; 62 4th floor
8	Neal S Blaisdell Park	1	64	67	59	56
J	98-124B Kihale St	19	74	71	62	59
AD	99-002 'Ie'le Street	14	79	72	61	58
AZM-1	Arizona Memorial Parking Lot	0	55	52	45	42
AZM-2	Arizona Memorial Remembrance Circle	0	56	49	43	40
AZM-3	Arizona Memorial Boat Dock	0	62	40	35	32
NH-1	Betio Place	8	61	68	59	56
NH-2	Makalapa Guest House	4	61	67	59	56
NH-3	Makalapa Place	5	66	69	59	56
NH-4	Community Center	2	65	62	53	50
NH-5	MWR Youth Field	0	62	62	53	50
13	1086 Fisler Ct	20	69	65	57	54
21	Ke'ehi Beach Lagoon Park	1	66	64	55	52
Q	1746 Dillingham Blvd	30	75	72	62	59
18	Honolulu Community College	4	72	68	59	56
19	215 King St	1	73 Ground Floor, 73 6th floor, 70 26th Floor	64 Ground to 12th floor; 63 13th to 19th floor, 62 20th to 26th floor	53 Ground to 6th floor;63 6th to 12th floor; 62 or less 13th to 26th floor	50 Ground to 6th floor;60 6th to 12th floor; 59 or less 13th to 26th floor
AA	901 River St	1	77	67	58	54
22	Fort Street Park	1	67	65	56	53
23	Aloha Marketplace	1	63	64	55	52
AB	700 Richards St	1	76 Ground Floor, 74 7th floor, 73 26th Floor	No Apartments 1st to 6th Floor; 67 7th Floor; 66 8th to 11th Floor; 65 12th to 14th Floor; 64 15th to 17th Floor, 63 18th and 20th Floor, 62 or less 21st to 26th Floor	No Apartments 1st to 6th Floor; 67 7th Floor; 66 8th to 11th Floor; 65 12th to 14th Floor; 60 or less 15th to 26th Floor	No Apartments 1st to 6th Floor; 64 7th Floor; 63 8th to 11th Floor; 62 12th to 14th Floor; 61 or less 15th to 26th Floor

Rec.	Receptor Description	# Bldgs	Existing Noise Level (dBA)	Project Noise Exposure without walls and wheel skirt in the design (dBA)	Project Noise Exposure with current design (dBA)	Project Noise Exposure with current design and wheel skirts (dBA)
AC	610 Cooke St	1	67 Ground Floor, 75 5th floor and above	72 Ground Floor, to 3rd floor, 73 4th to 5th Floor,	60 Ground Floor, 61 2nd Floor, 62 3rd floor, 63 4th Floor, 64 5th Floor	57 Ground Floor, 58 2nd Floor, 59 3rd floor, 60 4th Floor, 61 5th Floor
24	Mother Waldron Park	1	58	64	56	53
	860 Halekauwila	1	67 Ground Floor, 75 5th floor and above	72 Ground Floor, to 3rd floor, 73 4th to 6th Floor, 72 7th Floor, 71 8th and 9th Floor, 70 10th Floor, 69 11th floor, 68 12th and 13th floor, 67 14th Floor 66 15, and 16th Floor, 65 17th and 18th Floor, 64 20th and 21st Floor, 63 or less 22nd to 30th	58 Ground Floor, 59 2nd Floor, 60 3rd floor, 63 4th Floor, 66 5th Floor, 68 6th Floor, 70 7th Floor to 9th Floor, 69 10th Floor, 68 11th floor, 67 12th and 13th floor, 66 14th Floor, 65 15th, and 16th Floor, 64 17th and 18th Floor, 63 or less 19th to 30thFloors	55 Ground Floor, 56 2nd Floor, 57 3rd floor, 60 4th Floor, 61 5th Floor, 60 6th Floor, 67 7th Floor to 9th Floor, 66 10th Floor, 65 11th floor, 64 12th and 13th floor, 63 14th Floor, 62 15th, and 16th Floor, 61 17th and 18th Floor, 60 or less 19th to 30thFloors.
AE	1133 Waimanu Street	1	65 Ground Floor, 75 5th floor and above	69 Ground Floor and above	56 Ground Floor, 57 2nd Floor, 58 3rd Floor, 59 4th Floor, 69 5th Floor and above	53 Ground Floor, 54 2nd Floor, 55 3rd Floor, 56 4th Floor, 66 5th Floor and above
AF	Uraku Tower	1	80 7th Floor, 75 26th Floor	No Apartments 1st to 6th Floor, 65 7th to 10th Floor, 64 or under 11th to 16th Floor, 63 or less 17th to 30th Floor	No Apartments 1st to 6th Floor, 63 7th to 10th Floor, 62 or under 11th to 30th Floors	No Apartments 1st to 6th Floor, 60 7th to 10th Floor, 59 or under 11th to 30th Floors
R	Ala Moana Hotel at Kona and Mahukona	1	72	62	49 for floors below the guideway, at most 60 for floors above the guideway	46 for floors below the guideway, at most 59 for floors above the guideway
S	2148 Kapiʻolani Blvd	28	74	72	62	59
T	2232 Kapiʻolani Blvd	18	75	70	61	58
U	630 University Ave	20	68	73	63	60
V	801 University Ave	25	68	71	61	58
W	1880 Kalākaua Ave	10	73	69	59 for floors below the guideway, at most 68 for floors above the guideway	56 for floors below the guideway, at most 67 for floors above the guideway

Rec.	Receptor Description	# Bldgs	Existing Noise Level (dBA)	Project Noise Exposure without walls and wheel skirt in the design (dBA)	Project Noise Exposure with current design (dBA)	Project Noise Exposure with current design and wheel skirts (dBA)
X	1911 Kalākaua Ave	3	77	65	53 for floors below the guideway, at most 64 for floors above the guideway	51 for floors below the guideway, at most 64 for floors above the guideway
20	King Kalakaua Park	0	70	65	55	53
Y	2406 Kūhiō Hwy	17	75	71	59 for floors below the guideway, at most 70 for floors above the guideway	57 for floors below the guideway, at most 69 for floors above the guideway
Z	2520 Kūhiō Hwy	14	75	70	58 for floors below the guideway, at most 69 for floors above the guideway	56 for floors below the guideway, at most 68 for floors above the guideway