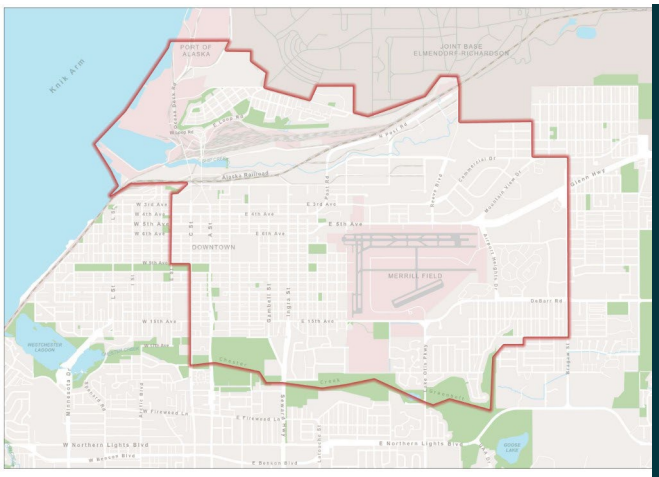

AMATS: Seward Highway to Glenn Highway Connection
Planning & Environmental Linkage Study
State Project No.: CFHWY00550
Federal Project No.: 0001653

System Performance Memorandum

January 2023

This planning document may be adopted in a subsequent environmental review process in accordance with 23 USC 168 Integration of Planning and Environmental Review and 23 CFR 450 Planning Assistance and Standards.

The environmental review, consultation, and other actions required by applicable federal environmental laws for this project are being, or have been, carried out by DOT&PF pursuant to 23 USC 327 and a Memorandum of Understanding dated November 3, 2017, and executed by FHWA and DOT&PF.

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Acronyms

AAC	Alaska Administrative Code
AADT	annual average daily traffic
AHS	Alaska Highway System
AMATS	Anchorage Metropolitan Area Transportation Study/Solutions
CCS	Continuous Count Stations
CFR	Code of Federal Regulations
DoD	Department of Defense
DOLWD	Alaska Department of Labor and Workforce Development
DOT&PF	Alaska Department of Transportation and Public Facilities
FHWA	Federal Highway Administration
GHNP	*Government Hill Neighborhood Plan*
GSD	Greenway-Supported Development
HPP	Historic Preservation Plan
IRI	International Roughness Index
ISER	Institute of Social and Economic Research
LOS	level of service
LRTP	Long Range Transportation Plan
LTS	Level of Traffic Stress
LUP	Land Use Plan
MOA	Municipality of Anchorage
mph	miles per hour
MSB	Matanuska-Susitna Borough
MTP	Metropolitan Transportation Plan
MVMT	million vehicle miles traveled
NB	Northbound
NHFN	National Highway Freight Network
NHS	National Highway System
NPRN	National Port Readiness Network
OSHP	*Official Streets and Highways Plan*
PEL	Planning and Environmental Linkages

POA	Port of Alaska
SB	Southbound
STRAHNET	Strategic Highway Network
UMED	University Medical District
USC	United States Code
VHD	vehicle hours of delay
VHT	vehicle hours of travel
VMT	vehicle miles of travel

1. Introduction

1.1 Seward Glenn PEL Study Overview

The Seward-Glenn Mobility Planning and Environmental Linkages (PEL) Study will identify and evaluate alternatives to improve transportation mobility, safety, access, and connectivity between the Seward Highway, near 20th Avenue, and the Glenn Highway, east of Airport Heights Drive. The study will also identify alternatives to improve access to and from the Port of Alaska (POA) to the highway network. The study area is shown in Figure 1.

1.2 Purpose of this Memorandum

The purpose of this memorandum, consistent with 23 United States Code (USC) 168 and 23 Code of Federal Regulations (CFR) 450.212 and 450.318, is to summarize the existing and desired transportation system performance conditions of the study area[1]. The intent of this memorandum is to report data and analyses to identify and support the purpose and need statement for the project. The purpose and need statement itself is reported in a separate memorandum, but is based on the analysis contained within this document. This memorandum provides information about the desired performance of the system based on a review of existing transportation and land use plans and previously approved performance criteria. This memorandum makes recommendations regarding the transportation needs, such as the key problems to be addressed and the underlying causes of those problems.

Where possible, the existing and future transportation performance conditions were identified for a variety of travel modes in the project area, including automobile, public transportation, walking, and bicycling. This includes a review of the system performance published in existing approved transportation plans, analyses conducted for the PEL Study, and stakeholder input on desired system performance. The information presented in this memorandum will be used to support the study's purpose and need statement as well as the alternative selection criteria and will be included in the final Seward-Glenn Mobility PEL Study report.

Because this memorandum is used to document the purpose of and needs for the project, it is based on Federal Highway Administration (FHWA) guidance regarding purpose and need development. Therefore, this memorandum examines the transportation system performance in terms of the nine items that FHWA guidance recommends are often a relevant part of a project's

[1] This memorandum may be adopted or incorporated by reference by a relevant agency during a later environmental review process, as allowed by law and regulations. The environmental review, consultation, and other actions required by applicable federal environmental laws for this study are being, or have been, carried out by the Alaska Department of Transportation and Public Facilities (DOT&PF) pursuant to 23 USC 327 and a Memorandum of Understanding dated November 3, 2017, and executed by the FHWA and DOT&PF. This PEL Study will be developed in accordance with DOT&PF's *Planning and Environmental Linkages (PEL) Guidebook* (DOT&PF 2021).

purpose and need statement.[2,3] These nine FHWA recommended purpose and need considerations are:

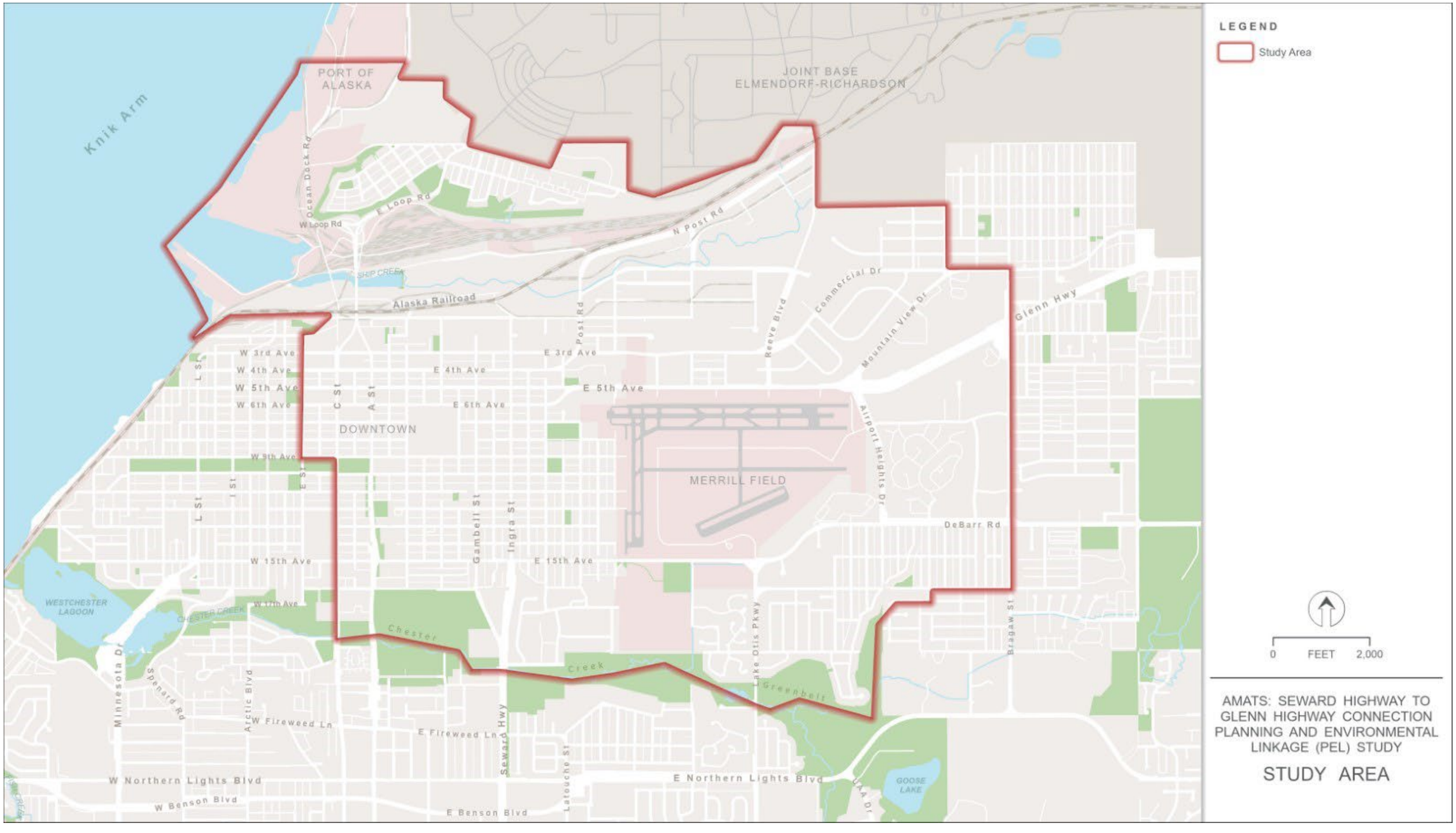
- Legislation
- Project Status
- System Linkage
- Capacity
- Transportation Demand
- Social Demands or Economic Development
- Modal Interrelationships
- Safety
- Roadway Deficiencies

According to FHWA Technical Advisory 6640.8a and FHWA's Environmental Review Toolkit for National Environmental Policy Act Transportation Decisionmaking[4], these topics are meant to assist in explaining the need for a proposed transportation action by describing the problems to be corrected.

Within each section of this memorandum, each item presents the FHWA guidance, followed by an analysis of the current system performance within the study area, a recommendation of the desired system performance for each item, and whether that topic is relevant to the study's purpose and need.

[2] https://www.environment.fhwa.dot.gov/legislation/nepa/guidance_preparing_env_documents.aspx#pn
[3] https://www.environment.fhwa.dot.gov/nepa/trans_decisionmaking.aspx
[4] https://www.environment.fhwa.dot.gov/nepa/trans_decisionmaking.aspx

Figure 1. Study Area



2. Legislation

2.1 FHWA Purpose and Need Guidance

The FHWA guidance recommends that legislation is an element that should be investigated in identifying a project's purpose and need statement. FHWA guidance indicates:

> Legislation – Explain if there is a Federal, state, or local governmental mandate for the action.[5]

2.2 System Analysis

No federal, state, nor local government mandates apply to the project study area and this PEL Study. However, the project is identified in several local plans. For additional information, please see Section 3, Project Status.

2.3 System Performance Recommendation

No performance gap is identified, and no change is recommended. Since no legislation mandates action in this corridor, this purpose and need factor is not applicable.

3. Project Status

3.1 FHWA Purpose and Need Guidance

FHWA guidance recommends that project status be considered in identifying a project's purpose and need statement. FHWA guidance indicates:

> Project Status – Briefly describe the action's history, including measures taken to date, other agencies and governmental units involved, action spending, schedules, etc.[6]

3.2 System Analysis

3.2.1 Transportation Planning History of Study Area

Constructed in the 1940s, the Seward and Glenn Highways are controlled-access freeways separated by urban arterial streets within the Downtown and Midtown areas of Anchorage. By the late 1960s, the population of Anchorage and the Matanuska-Susitna Valley had grown substantially due to the development of both areas, resulting in an increased volume of traffic on roads and highways in Anchorage that accessed major employment, commercial, and industrial centers. The two freeways are the primary National Highway System (NHS) corridors within the Anchorage Bowl. As a result, transportation planners have consistently identified these

[5] https://www.environment.fhwa.dot.gov/legislation/nepa/guidance_preparing_env_documents.aspx
[6] https://www.environment.fhwa.dot.gov/legislation/nepa/guidance_preparing_env_documents.aspx

highways as areas for improvement in various planning documents over the last 50 years. Over time, these documents have contained plans for the construction of a freeway-type connection of the two highways along the eastern edge of the Downtown and Midtown areas. Those plans include:

- *Anchorage Freeway Study* (1963), Alaska Department of Transportation and Public Facilities (DOT&PF)
- *Anchorage Metropolitan Area Transportation Plan* (1968), Anchorage Metropolitan Area Transportation Solutions (AMATS)
- *Revised Transportation Plan* (1972), AMATS
- *Long Range Element* (1976), City of Anchorage
- *Major Corridors Study* (1982), DOT&PF
- *Long Range Transportation Plan* (1984), AMATS
- *Long Range Transportation Plan* (1991), AMAT
- *Long Range Transportation Plan* (1994 and 1997), AMATS
- *Long Range Transportation Plan* (2001), AMATS
- *Glenn Highway Major Investment Study* (2001), DOT&PF
- *New Seward Highway Major Investment Study* (2002), DOT&PF
- *East Anchorage Study of Transportation* (2003), DOT&PF
- *Anchorage Bowl 2025 Long-Range Transportation Plan* (2005), AMATS
- *2035 Metropolitan Transportation Plan* (MTP; 2012), AMATS
- *2040 Metropolitan Transportation Plan* (2020), AMATS

3.3 System Performance Recommendation

Transportation issues surrounding the connection between the Seward and Glenn Highways have been identified for decades in Anchorage-area, publicly developed, transportation planning documents. Several plans have explicitly stated the desire to construct a limited-access freeway connection between these highways. This PEL Study and a long-term project to construct a connection between these highways are identified as the next step toward completing freeway and local street projects in the current, approved MTP (MTP #129, MTP #214, and MTP #316; AMATS 2020). The cost for each project is shown in Table 1. The planning history suggests long-standing transportation and land use issues within the study area affect local neighborhoods and are relevant to the project's purpose and need. Recently adopted plans have direct project relevance and should be considered in developing the project's purpose and need statement. The issues raised by these plans and relevance to the project's purpose and need are discussed in Section 7, Social Equity or Economic Development.

Table 1. Seward Highway/Glenn Highway Cost Estimates from the 2040 MTP

MTP Project #	Project Name	Timeframe	Cost Estimate
129	Seward Highway/Glenn Highway Connection Planning and Environmental Linkages (PEL) Study – 20th Avenue (Chester Creek) to Airport Heights Road	Short term	$5,000,000

MTP Project #	Project Name	Timeframe	Cost Estimate
214	Seward Highway/Glenn Highway Connection – 20th Avenue (Chester Creek) to 13th Avenue	Long term	$237,500,000
316	Seward Highway/Glenn Highway Connection – 13th Ave to Airport Heights Interchange	Illustrative	$662,500,000
Total			**$905,000,000**

Source: AMATS 2020

4. System Linkage

4.1 FHWA Purpose and Need Guidance

FHWA guidance recommends that system linkages are an element that should be investigated in identifying a project's purpose and need statement. FHWA guidance indicates:

> System Linkage – Discuss if the proposed action is a "connecting link" and how it fits into the transportation system.[7]

4.2 System Analysis

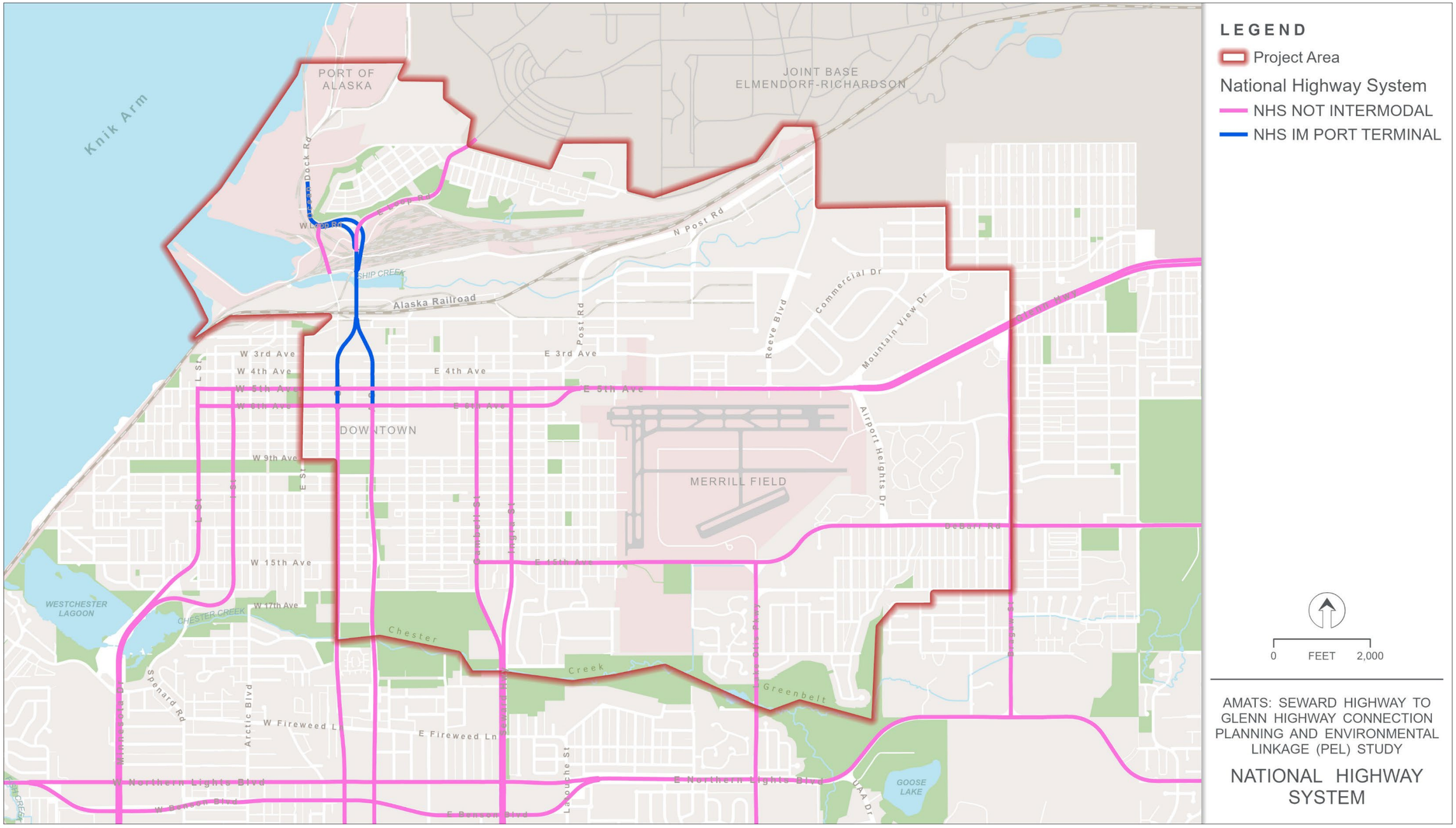
System linkage refers to how a project fits into the transportation system (i.e., is the project needed to complete a missing link in the transportation network). The desire is to have a multimodal transportation network that supports mobility and access, and allows people to travel in an efficient, safe, and predictable manner based on travel speed, degree of controlled access, and land use setting or context.

4.2.1 National Highway System

The NHS is an interconnected system of routes that serve important national functions: security, commerce, and travel. The NHS consists of interstates, principal arterial routes, the Strategic Highway Network (STRAHNET), major strategic highway connectors, and routes connecting to major intermodal facilities such as airports, ports, and ferry terminals. DOT&PF typically manages and maintains NHS routes in Alaska. Figure 2 shows NHS facilities within the study area. These include the Glenn and Seward Highways, 5th Avenue, 6th Avenue, C Street (south of 6th Avenue), A Street (south of 6th Avenue), and 15th Avenue. The Seward and Glenn Highways are classified as interstate routes, STRAHNET, strategic highway connectors, and routes connecting to major intermodal facilities.

[7] https://www.environment.fhwa.dot.gov/legislation/nepa/guidance_preparing_env_documents.aspx

Figure 2. National Highway System



Source: DOT&PF n.d.

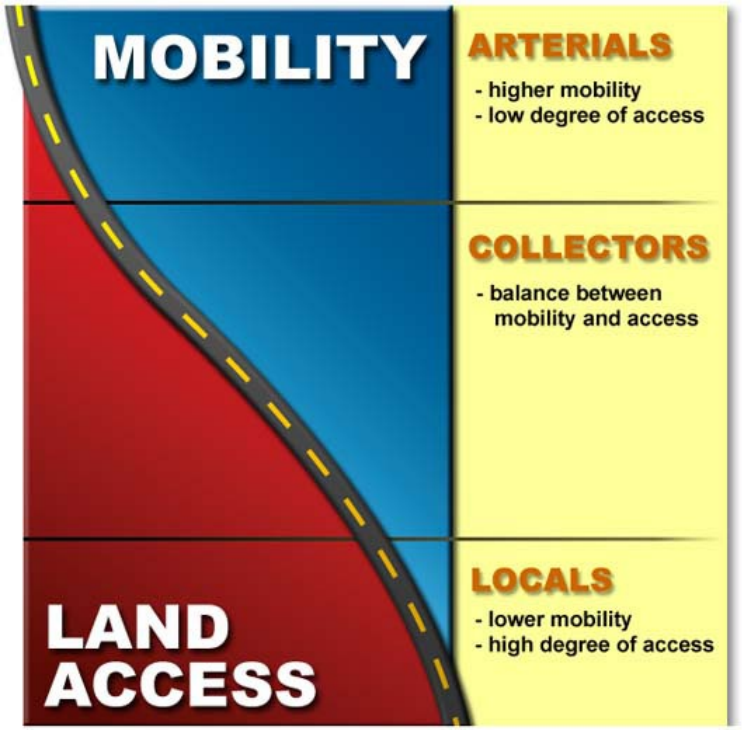
4.2.2 Alaska Highway System

The Alaska Highway System (AHS) consists of highways that have statewide significance but are not on the NHS. The AHS includes routes that connect communities and link to recreational sites or areas of resource development. DOT&PF manages and maintains most AHS routes. No AHS routes are within the study area[8].

4.2.3 Functional Classification

DOT&PF and the Municipality of Anchorage (MOA) use functional classification to classify each road based on their relative emphasis on mobility versus land access (see Figure 3).

Figure 3. Functional Classification Overview



Basically, a road can be functionally classified as:

- **Arterial**: A road that primarily provides mobility so traffic can quickly and safely move from one place to another.
- **Collector:** A road that links arterials and local roads, and performs some duties of each.
- **Local**: A road that primarily provides access to homes, businesses, and other property.

[8] For additional information about the AHS, please see https://dot.alaska.gov/stwdplng/fclass/nhs_ahs_map.shtml.

FHWA requires states to classify all public roads[9]. The classifications are submitted to FHWA for approval; when approved, they serve as the official record for Federal-aid highways and the basis for NHS designation.

Table 2 shows DOT&PF and MOA's classification systems. The approximate equivalents are shown in the same row.

Table 2. DOT&PF and MOA Functional Classification Hierarchies

DOT&PF Urban	MOA
Principal Arterial Interstate	Freeway
Principal Arterial – Other Freeways and Expressways	Expressway
Other Principal Arterial	Major Arterial
Minor Arterial	Minor Arterial
Major/Minor Collector	Collector
Local	Local

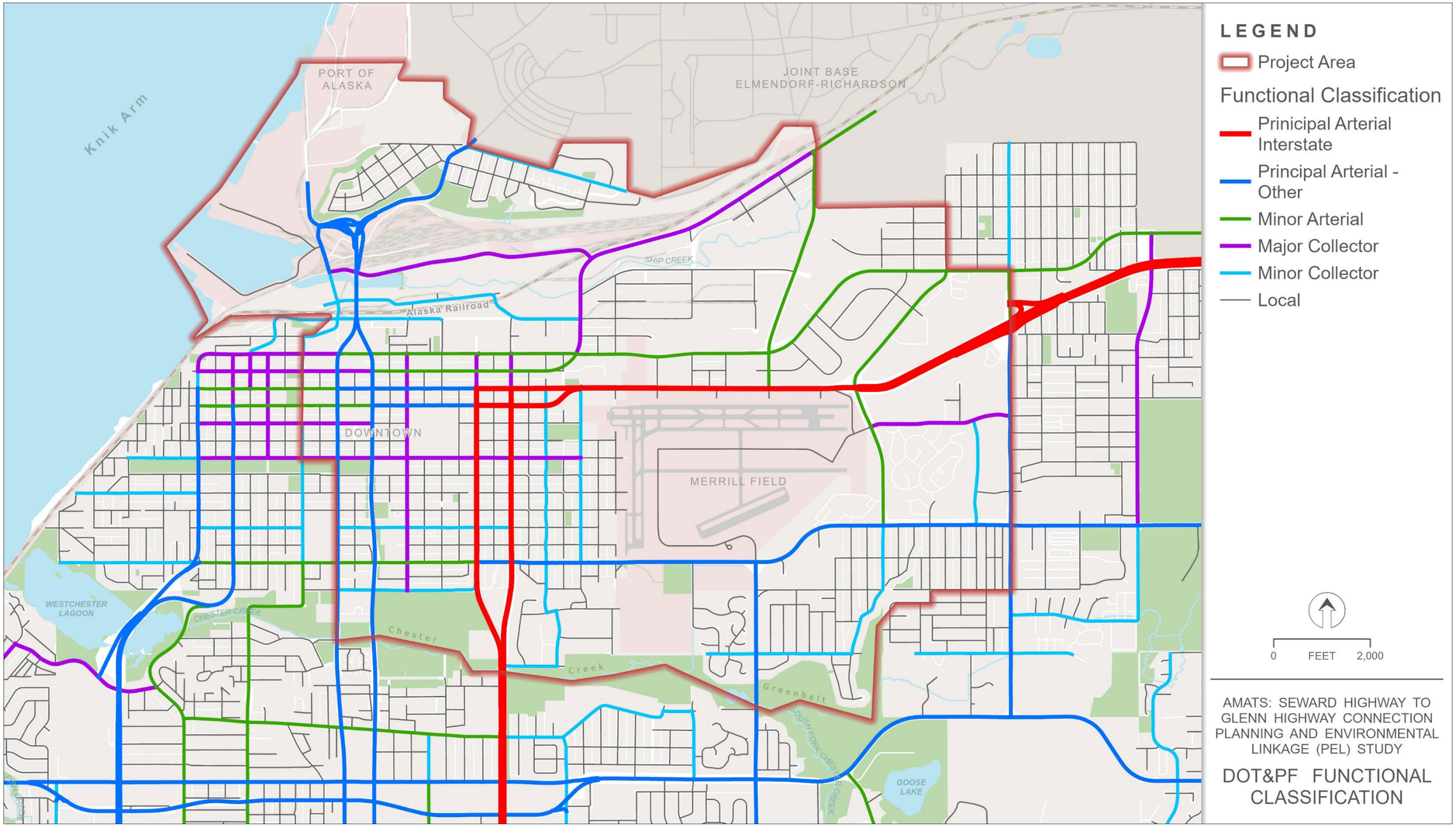
Source: DOT&PF n.d.

Freeways, expressways, and interstates have the greatest mobility but typically have limited access, meaning access to these roadways is controlled or limited to maximize mobility by eliminating conflicts with driveways and at-grade intersections that would otherwise hinder travel speed and safety. Access to these roadways is often limited to controlled locations at entrance and exit ramps. Local roads primarily provide property/land access and have greater limits to mobility and speed. Collectors and arterials are intermediate between local roads and freeway classifications and manage access to try to achieve a balance between access and mobility. Figure 4 shows the DOT&PF functional classification system within the study area. The Glenn and Seward Highways, along with Ingra and Gambell Streets, are classified as Principal Arterial Interstate. The other roads are a mix of Principal Arterial – Other, Minor Arterial, Major Collector, Minor Collector, and Local.

Figure 5 shows the MOA functional classification as listed in the Anchorage's *Official Streets and Highways Plan* (OSHP) (MOA 2014a). It shows the Glenn Highway (west of Airport Heights) and Seward Highway (south of 20th Avenue) as freeway, and Ingra and Gambell Streets as major arterials. Other major arterials within the study area include 5th Avenue, 6th Avenue, A Street, C Street, 15th Avenue, Lake Otis Parkway, and Merrill Field Drive. Most of the remaining roads within the study area are minor arterials or collectors.

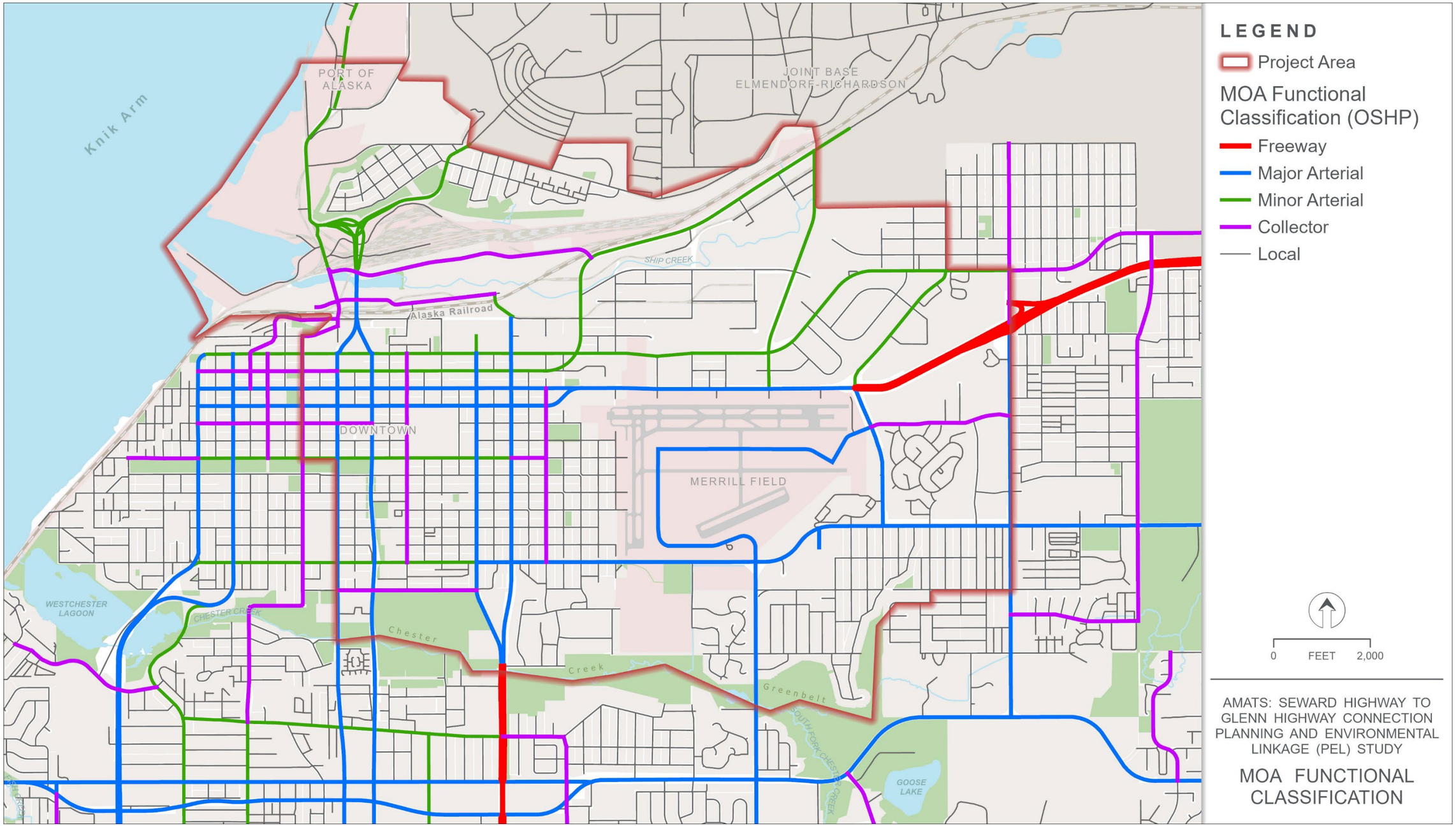
[9] For additional information on Functional Classification, please see https://www.fhwa.dot.gov/planning/processes/statewide/related/highway_functional_classifications/

Figure 4. DOT&PF Functional Classification



Source: DOT&PF n.d.

Figure 5. MOA Functional Classification



Source: MOA 2014a

4.3 System Performance Recommendation

The Seward Highway – Glenn Highway corridor is designated as an NHS and Interstate Highway System. The DOT&PF and MOA functional classifications system have differing classifications for Ingra and Gambell Streets; the DOT&PF classifies the streets as interstate principal arterial, while the MOA classifies the streets as major arterial. The functions of both of the respective classifications are to move large volumes of traffic through the corridor, but with few conflicts and in an efficient manner for regional NHS travel to ports and airports.

The FHWA's Highway Functional Classifications (FHWA 2017) states:

> Interstates are the highest classification of Arterials and were designed and constructed with mobility and long-distance travel in mind. Since their inception in the 1950's, the Interstate System has provided a superior network of limited access, divided highways offering high levels of mobility while linking the major urban areas of the United States… All routes that comprise the Dwight D. Eisenhower National System of Interstate and Defense Highways belong to the Interstate functional classification category and are considered Principal Arterials.

The FHWA's classification of "Other Principal Arterial" may describe the current connection between the Glenn and Seward Highways more accurately (FHWA 2017):

> These roadways serve major centers of metropolitan areas, provide a high degree of mobility and can also provide mobility through rural areas. Unlike their access-controlled counterparts, abutting land uses can be served directly. Forms of access for Other Principal Arterial roadways include driveways to specific parcels and at-grade intersections with other roadways. … For the most part, roadways that fall into the top three functional classification categories (Interstate, Other Freeways & Expressways and Other Principal Arterials) provide similar service in both urban and rural areas. The primary difference is that there are usually multiple Arterial routes serving a particular urban area, radiating out from the urban center to serve the surrounding region. In contrast, an expanse of a rural area of equal size would be served by a single Arterial.

The OSHP (MOA 2014a) states the following regarding major arterial classification:

> Major arterials are designed to rapidly move large volumes of traffic and access should be controlled. Major arterials also connect major traffic generators within a city and link important inter-city routes by forming an integrated system within the community. A secondary function of major arterials is to provide land access.
>
> Traffic volumes on these streets will typically be over 20,000 trips a day. There should be at least 4 moving lanes, paved shoulders (for emergency parking), and a divider wherever possible. Access should be carefully controlled. Residential development should be served from side streets. A detailed traffic analysis should be made to determine how best to serve commercial property, whether from service roads, shared entrances, or side streets.

The current system experiences conflicting and competing travel functions in the Glenn and Seward Highway corridor within the study area. These roadways are classified in a way that focuses on moving large volumes of traffic through the corridor; however, access is not controlled through the corridor, and numerous stoplight-controlled intersections and uncontrolled driveways occur. The “highways” are composed of arterial streets that traverse local neighborhoods and also serve important local travel functions, including property access and mobility for shorter, local trips.

The Seward and Glenn Highways provide important regional connecting links between major employment centers, residential areas, and the POA. As regionally important facilities that are part of the NHS, these roadways are intended to serve longer distance travel and are focused on mobility and travel efficiency. These facilities also carry a large portion of truck freight and are part of the Regional Truck Routes identified in the *Anchorage Freight Mobility Study* (AMATS 2017). The NHS within the study area provides several critical regional linkages, including: (1) connecting residential areas to employment centers for people on their daily commutes; (2) connecting the POA and Ship Creek industrial area to the highway network for truckers distributing containers to communities throughout the Alaska road system; and (3) connecting Joint Base Elmendorf-Richardson to the highway network to allow efficient deployment throughout Alaska, should the need arise. These roadways have been designed as high-capacity roadways with relatively high travel speeds; however, conflicts do occur with local traffic, reducing the functionality of the NHS for regional travel. The functional classification system needs to work together to provide sufficient capacity but also reduce conflicts (which will improve safety), and support economic activity through efficient connections on the NHS to the POA and airports.

Figure 6 shows the existing arterial connection in the regional highway network and some of the regional destinations to which this important link connects.

Local travelers face barriers associated with wide streets, high speeds, and congestion in getting across the NHS facilities in the current Seward and Glenn Highway corridor within the study area. The facility design does not meet current design standards. Connectivity of facilities for walking, bicycling, and non-motorized uses, modes that are critical to the local neighborhoods, are deficient and not consistent with recently adopted development plans. The multi-laned, wide streets and heavy traffic volumes on the existing arterial streets that comprise the Seward and Glenn Highways make travel across and along these roads difficult and uncomfortable for bicycle, pedestrian, and vehicle users, adversely affecting travel within and between adjacent neighborhoods. The neighborhood most adversely affected is Fairview. Residents in Fairview tend to have lower incomes and make a greater percentage of their trips using non-motorized modes or transit than other areas of Anchorage. The proposed project (Seward Highway/Glenn Highway Connection), as included in the adopted 2040 MTP (AMATS 2020), is one approach to dealing with the conflicts while improving local mobility and connectivity.

Figure 6. Regional System Linkage

5. Roadway Capacity

5.1 FHWA Purpose and Need Guidance

FHWA guidance recommends that roadway capacity is an element that should be investigated in identifying a project's purpose and need statement. FHWA guidance indicates:

> Roadway Capacity – Discuss the capacity of the present facility and its ability to meet present and projected traffic demands. Discuss what capacity and levels of service for existing and proposed facilities are needed.[10]

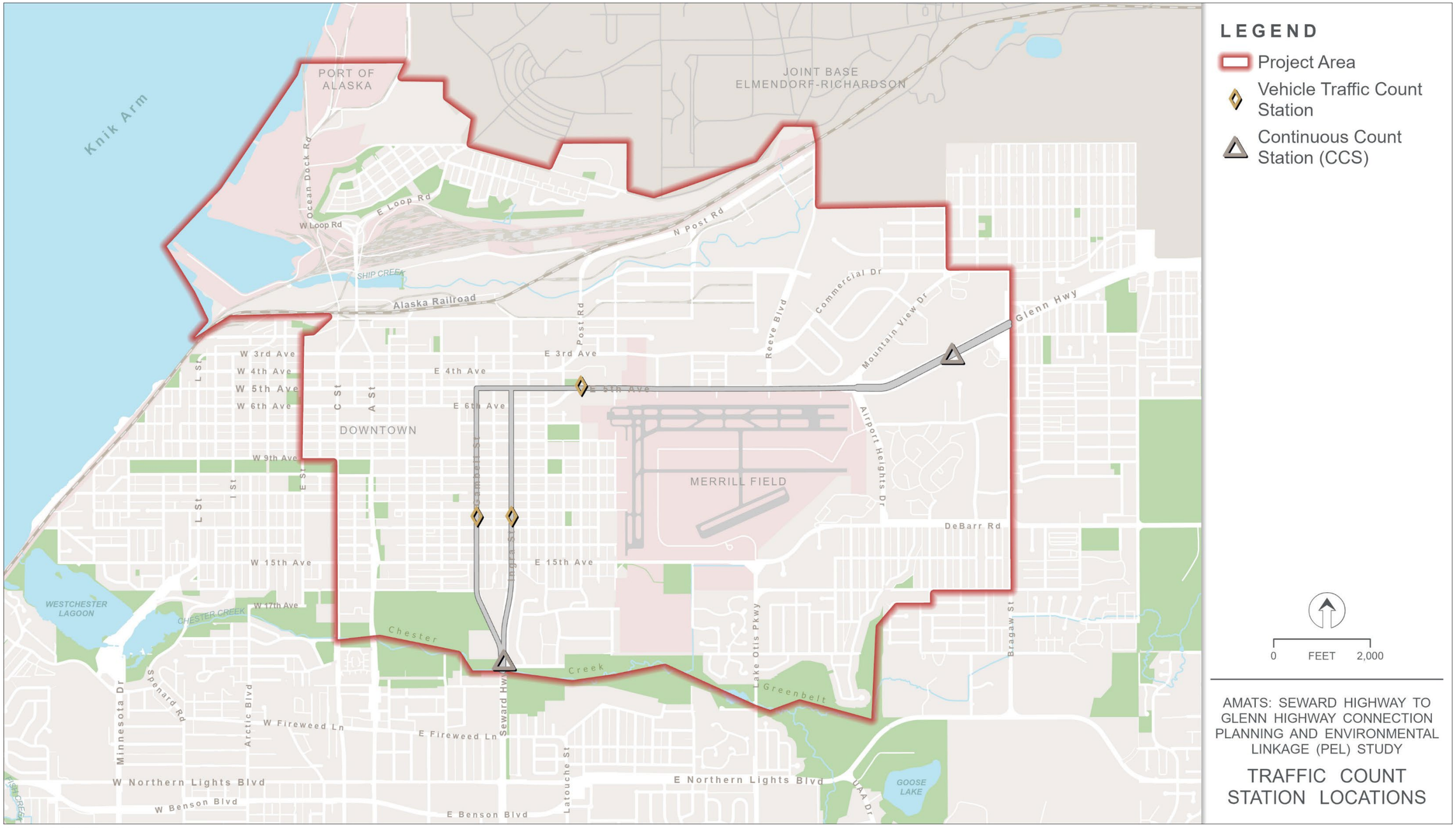
5.2 Roadway System Analysis

5.2.1 Vehicle Traffic Count Stations

This section documents historical and forecast vehicle traffic in the project area. For information on bicycle and pedestrian demand, see Section 8.2.3, Non-Motorized Facilities. Vehicle traffic counts and forecasts were identified for the two Continuous Count Stations (CCS) along the Seward and Glenn Highway corridor closest to the study area (see Figure 7). Each CCS is a permanent station that typically collects traffic data year-round. The CCS locations were used because these sites are considered to have the most reliable traffic count data. Additionally, traffic counts were identified for three short-term stations (which typically collect traffic data for 7-day intervals) located at 5th Avenue just east of Medfra Street (where the 5th/6th Avenue couplet ends) and Ingra and Gambell Streets (between 12th and 14th Avenue). These stations are identified as Vehicle Traffic Count Stations in Figure 7. Traffic count information was obtained from the DOT&PF Traffic Analysis and Data Application website (DOT&PF n.d.) and DOT&PF Central Region's *2010–2012 Traffic Volume Report* (DOT&PF n.d.).

[10] https://www.environment.fhwa.dot.gov/legislation/nepa/guidance_preparing_env_documents.aspx

Figure 7. Vehicle Traffic Count and Continuous Count Station Locations



Source: DOT&PF n.d.

5.2.2 Historical and Current Vehicle Traffic Volumes

The primary routes into the study area are the Glenn and Seward Highways. Table 3 shows traffic on these routes at selected locations. Data for the years 2010 through 2019 are reported; traffic count data for 2020 is not included in this analysis because COVID-19 pandemic-related conditions resulted in lower than typical traffic volumes. Overall, traffic counts at these locations have remained relatively flat.

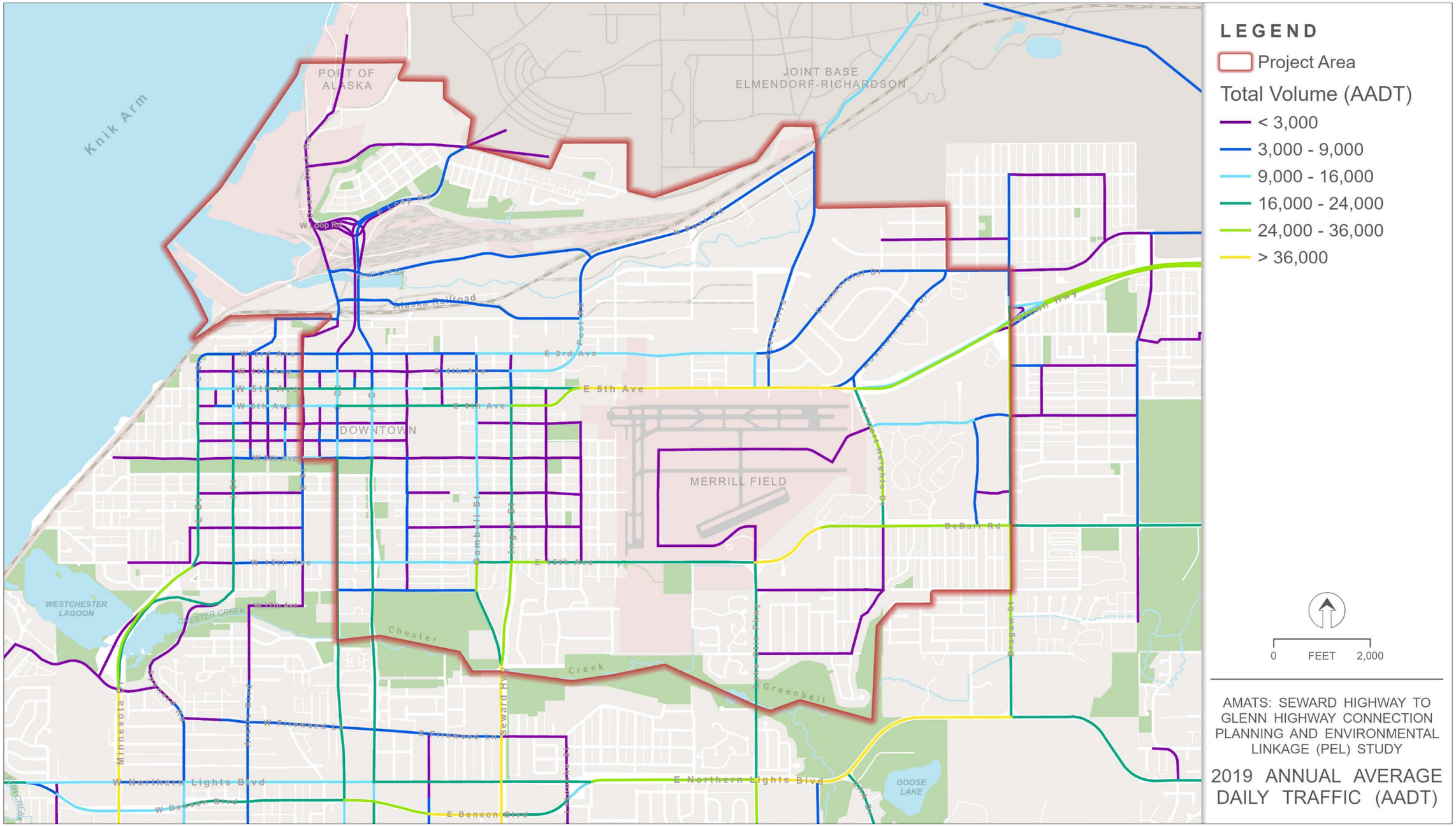
Table 3. Historical Traffic Counts, 2010–2019

Location	Year[a]									
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Glenn Highway (Airport Heights to Bragaw)	47,089	48,230	47,836	47,958	48,166	50,416	50,450	48,304	48,484	49,423
5th Avenue (just east of Medfra Street)	50,404	47,474	47,266	48,096	48,305	44,270	50,852	49,845	N/A	47,803
Ingra Street (between 12th and 14th Avenues)	22,150	N/A	N/A	N/A	N/A	22,656	22,918	20,475	20,193	21,306
Gambell Street (between 12th and 14th Avenues)	21,008	19,543	18,873	19,553	19,141	16,635	18,298	17,747	17,491	19,187
Seward Highway at Ingra and Gambell Streets	52,206	51,113	49,085	47,565	50,037	51,490	51,446	49,074	47,977	48,503

Source: DOT&PF n.d.
Notes: N/A = not applicable
[a] Data for 2020 is excluded due to the changes in traffic due to COVID-19-related conditions.

Figure 8 depicts annual average daily traffic (AADT) from the updated traffic model. These model results were calibrated to 2019 conditions to use traffic count data prior to COVID-19 pandemic-related influences on travel behavior.

Figure 8. 2019 Average Daily Vehicle Traffic



Source: RSG 2022

5.2.3 Future Vehicle Traffic

A range of forecasts were developed to account for the uncertainty associated with a 30-year planning horizon. The most likely scenario is the medium-growth scenario. The medium-growth scenario is recommended for use as the basis for determining future infrastructure needs as it is the most likely scenario based on what is currently known. The low-growth scenario represents the lowest growth that is likely to occur during the planning horizon. A high-growth scenario is estimated because it establishes the probable upper bounds of potential traffic growth. Additional details are found in the *Traffic Forecast Memorandum* (March 2022) for this project.

The medium-growth scenario is based on the Alaska Department of Labor and Workforce Development (DOLWD) population projection for the MOA/Matanuska-Susitna Borough (MSB) region over the next 30 years. The DOLWD population projection predicts regional population increasing from 398,235 residents in 2020 to 458,479 residents in 2045, which represents an annual percent change of 0.61 percent. As noted in Section 5, Roadway Capacity, of this memorandum, the population growth in the MOA and MSB has been reduced substantially from past DOLWD forecasts. This scenario assumes that changes in traffic volumes are related to changes in population. Table 4 presents the resulting forecast of projected traffic volumes by year.

Table 4. Medium Growth Scenario, Projected Traffic Volumes, 2010–2050

Roadway Segment	Historical (Actual) Data		Forecast: 2020–2050							Percent Change
	2010	2015	2020	2025	2030	2035	2040	2045	2050	2010–2050
Glenn Highway (between Bragaw and Airport Heights)	47,089	50,416	49,722	51,245	52,814	54,431	56,098	57,816	59,587	26.54
5th Avenue	50,404	44,270	48,092	49,565	51,083	52,647	54,260	55,921	57,634	14.34
Gambell Street	21,008	16,635	19,303	20,503	21,121	21,778	22,445	22,445	25,688	15.97
Ingra Street	22,150	22,656	21,435	22,091	22,768	23,465	24,184	24,924	23,133	10.11
Seward Highway at 20th Avenue	52,206	51,490	48,796	50,291	51,831	53,418	55,054	56,740	58,478	12.01

Source: Traffic Forecast Memorandum, March 2022

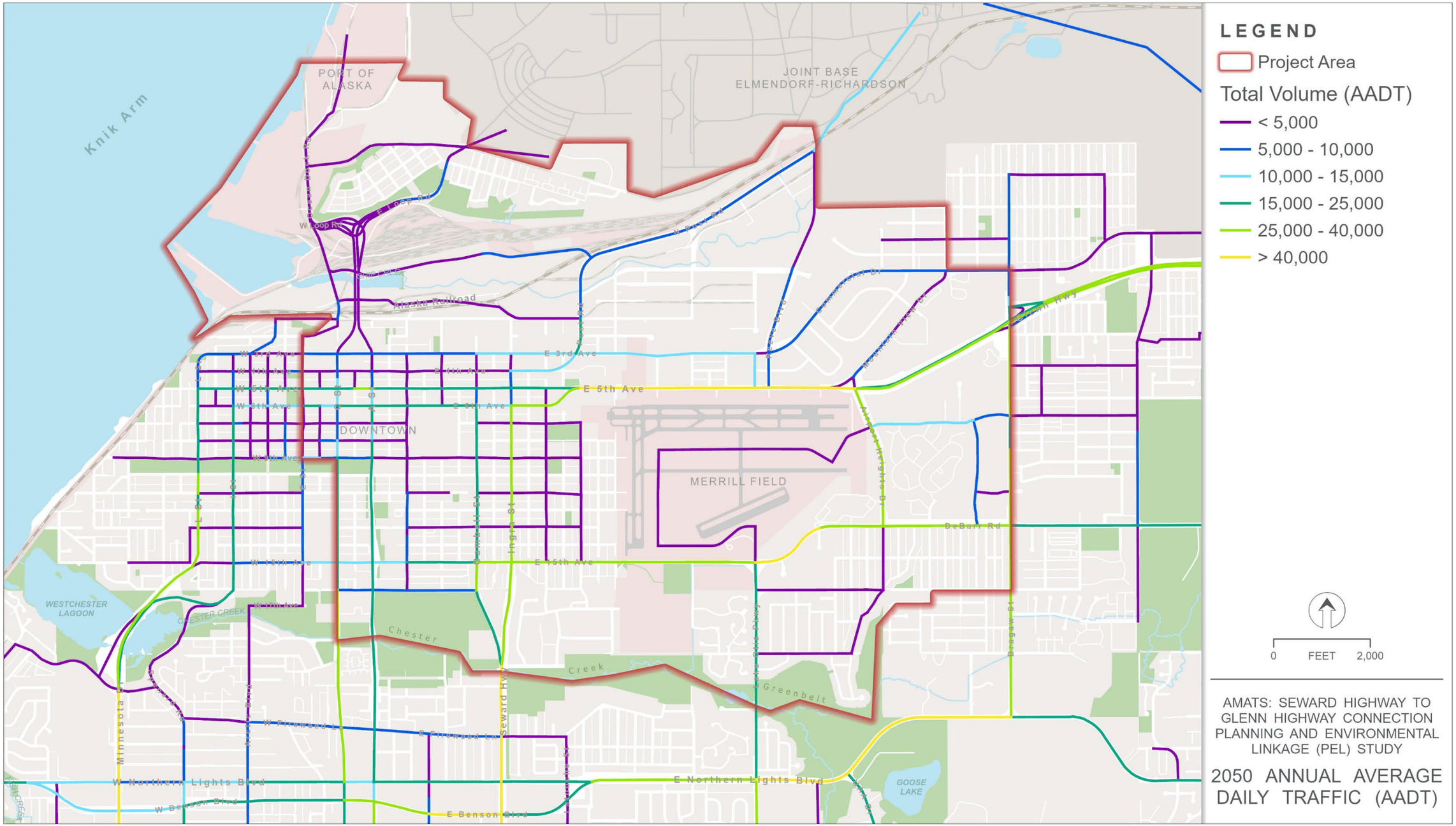
In addition to the trendline analysis presented above, DOT&PF commissioned a traffic model specifically for this PEL Study. The traffic team began with the 2013 AMATS Travel Demand Model and altered the model input parameters to the most current data available; this updated traffic model will be referred to as the Seward-Glenn PEL Traffic Model. This section describes the summary findings of the “No Build model run,” which models future traffic conditions that are anticipated absent any roadway improvements. Details of the model update methodology can

be found in the *Travel Demand Modeling Memorandum* (August 2021) for this project. The Seward-Glenn PEL Traffic Model calibration results and information on the No Build model run can be found in the *Draft Travel Demand Modeling Report* (RSG 2022) for this project, also available on the Seward-Glenn Mobility PEL Study project website (sewardglennmobility.com).

Figure 9 depicts AADT as predicted in 2050 by the Seward-Glenn PEL Traffic Model. The Gambell-Ingra Street couplet, which comprises the Seward Highway within the study area, is predicted to have 15,000 to 40,000 AADT in 2050. The 5th Avenue corridor, which comprises the Glenn Highway between the Airport Heights Drive intersection and the 5th Avenue/6th Avenue couplet split, is modeled to have the highest traffic volumes, at more than 40,000 AADT. The 15th Avenue corridor between Ingra Street and Airport Heights Drive is modeled to experience traffic volumes of 25,000 to more than 40,000 AADT, with the highest traffic volumes predicted in the curve by the Alaska Regional Hospital.

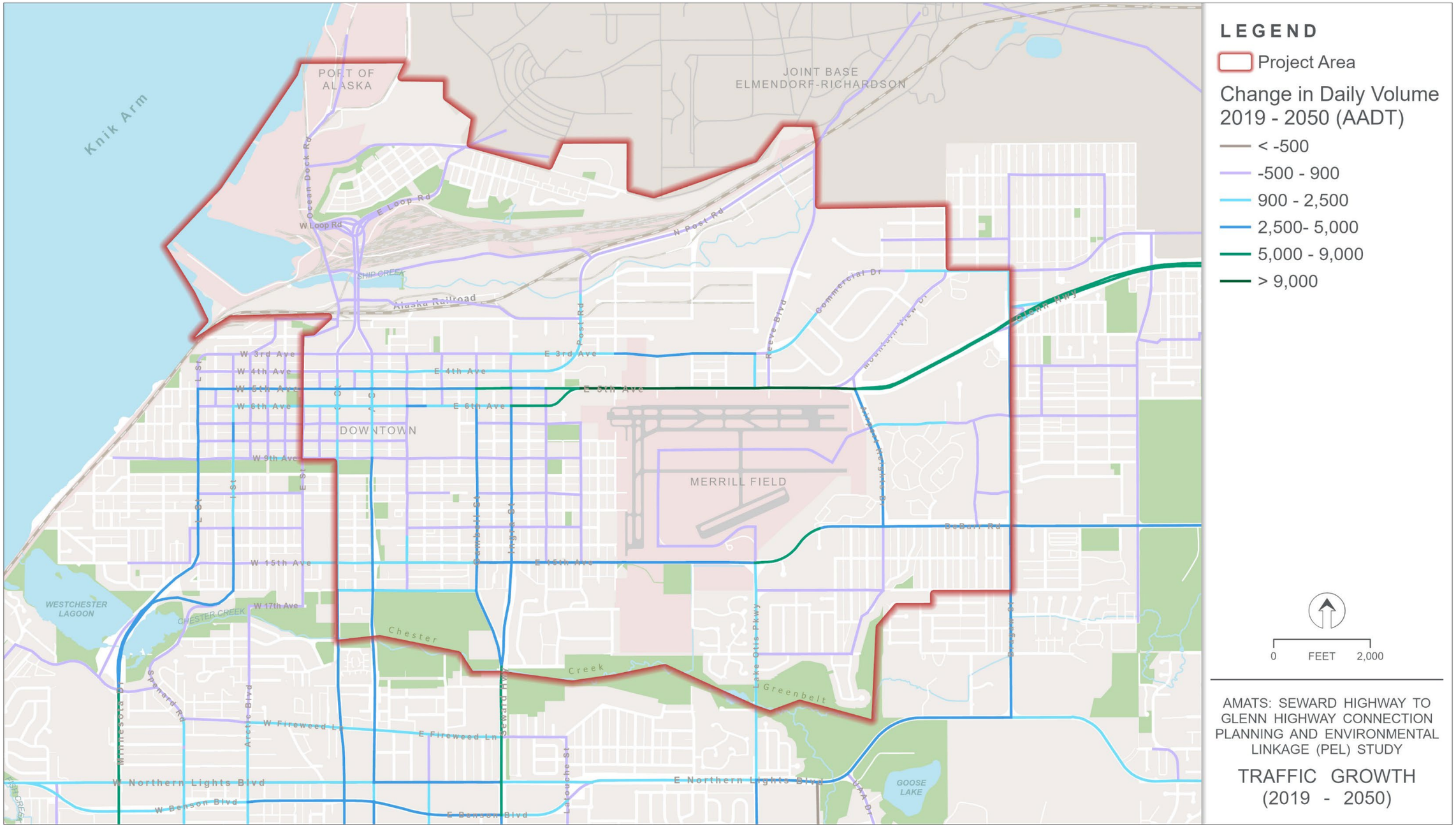
Figure 10 depicts the change in AADT between 2019 and 2050 for selected roadways within the study area. The Gambell-Ingra Street couplet is modeled to experience growth of 2,500 to 5,000 AADT. The 5th Avenue corridor, which comprises the Glenn Highway between the Airport Heights Drive intersection and the 5th Avenue/6th Avenue couplet split, is modeled to experience a growth of more than 9,000 AADT. The 15th Avenue corridor between Ingra Street and Airport Heights Drive is modeled to experience growth of 2,500 to 9,000 AADT.

Figure 9. Study Area Average Daily Vehicle Traffic, 2050



Source: RSG 2022

Figure 10. Change in Study Area Average Daily Vehicle Traffic, 2019 to 2050



Source: RSG 2022

5.2.4 Vehicle Traffic Mobility[11]

Table 5 and Table 6 illustrate the No Build model run forecast results for 2050 vehicle miles of travel (VMT), vehicle hours of travel (VHT), and vehicle hours of delay (VHD) based on the volumes presented above. Of note are the changes on both the northbound and southbound portions of the Glenn Highway within the Anchorage Bowl—both directions are anticipated to see a greater increase in both VMT and VHD than their counterpart Seward Highway segments south of the couplet. Tudor Road is anticipated to continue to be a key route, with its selected segment increasing to more than 212,000 VMT, with 4.4 percent of its roughly 6,400 VHT experiencing delay. Ingra Street (the northbound leg of the couplet within the study area) would likely experience 2.9 percent of its VHT in delayed conditions, while the Glenn Highway east of the couplet would experience 3.2 to 3.5 percent of its daily VHT in delay (depending on direction).

Table 5. Anchorage Bowl Forecast – 2050 No Build Condition for Volumes, VMT, VHT, and VHD by Selected Roads

Facility	VMT	VHT	VHD	VHD as % of VHT
Tudor	212,277	6,422	285	4.4
Dimond-Abbott	160,685	4,083	49	1.2
Muldoon	113,630	3,060	52	1.7
Seward SB	152,015	2,734	19	0.7
Seward NB	166,455	3,263	39	1.2
O'Malley	46,148	1,464	10	0.9
Minnesota SB	86,218	1,464	2	0.1
Minnesota NB	73,630	1,391	7	0.5
Gambell	21,426	766	5	0.7
Ingra	31,890	1,288	37	2.9
Glenn SB	121,388	2,576	90	3.5
Glenn NB	127,229	2,388	77	3.2
Total	**1,312,991**	**30,533**	**672**	**2.2**

Source: RSG 2022
Notes: NB = Northbound; SB = Southbound

Table 6. Anchorage Bowl Forecast – 2050 No Build Condition Change from 2019 VMT, VHT, and VHD

Facility	VMT	VMT % Difference	VHT	VHT % Difference	VHD	VHD % Difference	VHD as % of VHT
Tudor	26,367	14	847	15	99	53	1.1
Dimond-Abbott	16,067	11	420	11	15	44	0.3
Muldoon	26,167	30	717	31	33	174	0.9
Seward SB	9,750	7	180	7	6	46	0.2

[11] Mobility is defined as "The ability to move or be moved from place to place" (https://www.fhwa.dot.gov/planning/glossary/index.cfm).

Facility	VMT	VMT % Difference	VHT	VHT % Difference	VHD	VHD % Difference	VHD as % of VHT
Seward NB	11,056	7	227	7	10	34	0.2
O'Malley	4,758	11	115	12	3	43	0.2
Minnesota SB	9,290	12	159	12	1	100	—
Minnesota NB	7,735	12	149	12	2	40	0.1
Gambell	2,146	11	78	11	2	67	0.2
Ingra	3,815	14	159	14	13	54	0.7
Glenn SB	26,102	27	631	32	72	400	2.6
Glenn NB	26,115	26	531	29	60	353	2.3
Total	**169,367**	**15**	**4,213**	**16**	**316**	**89**	**0.8**

Source: RSG 2022
Notes: NB = Northbound; SB = Southbound

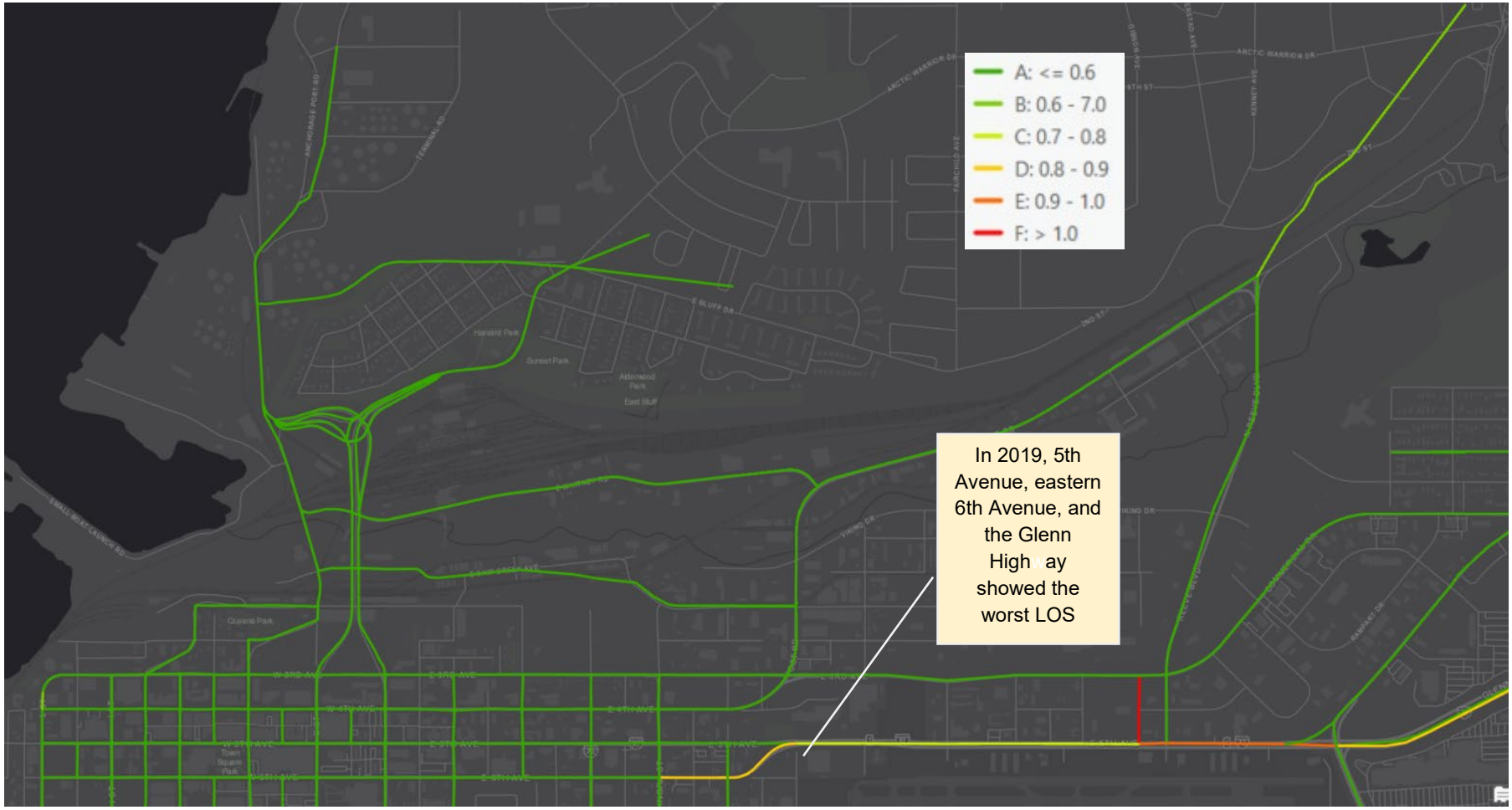
It is notable that the Seward Highway within the study area is not forecast to experience the increases in volume and congestion noted above, except for its immediate northbound approach to the Ingra-Gambell Street couplet. Taken together (and factoring in the findings from the 2019 *Origin-Destination Study*), the forecast traffic numbers suggest that major generators of future traffic using the Seward-Glenn Highway corridor will be the northeastern part of the Anchorage Bowl, Chugiak-Eagle River, and MSB. Additionally, it appears that Tudor/Muldoon Road is likely to play an increased future role as an alternative path to the Seward-Glenn Highway corridor. Both directions of the Glenn Highway plus Muldoon Road show forecast VMT increases (approximately 26 to 30 percent), well above the study area average increase of 14 percent (from 2019 to 2050 in the No Build condition).

The Seward-Glenn PEL Traffic Model's 2019 system performance estimates in the PM peak hour (see Figure 11 and Figure 12) illustrate several congestion effects. First, 5th Avenue, 6th Avenue, and the Glenn Highway perform at much slower than free-flow conditions during the peak. On the southern end of the project area, 15th Avenue, Debarr Road, and the southern part of Ingra Street all experienced noticeable congestion and performance degradation.

Figure 13 and Figure 14 provide maps of forecast level of service (LOS) for the roadways within the project area under a 2050 No Build future condition in the PM peak hour. A good part of the shift into LOS F is on the Glenn Highway in the northeastern corner of the Anchorage Bowl, and along the Glenn Highway and 5th Avenue within the project area. The LOS is not expected to rise to an unacceptable LOS within most of the study area.

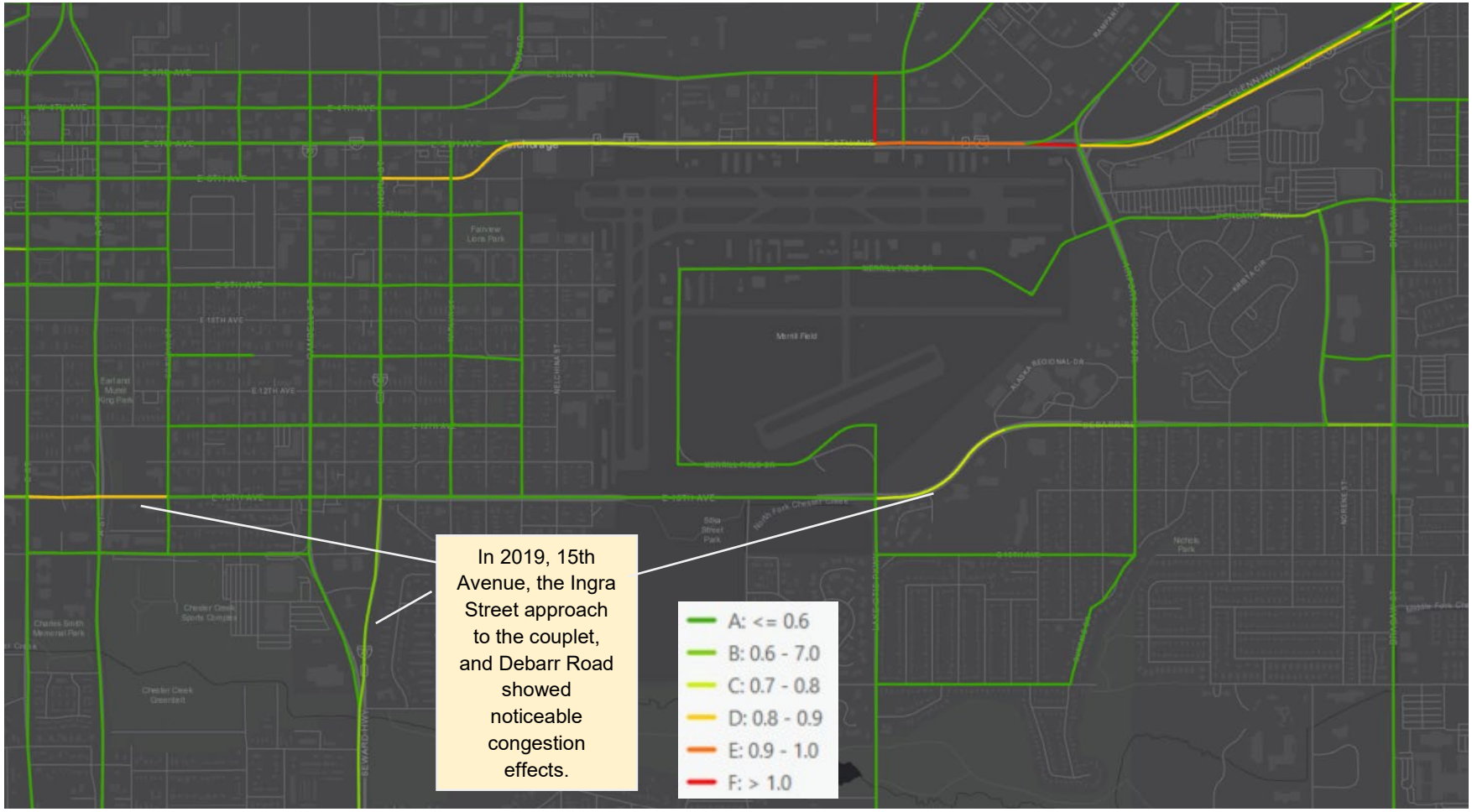
Please see the *Seward-Glenn Travel Demand Modeling Report* for additional information about the travel model results.

Figure 11: 2019 PM Peak Hour (5 p.m. to 6 p.m.) Estimated Volume-over-Capacity in the Northern Portion of the Project Area by Level of Service



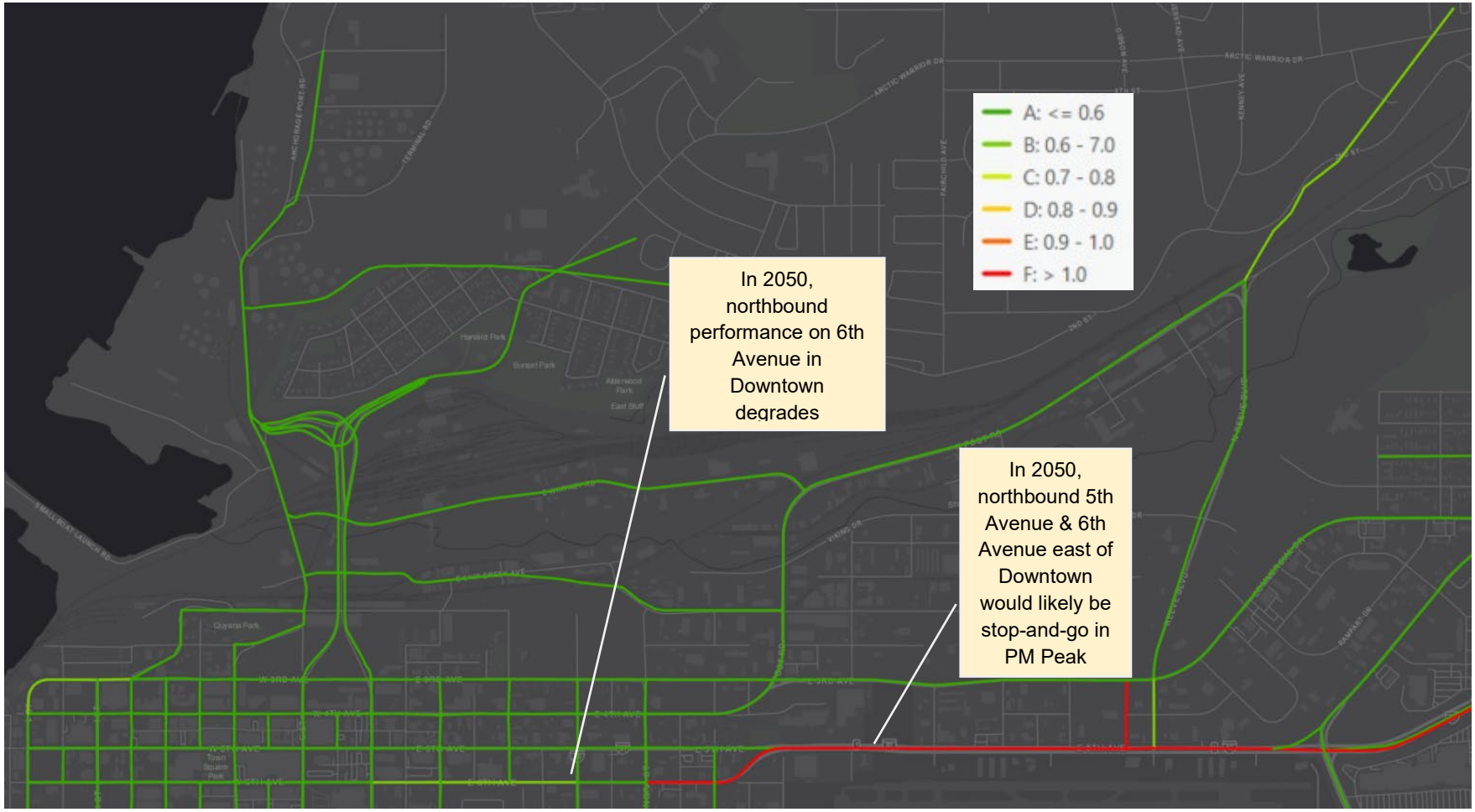
Source: RSG 2022
Notes: LOS = level of service

Figure 12: 2019 PM Peak Hour (5 p.m. to 6 p.m.) Estimated Volume-over-Capacity in the Southern Portion of the Project Area by Level of Service



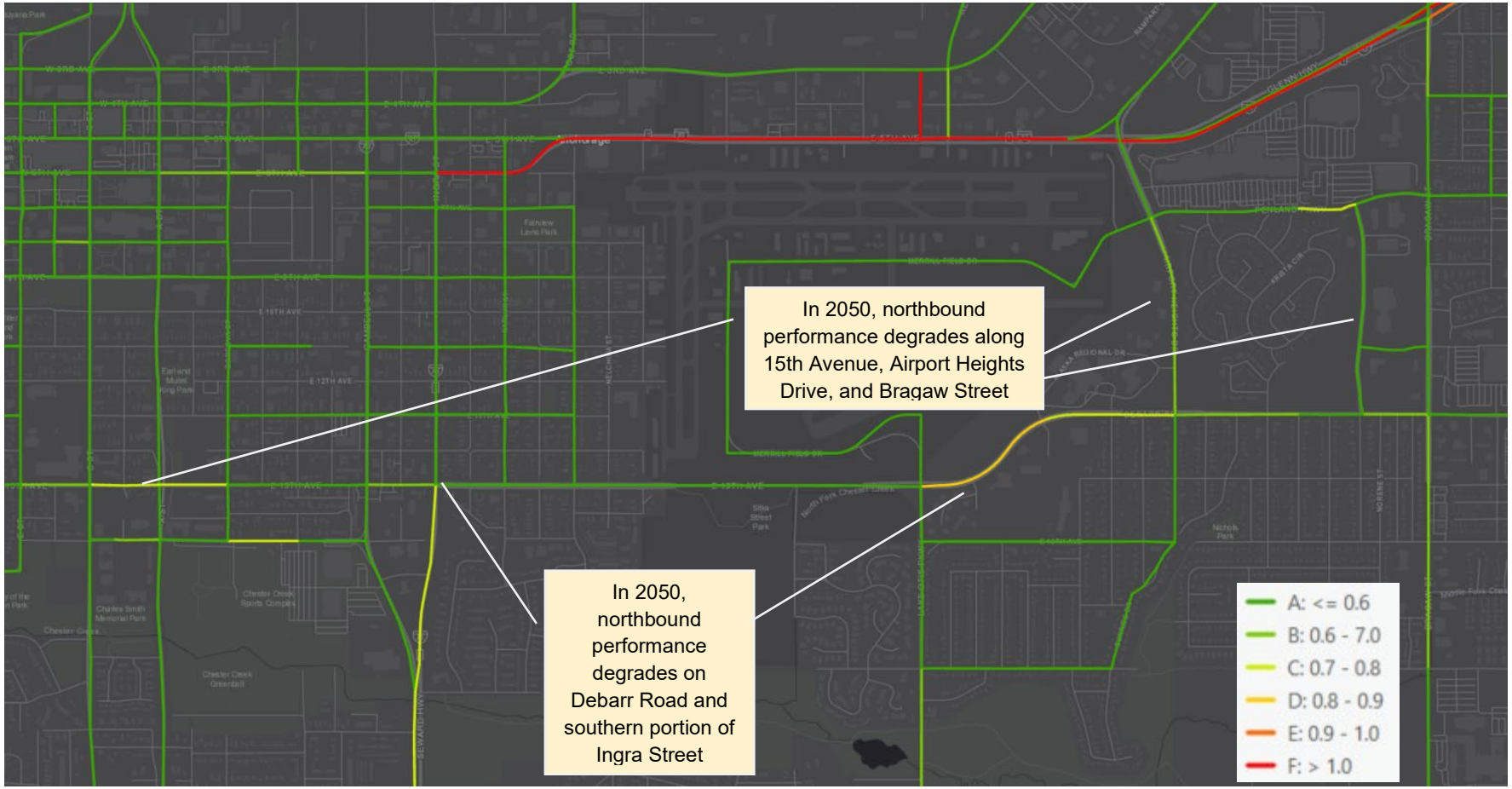
Source: RSG 2022

Figure 13: 2050 No Build PM Peak Hour (5 p.m. to 6 p.m.) Estimated Volume-over-Capacity in the Northern Portion of the Project Area by Level of Service



Source: RSG 2022
Note: Grade-separated facilities mapped separately

Figure 14: 2050 PM Peak Hour (5 p.m. to 6 p.m.) Forecast Volume-over-Capacity in the Southern Portion of the Project Area by Level of Service



Source: RSG 2022
Note: Grade-separated facilities mapped separately

In summary, combining the many data points cited above, and considering the *Origin-Destination Study*, there are several over-arching observations from the *Travel Demand Modeling Report* (RSG 2022):

- Congestion would increase within the study area overall in a 2050 No Build future condition but would still be relatively low (2.4 percent of overall VHT spent in delay conditions) compared to other regions of the MOA, such as traffic on the Glenn Highway east of the Muldoon Road interchange.
- The Glenn Highway east of the Ingra/Gambell Street couplet would likely become more of a chokepoint in a 2050 No Build future condition than it is now. The Seward Highway immediately south of the couplet would also likely become more congested under such a scenario. However, it would be unlikely to experience as much performance degradation as the Glenn Highway because of the one-way configuration and the existing reduction in conflicting movements.
- There currently is, and would likely continue to be, strong demand on a diagonal axis from the southwestern portion of the Anchorage Bowl to and from the northeast (and parts beyond) that uses the combined system of the Ingra/Gambell, L/I, and A/C Street couplets. The combination of those facilities and the Downtown Anchorage street grid appear to be relatively resilient but would start to become more taxed under a 2050 No Build future condition. Increased traffic demand is also reflective of continuing economic growth in the University Medical District (UMED), Ted Stevens Anchorage International Airport, and other parts of Anchorage. This economic growth could lead to land use changes to support economic activity and commuting patterns. If this demand is not accommodated, it could lead to growth in other parts of the Anchorage Bowl if development seeks out uncongested areas.
- Flows to and from the Ted Stevens Anchorage International Airport would grow, adding delay to the International Airport/Minnesota Drive corridor and likely contributing to the increased traffic in the Ingra/Gambell, L/I, and A/C Street couplets combined system. Traffic flows to UMED; Midtown; and to a small extent, the Kenai Peninsula, would also contribute to increased traffic flows within the study area.
- In a No Build future condition, demand to and from areas straddling and to the southeast of the Ingra/Gambell Street couplet accessing areas east of Downtown Anchorage and out the Glenn Highway to the far northeast would contribute to more delay on Ingra Street and more impact on the Glenn Highway. Lake Otis Parkway could be considered a key parallel facility to the Seward/Glenn Highways as a Lake Otis Parkway to Glenn Highway connection would likely reduce demand on Ingra/Gambell Streets, helping improve safety and mobility within the study area.
- The Seward-Glenn Mobility PEL Study alternatives development phase should consider the performance of the L/I and A/C Street couplets and Lake Otis Parkway facilities as part of any overall plan to improve performance of the specific Seward-Glenn Highway and Ingra/Gambell Street facilities, balanced with community concerns and land use policies along those corridors.

5.3 System Performance Recommendation

The increasing traffic generation is reflective of continuing economic growth in the UMED, Ted Stevens Anchorage International Airport, and other parts of Anchorage, which means commuting and commerce with communities to the north. To the extent this is not served, economic growth could require land use changes to support the growth and commute, or absent further land use changes than planned, it could lead to growth moving to other locations than Anchorage's town centers as traffic worsens.

Based on a 1-hour analysis of traffic on the Seward and Glenn Highways within the study area during AM or PM peak periods, congestion is not anticipated to be a factor in the purpose and need statement. Traffic volumes are forecast to increase by 2050, and congested conditions would occur during short durations. It should be noted that while the volumes on street segments are predicted to function acceptably (averaged over a 1-hour period), intersection capacity exceedances may result in congestion. This is because turning traffic constrains lane usage and consumes green time in the signal cycle.

6. Transportation Demand

6.1 FHWA Purpose and Need Guidance

FHWA guidance recommends that transportation demand is an element that should be investigated in identifying a project's purpose and need statement. FHWA guidance indicates:

> Transportation Demand – Discuss the action's relationship to any statewide plan or adopted urban transportation plan. In addition, explain any related traffic forecasts that are substantially different from those estimates of the 23 U.S.C. 134 (Section 134) planning process.[12]

6.2 System Analysis

6.2.1 Relationship to the Statewide Long Range Transportation Plan

The *Alaska Statewide Long-Range Transportation Plan, Let's Keep Moving 2036: Policy Plan* establishes transportation policies, goals, and implementing actions for DOT&PF through 2036, setting overall policy and investment priorities (DOT&PF 2016). The Long-Range Transportation Plan (LRTP) does not list specific projects. It provides policy direction and specifies priorities and implementing actions that align capital and maintenance expenditures with goals for the preservation and modernization of Alaska's "as-built" transportation system. This is accomplished by providing direction for the scope of area and modal plans that identify project priorities for inclusion in the capital improvement program. The plan directs investments by the DOT&PF strategically to:

[12] https://www.environment.fhwa.dot.gov/legislation/nepa/guidance_preparing_env_documents.aspx

- Preserve the system;
- Maintain basic connectivity across the state; and
- Pursue modernizing the system to address the expected travel demand growth in the fastest growing parts of the state.

Any projects that may result from the recommendations of this PEL Study that are implemented by DOT&PF would need to align with the LRTP policy and goals effective at that time.

6.2.2 Relationship to the Adopted Municipal Transportation Plan

Alaska Statute 19.20.080 requires municipalities with populations more than 5,000 to have a master highway plan that insures the proper location and integration of the Alaska highway connections in the municipality[13]. In Anchorage, that plan is the AMATS MTP. As mentioned in Section 3, Project Status, MTP 2040 includes a long-term project, MTP #214, that is planned to "Construct freeway connection between Seward Highway/20th Avenue and 13th Avenue with freeway access and egress ramps onto Ingra/Gambell Streets near the northern termini of the project" (AMATS 2020). MTP 2040 indicates that safety, congestion, access, connectivity, and freight are purposes for the project (AMATS 2020). Additionally, the project is intended to address the following federal performance areas: injuries and fatalities, performance of the NHS, freight movement/economic vitality, and environmental sustainability.

6.2.3 Traffic Forecast Differences

This section discusses traffic forecasts that are substantially different than those previously adopted by AMATS. Traffic forecast and modeling completed for the project show considerably lower traffic forecasts for the Seward and Glenn Highways within the study area compared to previously adopted forecasts. The lower traffic forecasts are a result of slower regional population growth and population projections that are dramatically lower in future years compared to past projections.

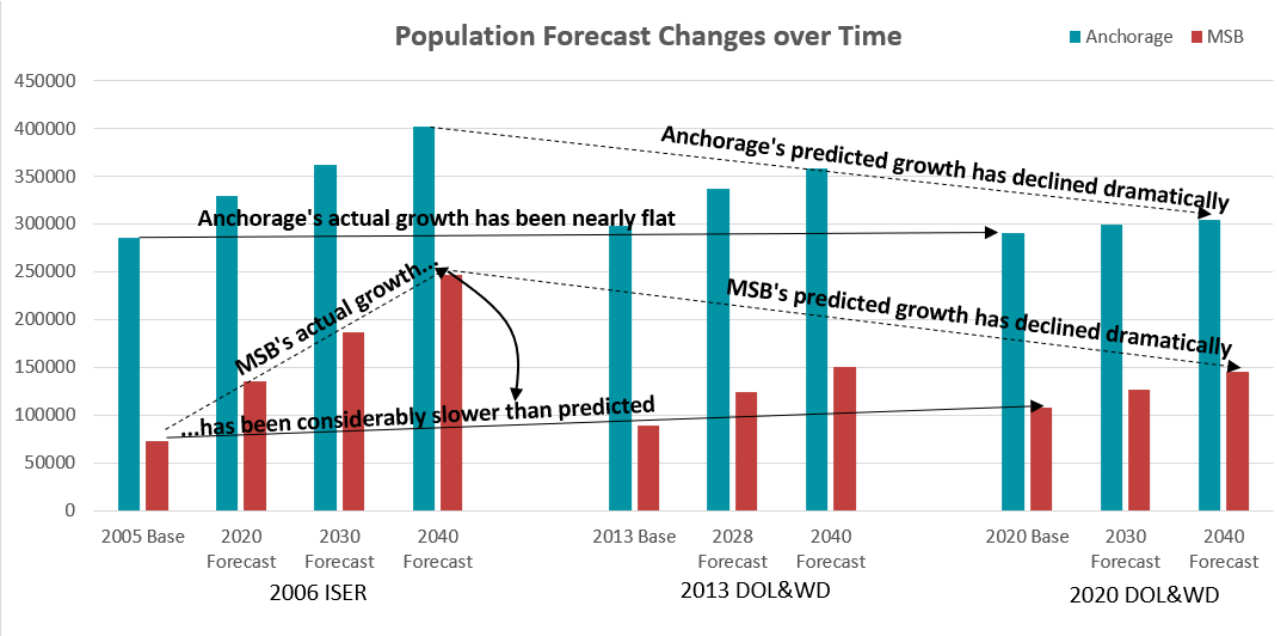
Figure 15 shows how population forecasts have changed over time in Anchorage and the MSB. In forecasts prepared by the Institute of Social and Economic Research (ISER; Goldsmith 2005), population in the region was expected to grow to nearly 650,000 by 2040[14]. That growth was predicted to be dramatically influenced by growth in the MSB, which was one of the fastest growing locales in the United States at that time. The national recession of 2008 and 2009, and more recently the recession in Alaska over the last 8 to 10 years, have dampened population growth in Southcentral Alaska. As can be seen in Figure 15, Anchorage's

[13] Sec. 19.20.080. Municipal master highway plan (https://www.akleg.gov/basis/statutes.asp#19.20.080): A municipality of over 5,000 population, according to the latest available census, together with the department, shall develop and adopt a master highway plan, which shall insure the proper location and integration of the Alaska highway connections in the municipality. In selecting and designating the master highway plan, they shall take into account the important principal streets that connect residential areas with business areas and the streets that carry important rural traffic into and across the municipality, in order to ensure a system of highways upon which traffic can be controlled and protected in a manner to provide safe and efficient movement of traffic in the municipality.

[14] ISER's (Goldsmith 2005) forecast went through 2035. A straight-line extrapolation was applied to obtain a 2040 value for comparison purposes.

population change has been nearly flat, and the MSB's population growth has been considerably lower than predicted in 2006. A 2020 forecast by DOLWD predicts only 449,609 people in the region in 2040, an estimate that is 200,000 fewer people living in the region compared to the 2005 predictions (Goldsmith 2005).

Figure 15. Population Forecast Changes over Time



Source: AMATS 2016, 2020; Goldsmith 2005

Additionally, transportation improvements and land use changes of the preceding 20 years have also influenced trip patterns and have lowered traffic levels within the study area. The changes affecting study area traffic include:

- A program of improvement called Connect Anchorage provided several improvements that have affected traffic levels within the study area, most notably:
    - Improvements to the Lake Otis Parkway/Tudor Road intersection removed a bottleneck at that intersection that previously caused more traffic to travel onto the Seward Highway; this intersection also saw an improvement as a result of the Tudor Road/Elmore Road intersection improvements;
    - Completion of the Martin Luther King Boulevard and Dowling Road projects created a bypass route around the study area from the Glenn Highway at Boniface Parkway to the Seward Highway and Minnesota Drive; and
    - Completion of a grade-separated interchange at Bragaw Street and the Glenn Highway.
- Tikhatnu Commons created a regional shopping destination, meaning shoppers from Chugiak-Eagle River and the MSB do not need to go Downtown to the 5th Avenue Mall or locations on Dimond Boulevard.

- The MSB developed services (such as a new hospital) and commercial opportunities that reduced the need for MSB residents to travel into Anchorage to obtain such services.

The result is that considerably fewer trips are predicted to use the Seward and Glenn Highways in Anchorage. The Glenn Highway at Airport Heights Drive is predicted to have approximately 60,000 trips per day in 2050 (an increase of approximately 10,000 trips per day over pre-COVID-19 pandemic levels). Traffic on the Seward Highway is predicted to remain relatively constant (from approximately 49,000 trips per day just before the COVID-19 pandemic to 48,500 trips per day in 2050). See details regarding the forecast methodology in the following reports prepared for this PEL Study: *Traffic Forecast Memorandum* (March 2022) and the *Draft Travel Demand Modeling Report* (RSG 2022), available on the project website (sewardglennmobility.com).

6.3 System Performance Recommendation

It is typical to use the adopted MTP model to estimate the forecast of future traffic for PEL studies. However, because the base year of the currently adopted model is 2013 (which is at the beginning of Alaska's recession), DOT&PF determined that an updated forecast should be prepared for this PEL Study. DOT&PF commissioned a traffic model specifically for this PEL Study. The traffic team began with the 2013 AMATS Travel Demand Model and altered the model input parameters to the most current data available. This altered traffic model is referred to as the Seward-Glenn PEL Traffic Model. Because of the Alaska recession and the dramatic changes that have occurred in future predicted population, the MTP 2040 model forecast for traffic growth is not being used for modeling future traffic volumes within the study area. Rather, the project team is using the Seward-Glenn PEL Traffic Model, detailed in the *Draft Travel Demand Modeling Report* (RSG 2022) for project evaluation. Furthermore, the Seward-Glenn PEL Traffic Model does not indicate a large increase in traffic demand on the roadways within the study area; therefore, the need to increase capacity to serve traffic demand in the Seward and Glenn Highway corridor is not proposed as a purpose and need factor.

7. Social Equity[15] or Economic Development

7.1 FHWA Purpose and Need Guidance

FHWA guidance recommends that social equity and economic development is an element that should be investigated in identifying a project's purpose and need statement. FHWA guidance indicates:

> Social Equity or Economic Development – Describe how the action will foster new employment and benefit schools, land use plans, recreation facilities, etc. In

[15] The FHWA guidance (FHWA 2020) uses the term "Social Demands." For this PEL Study, DOT&PF is using the term "Social Equity."

addition, describe projected economic development/land use changes that indicate the need to improve or add to the highway capacity.[16]

7.2 System Analysis

7.2.1 Land Use and Development

A number of relevant land use plans provide a vision for land use within the study area. These plans will be used to guide transportation development in this PEL Study, with the intent that the PEL Study results will be consistent with and work toward the realization of these plans.

Anchorage 2020 Comprehensive Plan (2002). Anchorage 2020 (MOA 2002) established the framework for land use decisions until the year 2020. It is the most recent comprehensive plan for the Anchorage Bowl and outlines expected increases in both population (to 298,300 people) and employment (to 158,600 jobs) in the Anchorage Bowl. The plan's Land Use Policy Map identified the approximate location of new land use policy areas, including major employment centers, redevelopment/mixed use areas, town centers, neighborhood commercial centers, industrial reserves, and transit-supportive development corridors.

***Anchorage 2040 Land Use Plan* (2017).** The 2040 Land Use Plan (LUP) (MOA 2017) includes a "Greenway-Supported Development" (GSD) overlay along the Ingra Street corridor, from 3rd to 15th Avenue, and connecting the Chester Creek Greenbelt on the southern end. The plan describes a GSD as a location where new development will incorporate natural open spaces and pedestrian routes, which will focus on catalyzing new infill and redevelopment projects to enhance new construction and property values by attracting more uses, housing, businesses, and employment. A key element of the GSD feature in the 2040 LUP is redevelopment of existing built areas in designated Mixed-use Centers and Main Street Corridors. For GSDs to most effectively catalyze redevelopment and alternative access modes, they should connect to existing pedestrian corridors and trails (MOA 2017).

The 2040 LUP identifies a Main Street Corridor designation along Gambell Street within the study area. The plan envisions that this land use designation will provide "for commercial and mixed-uses within urban neighborhoods that can evolve as pedestrian-oriented, transit-served 'main street' development" (MOA 2017:49). The plan includes specific corridors, such as along Gambell Street, that feature "transit access, wider sidewalks, pedestrian amenities, street tree landscaping, and relocation of utility poles and boxes and other impediments to a safe, comfortable pedestrian environment" (MOA 2017:45).

***Gambell Street Redevelopment and Implementation Plan* (2013).** This plan was prepared for Gambell Street between 3rd and 20th Avenues (CH2M Hill, Inc. 2013). This plan recommends converting Gambell Street from four to three lanes between 3rd and 15th Avenues, which would allow for three 11-foot travel lanes, sidewalks on both sides of the road, and an area for snow storage.

[16] https://www.environment.fhwa.dot.gov/legislation/nepa/guidance_preparing_env_documents.aspx

***Fairview Neighborhood Plan* (2014).** One of the top five priorities identified for this plan is the resolution of long-standing transportation system impacts. The plan "calls for a resolution of the transportation, land use, and planning issues related to this corridor to enable the redevelopment of Gambell Street, amenities that would enhance the community and encourage investment, and provide clarity for property owners as to the future of their lands" (MOA 2014b:2). The plan includes the Seward to Glenn Highway Connection project as one of its implementing actions. The plan indicates the project should "Maintain the integrity of Fairview, by following a cut and cover approach, creating a greenway connection between Ship and Chester Creek with a Hyder Street alignment or alternatives that reduce impact on the neighborhood, while providing needed neighborhood street and pedestrian improvements that support mixed-use and other land-use redevelopment and development identified on the approved land-use plan map" (MOA 2014b:58). The plan also calls for the implementation of the *Gambell Street Redevelopment and Implementation Plan* (CH2M HILL, Inc. 2013). The *Fairview Neighborhood Plan* was adopted by the Anchorage Assembly in 2014.

Government Hill Neighborhood Plan (2013). The *Government Hill Neighborhood Plan* (GHNP; MOA 2013a) adopted by the Anchorage Assembly in 2013, identifies an overarching goal to promote the orderly growth, improvement, and future development of the Government Hill neighborhood. Regarding the regional transportation aspects relative to this PEL Study, the plan identifies that freight movement from the POA and industrial reserve in the Ship Creek basin to the road system is a critical issue and the Seward to Glenn Highway connection would have a substantial impact on the neighborhood. The industrial reserve is associated within the Alaska Railroad Terminal Reserve, where the predominant use is industrial establishments on Alaska Railroad lease lots. The GHNP assigns industrial land uses clustered along Post Road and Whitney Drive in a corridor north of Ship Creek. One of the goals of the plan for the railroad yard corridor is to "coordinate access improvements for pedestrians, bicyclists and motorists into the upper portion of the Government Hill neighborhood and to Ship Creek Trail" (MOA 2013a). The plan calls for enhanced pedestrian and bicycle connectivity east-west along the northern side of the Alaska Railroad Terminal Reserve and also north-south from near the end of Ivy Street to Ship Creek.

Anchorage Original Neighborhoods Historic Preservation Plan (2013). The *Anchorage Original Neighborhoods Historic Preservation Plan* (HPP) was adopted by the Anchorage Assembly in 2013 (MOA 2013b). It is a community-based plan focused on preserving historic character while planning for a sustainable future in Anchorage's original neighborhoods, which includes the Government Hill, Downtown, South Addition, and Fairview Community Council areas. The Ship Creek area is also included in the HPP. A key policy of the plan states "Mitigate to the greatest extent possible any transportation and infrastructure, redevelopment, and infill projects, whether large or small, that does not enhance and support the existing neighborhood character, or does not follow proposed and adopted preservation plans for that neighborhood. This includes projects such as the Knik Arm Crossing, Seward Highway to Glenn Highway Connection, Ingra/Gambell connector, and A/C couplet" (MOA 2013b:137).

Mountain View Targeted Neighborhood Plan (2016). The *Mountain View Targeted Neighborhood Plan*, adopted by the Anchorage Assembly in 2016, defines the guiding vision for

community-driven investment in the safety, health, and happiness of those who live and work in Mountain View (MOA 2016). The vision for Mountain View focuses on the following six categories:

- Community and Resident Leadership and Engagement
- Community Safety
- Business Development and a Vibrant Business District
- Transportation and Green Spaces
- Real Estate Development and Housing
- Building Successful Family Resources

The plan calls for improving pedestrian amenities and transit service within Mountain View.

Our Downtown: Anchorage Downtown District Plan 2021 (2021). The *Our Downtown: Anchorage Downtown District Plan 2021* (MOA 2021) is a targeted review and update of the 2007 *Anchorage Downtown Comprehensive Plan*. This plan is meant to guide development in Downtown Anchorage over the next 10 to 20 years. This plan supports the completion of the Glenn-to-Seward Highway project to take traffic off Downtown and Fairview streets and increase the area's redevelopment potential. It also recognizes part of the study area is ripe for redevelopment, including the Fairview/East Downtown Economic Development Tax Abatement Zone, and is a federally designated Opportunity Zone. This plan was adopted by the Anchorage Assembly in April 2022.

3rd & Ingra/Former Alaska Native Service Hospital Master Plan (2019). The purpose of the *3rd & Ingra/Former Alaska Native Service Hospital Master Plan* (MOA 2019a) was to find an appropriate reuse alternative for the former Alaska Native Service Hospital site located on the northern side of 3rd Avenue between the projected right-of-way for Fairbanks and Ingra Streets. This plan identified two preferred alternatives. One was a mixed-use area with a commercial focus, and the other was a mixed-use area with a residential focus. Both included a new road that connects 3rd Avenue/Hyder Street to a new intersection on the western side of the parcel. The alternatives do not have any new road connections on the northern and eastern sides of the parcel.

Anchorage Climate Action Plan. The actions outlined in the *Anchorage Climate Action Plan* (MOA 2019b) are intended to help prepare Anchorage for the impacts of a changing climate and to work to slow the effects of climate change by reducing greenhouse gas emissions produced in Anchorage. The land use and transportation section of the plan identifies a key solution to reducing vehicle emissions, namely using less gasoline and diesel fuel. To do this, the plan suggests shortening the distances people need to travel, reducing the number of vehicle trips, and increasing the use of non-motorized transportation and public transit. The plan recommends making it easier to walk, bike, and use transit and transforming urban areas to reduce sprawl. Key action items from the plan relevant to this PEL Study include:

- Prioritize and conserve green spaces in transportation, development, and planning projects equitably across Anchorage.
- Invest in safe and covered bus stops with benches.

- Encourage carpooling and transit use by improving coordination and developing strategies with other agencies (e.g., developing site design incentives, using Link AK, creating carpool lanes, developing workplace incentives, addressing logistical challenges such as finding people who have similar travel needs).
- Continue to expand and connect non-motorized transportation facilities. Fund and implement policies and projects recommended by the Anchorage *Non-Motorized Plan* (AMATS 2021), such as secure and covered bicycle storage options.
- Explore opportunities for increasing public transit commuter options throughout the MOA, from Eklutna to Girdwood, also considering options for the Matanuska-Susitna Valley, including commuter rail.
- Make it easier for people to walk, bike, or use mobility aids by improving coordination and developing strategies with other agencies (e.g., lighting, winter maintenance of sidewalks, bicycle pathways and lanes). Prioritize safe routes to school to improve access and appeal of neighborhood schools.

Additionally, the plan indicates that achieving equity through land use and transportation planning is a central goal of the recommendations in the transportation and land use sector. The plan recommends land use and transportation policies that address equity issues are essential for making Anchorage a more walkable, bikeable, and livable community for all residents.

7.2.2 Social Equity

The *A Basic Description of the Environmental Setting Report* (January 2022) for this PEL Study documents that the neighborhoods affected by the Seward and Glenn Highway construction include high proportions of low-income and minority populations. The report found that the study area has a higher percentage of minority residents (56.6 percent) than the entire MOA (41.3 percent). More importantly, the census block groups that encompass much of the Fairview and Mountain View neighborhoods are 70 to 90 percent minority (U.S. Census 2021). The study area has a higher percentage of all racial/ethnicity categories, except Hispanic, compared to the entire MOA percentage. The report also documents several block groups within the study area with median household incomes below $30,000 per year.

As a result, a considerable number of facilities provide meals, food bank, counseling, employment, or other social services for low-income and homeless persons who live within the study area. One service provider, NeighborWorks Alaska, reported the following in their comments on this PEL Study, which articulately captures the social conditions:

> For over 40 years, NeighborWorks Alaska has been dedicated to improving the quality of life for families and individuals by preserving homes, creating new housing opportunities, and strengthening neighborhoods. Since 1993, we have offered 83 units of housing within our property Merrill Crossing at 1275 E 9th Avenue, located in the Fairview neighborhood. We offer 65 income-restricted apartment units, including 10 designated for residents who previously experienced homelessness. Based on recent data from our residents, within Merrill Crossing 62% of the residents we serve are people of color and 22% of them are over 60 years old. Our comments are not only to improve the

> neighborhood as a whole and to ensure the residents we serve have a safe and accessible neighborhood. These highways have disadvantaged the communities within Fairview, and going forward, solutions should preserve and restore the minority and low-income communities even if at greater costs to the project. Environmental justice should be centered on this project. Fairview is an area with approximately 8,000 residents in Anchorage, Alaska. According to census data, the area is demographically disadvantaged. Nearly half of the population (47%) is low-income and 15% of the population has less than a high school education--twice the state percentage. People of color comprise a majority of the population (62%) and 7% of the population is linguistically isolated. Eighty- four percent of occupied housing units are rentals. (Geraty 2022)

Adopted plans covering the area point out that development of the NHS has had a profoundly adverse effect on the neighborhood. According to the *Fairview Neighborhood Plan* (MOA 2014b), 5th Avenue was paved and widened from two to four lanes east to Airport Heights Drive in the late 1950s. In 1963, Glenn Highway construction began and in 1966, 6th Avenue was added to the system to create the 5th/6th Avenue couplet. According to the plan, the couplet improved through-traffic flow and increased corridor capacity on the western end of the corridor. Later, in the late 1980s, the Glenn Highway segment between McCarrey Street and the Hiland Interchange near Eagle River was upgraded to six lanes, increasing capacity in the eastern section of the corridor and creating additional traffic volumes through Fairview (MOA 2014b). Gambell and Ingra Streets had a similar development pattern, leading to severe consequences on the neighborhood:

> The extension of Gambell Street southward to the New Seward Highway heralded the loss of the Fairview Main Street atmosphere. The transformation into a strip commercial corridor was strengthened when the one-way couplet was implemented. As traffic volumes increased on Ingra Street, adjoining properties began to feel the impact as families relocated to less congested and safer parts of town. Most dwellings transitioned into rental units with high turnover rates. In the early 2000s, the Fairview Community Council advocated for and succeeded in installing intersection barriers to discourage Downtown commuters from cutting through Fairview. (MOA 2014b:36)

As part of identifying the needs for the project, the project team conducted several outreach activities, including a virtual public meeting, an online open house, presentations to community groups, and two listening posts. Through these activities, the project team asked stakeholders to identify their transportation needs. The project team received 422 comments identifying what stakeholders considered to be the transportation needs within the study area. The majority of the comments were about alternatives, non-motorized needs, and quality of life concerns. Other comments included safety, screening criteria, traffic, environmental justice, stakeholder engagement, and land use, among other issues.

Commenters suggested a variety of alternatives to be considered, including:

- Creating a highway/eliminating the traffic lights on the current alignment

- Downsizing the Ingra/Gambell Street couplet
- Developing a connection along Debarr Road and Northern Lights Boulevard
- Not expanding Debarr Road
- Considering a corridor west of Muldoon Road
- Widening Lake Otis Parkway and adding turn lanes at Lake Otis Parkway and 15th Avenue
- Considering commuter rail
- Building the Knik Arm Crossing
- Building a new connection along Orca Street
- Building a new connection behind Alaska Regional Hospital
- Tolling the Glenn Highway

In terms of non-motorized needs, commenters suggested locations where improvements to the existing system were needed, where new connections were needed, data collection needs, and others. Some of the comments received included:

- Provide conditions to allow walking in winter (lighting, snow removal, etc.)
- Gambell and Ingra Streets are high priority pedestrian corridors
- Improve safer conditions for pedestrians (i.e., walking in some areas is unsafe due to icy conditions, lack of buffers, proximity to high-speed traffic, inadequate sidewalk width)
- Provide non-motorized separated pathways
- Maintain the Chester Creek Trail
- Improve poor east-west connectivity

Figure 16 displays where the public suggested non-motorized issues exist within the study area.

Quality of life-related concerns received from commenters included:

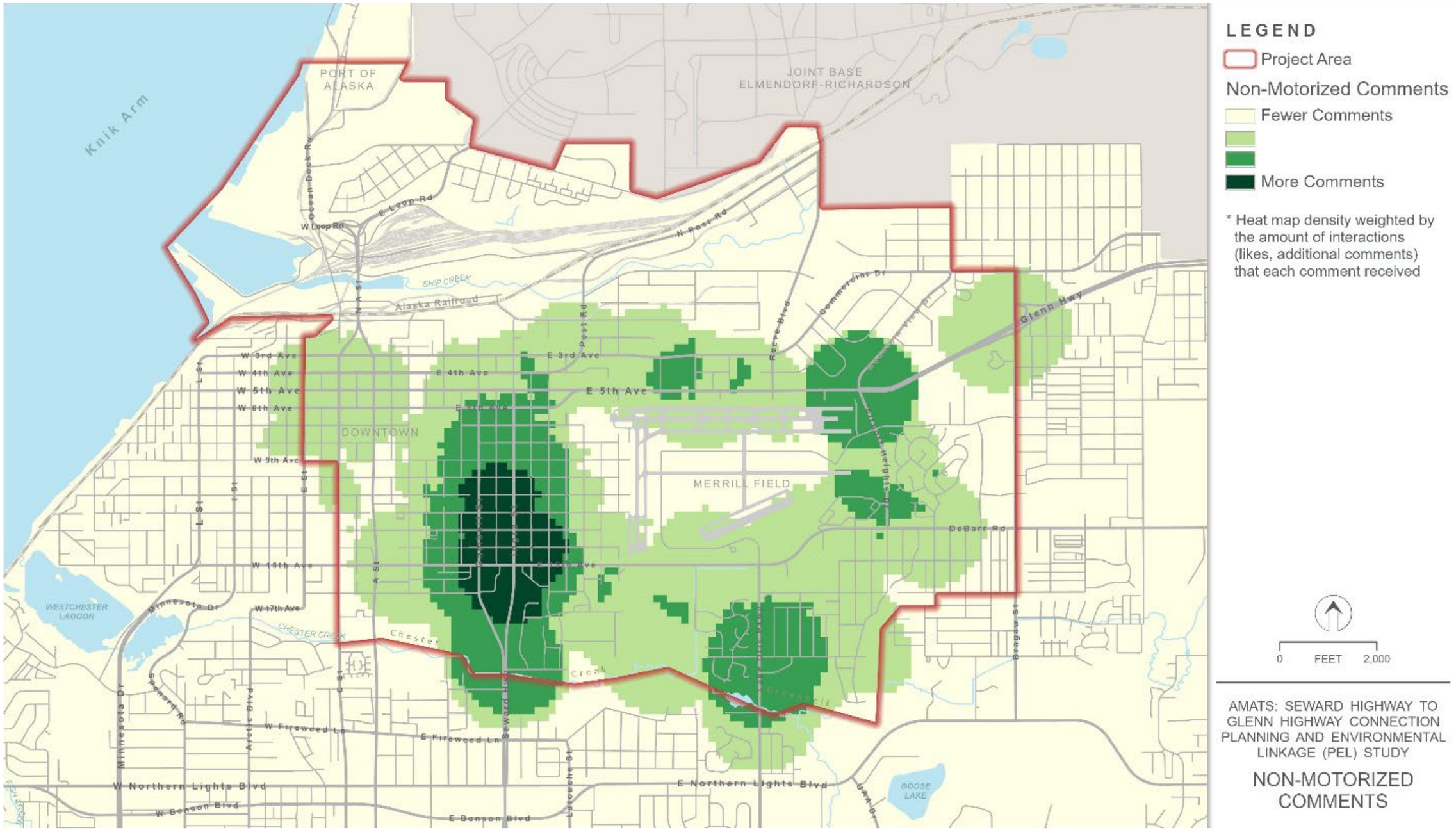
- Lower property values in the area
- Potential for residential and commercial relocations
- Loss of community cohesion

To see a complete list of the comments, please see Appendix A.

The project team will consider the alternatives identified by stakeholders as part of the alternative identification process. The other comments will be considered in a variety of ways. Some of the issues raised, such as existing conditions for non-motorized users, will be addressed in sections of this system performance report. Other comments will be considered as part of developing the project's purpose and need statement as well as screening criteria.

Some comments that address issues such as snow removal and localized improvements were shared with the MOA as they may be better addressed by the MTP or other processes.

Figure 16. Non-Motorized Issues Density Map from Public Comment



7.3 System Performance Recommendation

Neighborhood plans and public input to this PEL Study identify that the current street design and heavy traffic have impacted a low-income, minority neighborhood and hampered neighborhood development. Adopted land use and neighborhood plans envision that corridor transportation improvements will benefit economic development and reduce the impact that past transportation decisions have had on the Fairview neighborhood. Public input indicated that uncertainty with the highway's ultimate location and design have resulted in disinvestment in area residential and commercial development. Information provided by the public and agencies related to this topic has been considered and incorporated into needs #1 (Conflicting Travel Functions) and #3 (Social Equity and Economic Development) in the purpose and need statement, and are reflected in the proposed screening criteria. As described in the FHWA guidance (FHWA 2020: Section 7.1), the PEL Study will describe how alternatives may foster new employment and benefit schools, land use plans, recreation facilities, and improve local and regional travel. The PEL Study analysis will also describe projected economic development and land use changes that may indicate the need to improve or add to highway capacity. It will also explore other transportation factors such as safety and connectivity/mobility that will affect economic outcomes.

8. Modal Inter-relationships

8.1 FHWA Purpose and Need Guidance

FHWA guidance recommends that modal inter-relationships is an element that should be investigated in identifying a project's purpose and need statement. The guidance is as follows:

> Modal Inter-Relationships – Explain how the proposed action will interface with and serve to complement airports, rail and port facilities, mass transit services, etc.[17]

8.2 System Analysis

This section details the current performance of the multiple modes that are present within this study area: freight, ports, mass transit, and non-motorized facilities.

8.2.1 Freight

Anchorage has a much higher concentration of air and barge traffic than other United States regions. The MOA is the major year-round marine, rail, and air hub serving Alaska along the Railbelt. The POA, located at the head of Cook Inlet directly north of Downtown, is primarily a receiving port. Inbound cargo spans the full range of goods, materials, and equipment needed by consumers and businesses in the MOA and most of the rest of Alaska. Most freight is brought to the POA via container ship. Ships are off-loaded, and the containers may be hauled

[17] https://www.environment.fhwa.dot.gov/legislation/nepa/guidance_preparing_env_documents.aspx

by truck tractor to either the destination of consumption or to a warehouse facility off port premises, where they are off-loaded and redistributed in smaller trucks or consolidated for tractor transport (AMATS 2017). A substantial number of trucking, transfer, and consolidating firms are located in the Ship Creek industrial area north of Downtown and within the study area. Additionally, the Alaska Railroad Corporation operates a trailer-on-flat-car facility at its main yard in the Ship Creek basin, which is used to load and unload container vans arriving from the POA. The freight is then moved by rail, predominantly to Fairbanks and nearby military bases.

The Ship Creek area remains one of MOA's major warehousing and transportation-related industrial areas, and continues to play a critical role in the shipment and distribution of goods to the MOA and the rest of the state. However, the bulk of outdoor storage facilities and warehousing, as well as manufacturing/processing plants and construction yards, has gravitated from the Downtown-Ship Creek basin area to the rail/highway industrial corridor between the New Seward Highway and Arctic Boulevard, south of International Airport Road. This places most truck traffic to or from the POA onto the Seward Highway, Gambell-Ingra Streets, and A-C Streets. Some truck traffic also uses the L Street-Minnesota Drive connection.

Stakeholders have reported concerns with the existing transportation system, including slow speeds, conflicts with turning traffic and non-motorized users, and poor intersection geometry that makes turning larger vehicles (especially tractor trailer doubles) difficult. Other challenges exist because most freight traffic has to travel through Downtown Anchorage before reaching its final designation, conflicting with existing and future land use plans. Another issue is the number of rail crossings freight vehicles cross in Ship Creek. The need to stop for each crossing, and the potential for truck-rail conflicts, are a concern.

According to FHWA (2017), a direct relationship exists between key freight metrics (e.g., average speeds, reliability, travel times, crash rates, pavement quality) and the economy. For example, higher average speeds may increase the geographic area from which supplies can be drawn and the effective market into which supplies can be sold. Similarly, more predictable travel times means more efficient scheduling and improved utilization of truck and driver. Also, it creates a higher probability of on-time delivery and reduces the cost of reliable service. Crash rates drive insurance costs, loss and damage of goods, and delivery failures. Smoothness of pavement increases speeds, reduces loss and damage, and lowers vehicle operating costs. Related to these metrics, congestion as measured through LOS, travel speeds, crash rates, and pavement conditions are all evaluated in applicable sections of this report and provide important performance information relative to the freight network.

The Bureau of Transportation Statistics (BTS 2022), reports that highway system reliability is an important indicator for understanding freight performance and identifying areas in need of operational and capital improvements. BTS indicates that unexpected delays can increase the cost of transporting goods and affect delivery schedules and that a wide range of factors affect travel-time reliability, including congestion, incidents, infrastructure design and capacity, work zones, terrain, and weather. Average speeds below 55 miles per hour indicate congestion. Related to these metrics, congestion as measured through LOS, travel speeds, crash rates, and

pavement conditions are evaluated in applicable sections of this report and provide important performance information relative to the freight network.

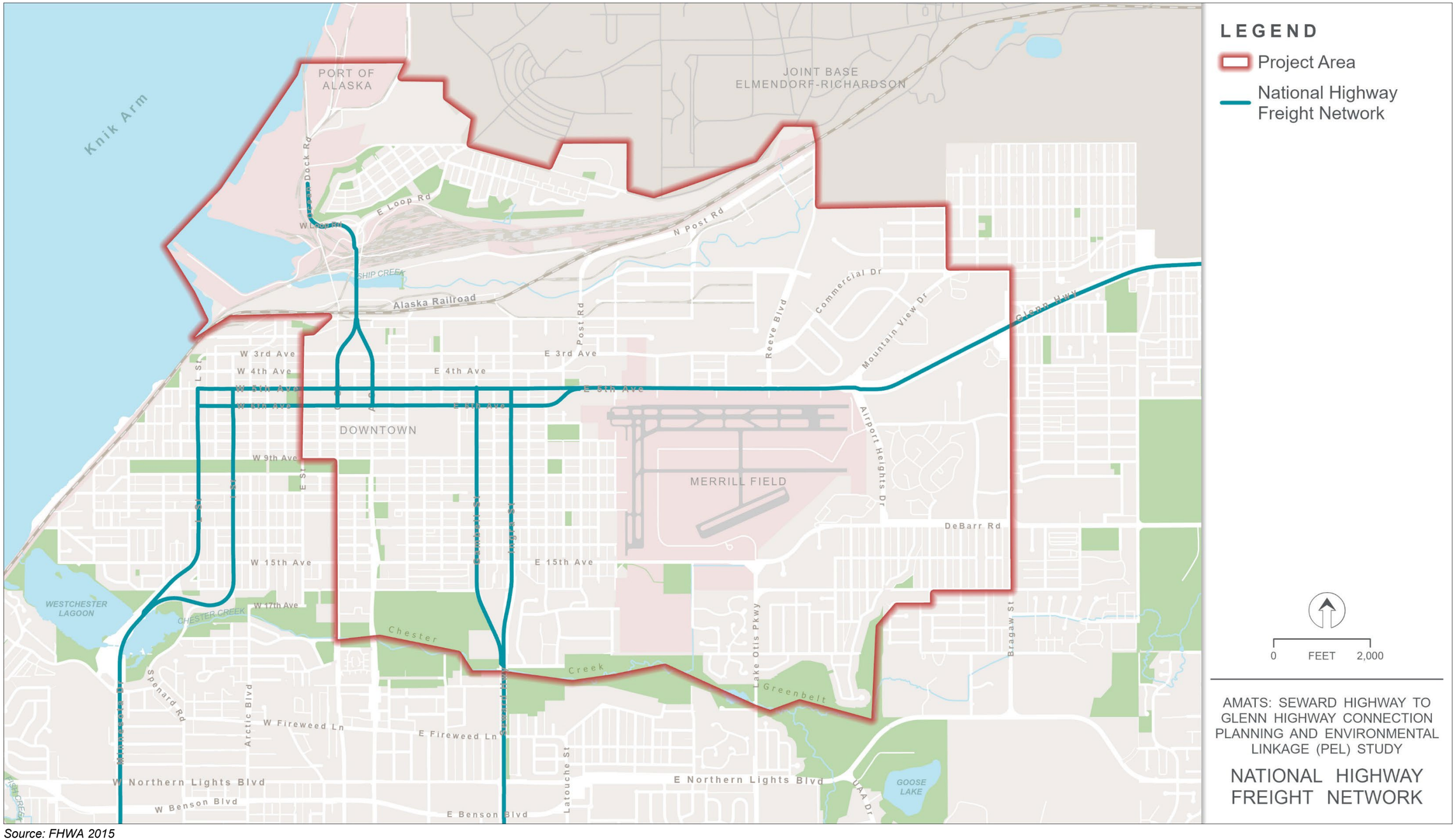
National Highway Freight Network. The National Highway Freight Network (NHFN) was established through the Fixing America's Surface Transportation Act. Alaska's NHFN includes the Glenn and Seward Highways, and 5th 6th Avenues (see Figure 17).

Regional Truck Routes. The *Anchorage Freight Mobility Study* (AMATS 2017), prepared for AMATS, identified a regional truck route network that should be designed to accommodate trucks. The proposed network is shown in Figure 18 and includes the Seward and Glenn Highways, 5th and 6th Avenues, and Ingra and Gambell Streets within the study area.

Figure 19 depicts annual average daily truck volumes in 2019 from the updated traffic model. These volume estimates represent a No Build condition, meaning no future roadway improvements are included. Figure 20 depicts estimated truck volume in 2050, without any roadway improvements.

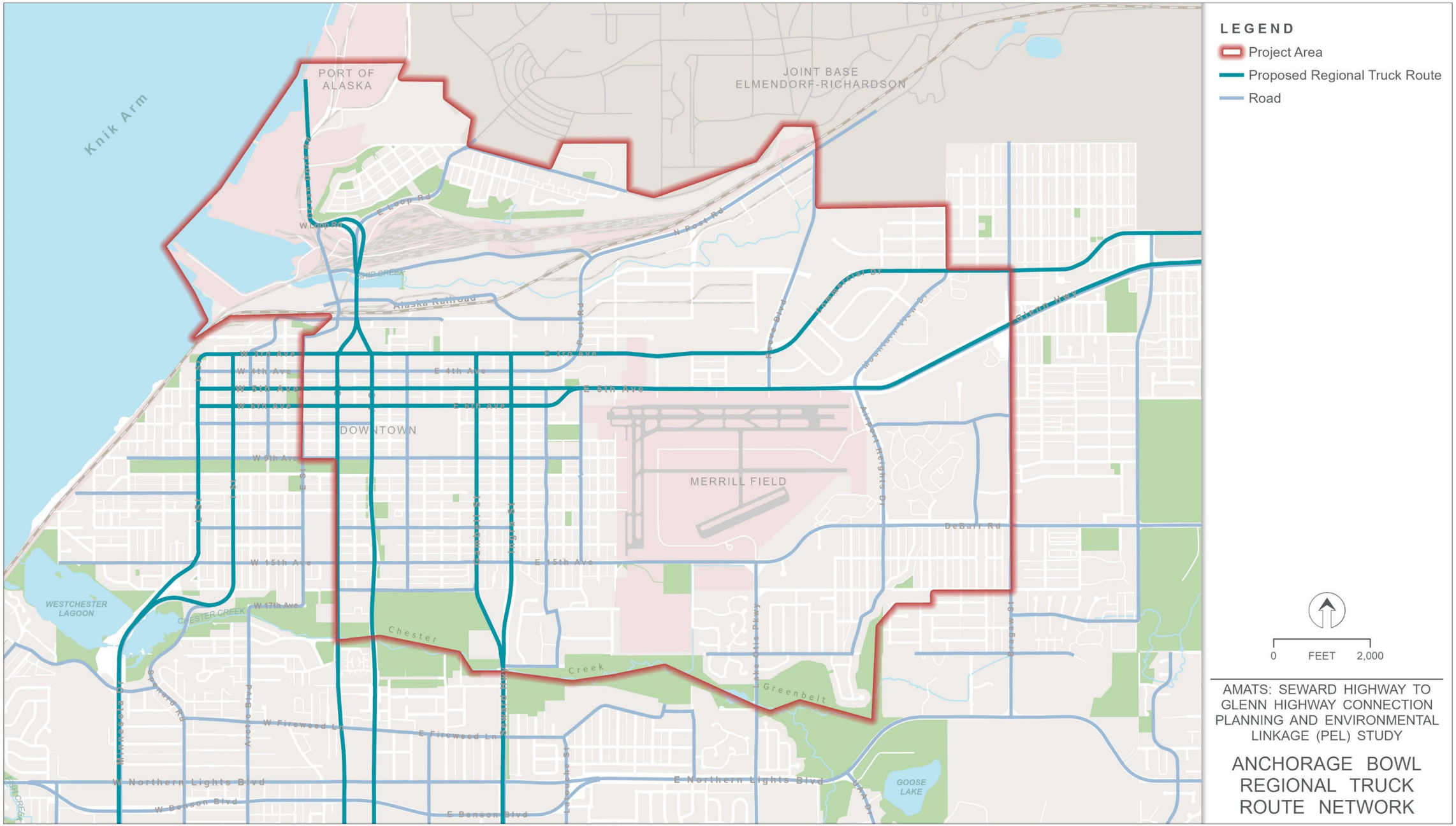
Important freight routes are modeled, showing a reduction in truck traffic on some routes, such as the POA-access A Street viaduct, 5th Avenue/Glenn Highway between the couplet and Airport Heights Drive, and 3rd Avenue between A Street and Post Road. Other segments of important freight routes show no reduction in traffic and remain at the highest category of traffic (more than 900 heavy trucks per day), including Ocean Dock Road, Whitney Road, Post Road, and 3rd Avenue between Post Road and Commercial Drive. Heavy truck traffic is predicted to remain mostly stable along the Gambell/Ingra Street couplet at 350 to 600 trucks per day between 2019 and 2050.

Figure 17. National Highway Freight Network



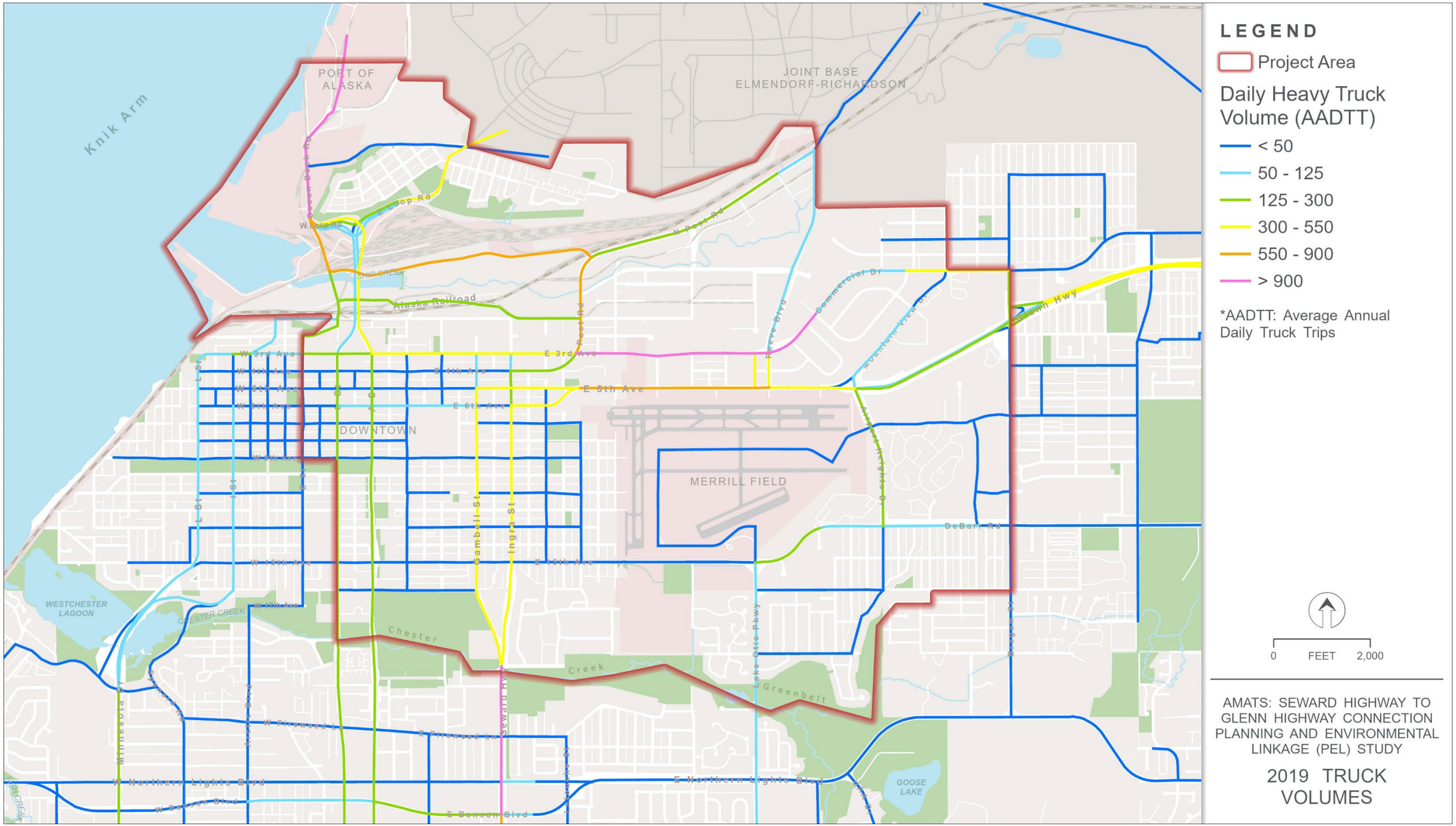
Source: FHWA 2015

Figure 18. Anchorage Bowl Proposed Regional Truck Route Network



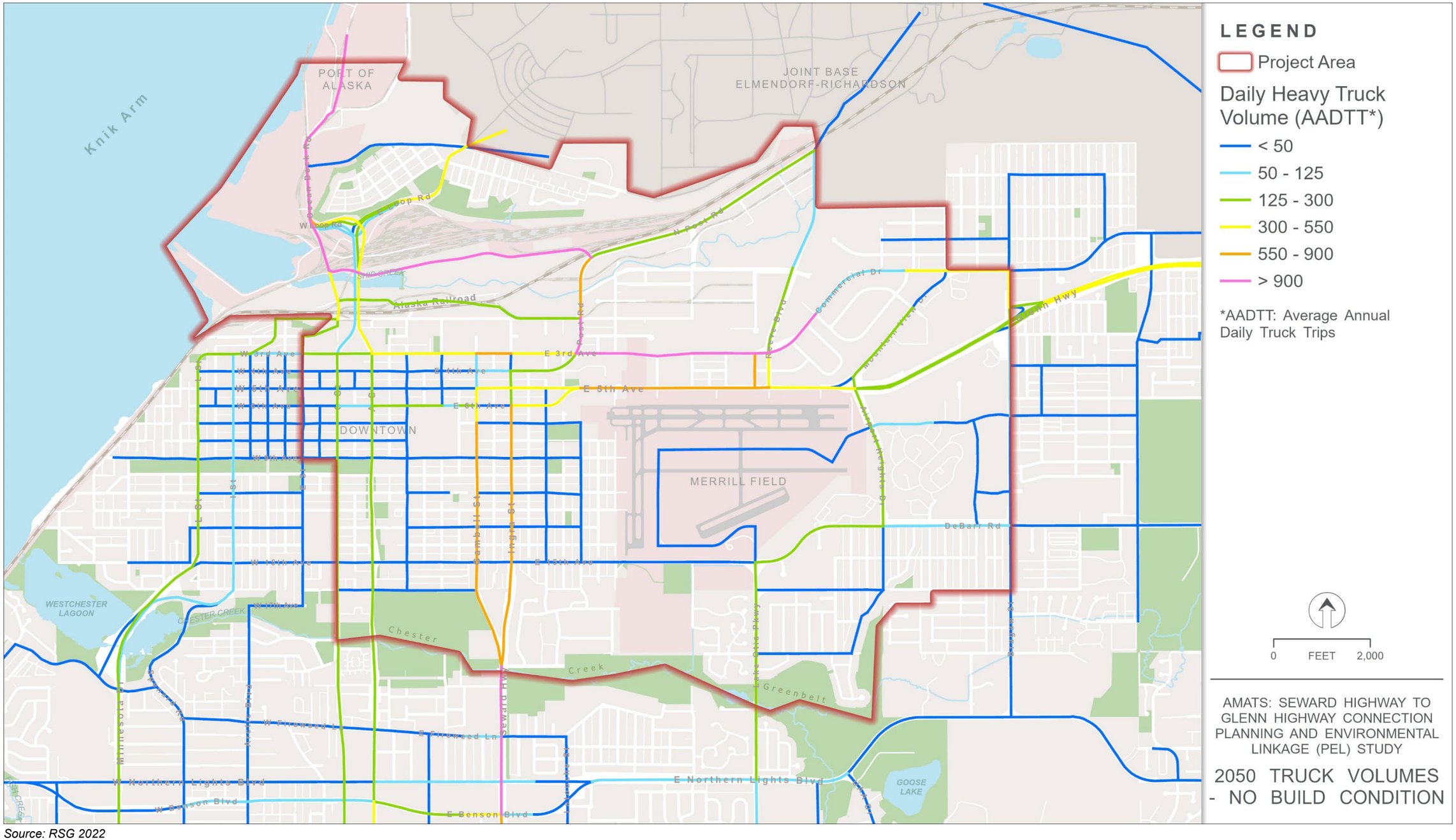
Source: AMATS 2017

Figure 19. Study Area Truck Volumes, 2019



Source: RSG 2022

Figure 20. Study Area No Build Truck Volumes, 2050



Source: RSG 2022

Ports

The POA is a major freight generator and asset to the regional economy. Fifty percent of all freight shipped into Alaska arrives through the POA (POA 2022a). While some of the freight and petroleum stays in the Anchorage area, much is destined for other parts of the state. In 2021, tonnage through the POA was 4,987,806 tons (POA 2022b). Approximately 33 percent of that was composed of vans, flats, and containers (POA 2022b).

Designated National Strategic Seaports. The POA is one of 22 (17 commercial and 5 military) Department of Defense (DoD) Designated National Strategic Seaports. "Strategic seaports are designated because of their ability to support major force and material deployments in times of war and national emergency, based on their proximity to deploying military units and their transportation links close to those units, and varying other capabilities the DOD has deemed important, including the importance of having strategic ports on all four of the nation's coasts (Atlantic, Gulf, Pacific, and Alaska)" (Bondareff 2012). Strategic seaports "are significant transportation hubs that are important to the readiness and cargo throughput capacity of the DOD" (Bondareff 2012).

"One of the major responsibilities of strategic seaports is to be prepared to make the port and its facilities available within short notice for the deployment of military forces and supplies in support of DOD operations" (Bondareff 2012). "Strategic seaports need to be able to make their facilities available to the military with as little as 48 hours' notice, and for long periods of time, if necessary" (Bondareff 2012). Between 2005 and 2010, the POA "has supported over 20 military deployments including Stryker Brigade deployments to Iraq and Afghanistan. During that same time period, over 18,000 pieces of military equipment passed through the Port's facilities" (Bondareff 2012).

The POA is also part of the U.S. Department of Transportation, Marine Administration's National Port Readiness Network (NPRN). The NPRN "is a cooperative designed to ensure readiness of commercial ports to support force deployment during contingencies and other national defense emergencies" (MARAD 2021).

8.2.2 Mass Transit

People Mover. The MOA Public Transportation Department operates the PeopleMover, Anchorage's fixed route transit system. This system is the largest in Alaska. Within the study area, it operates 10 bus routes (see Figure 21). Figure 21 shows average weekday bus ridership by stop in 2019[18].

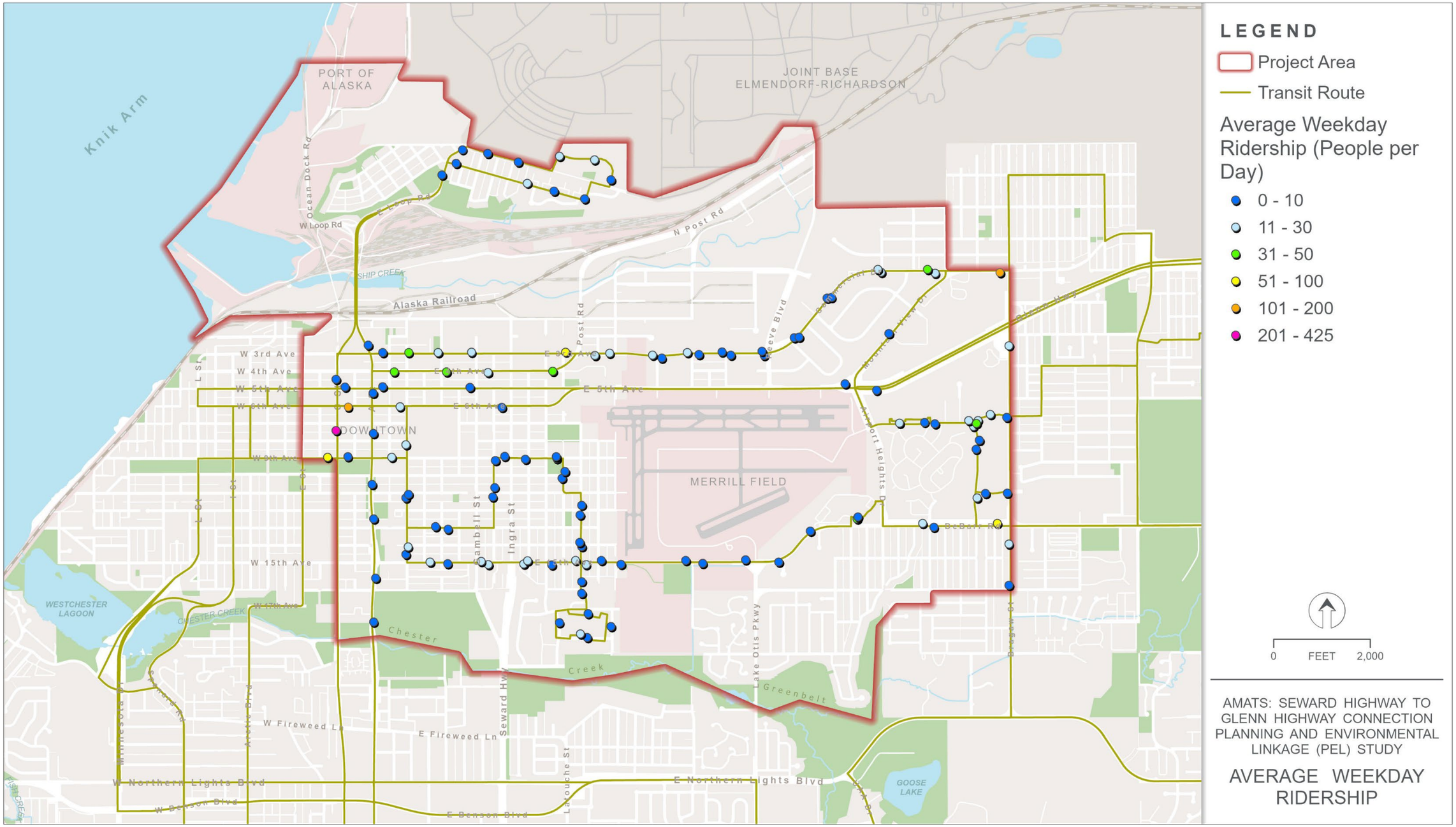
- **Route 11 Fairview/Senior Center:** Route 11 travels between City Hall and the Anchorage Senior Center via Medfra Street, 9th Avenue, Hyder Street, 13th Avenue, and Cordova Street. This is a neighborhood route and has 60-minute headways[19].

[18] 2019 ridership information is presented because it represents a typical year. The 2020 and 2021 data does not reflect typical ridership patterns due to the COVID-19 pandemic.
[19] A "headway" is the amount of time between transit vehicle arrivals at a bus stop.

- **Route 20 Mountain View/UMED:** Route 20 travels between the Downtown Transit Center and the Alaska Native Medical Center via 3rd and 4th Avenues, Mountain View, Northway Mall, East High School, and the UMED. It is classified as a frequent route. It has 15-minute headways on weekdays and 30-minute headways on weekends.
- **Route 21 Mountain View/Northway**: Route 21 travels in a counterclockwise loop, beginning on Penland Parkway at the Northway Mall. From Penland Parkway, the route travels on Bragaw Street, Debarr Road, Pine Street, McCarrey Street, Mountain View Drive, Lane Street, and Parsons Avenue before returning to Penland Parkway via Bragaw Street and Mountain View Drive. It is considered a neighborhood route and has 30-minute headways.
- **Route 25 Tudor:** Route 25 travels between the Downtown Transit Center and Veteran Affairs Clinic via A and C Streets, Tudor Road, the Alaska Native Medical Center, and Muldoon Road. This route is considered a standard route, and generally has 15-minute headways on weekdays and 30-minute headways on weekends.
- **Route 30 Debarr:** Route 30 travels between the Downtown Transit Center and the Muldoon Transit Hub via Cordova Street, 15th Avenue, Alaska Regional Hospital, and Debarr Road. Route 30 is a frequent route and has 15-minute headways on weekdays and 30-minute headways on weekends.
- **Route 41 Government Hill:** Route 41 travels from City Hall to the Anchorage Museum, Bluff Drive, Richardson Vista Road, Ivy Street, and Hollywood Drive, then returns to City Hall. It is a neighborhood route with 60-minute headways.
- **Route 92 Eagle River:** Route 92 is a commuter express route that stops at City Hall and the Eagle River Transit Center via the Glenn Highway. It is a rush hour route and has rush hour service.

The MOA Public Transportation Department also operates AnchorRIDES, a paratransit system, within the study area, providing shared ride, accessible door-to-door transportation within the urbanized Anchorage area. This service does not operate on set routes.

Figure 21. Average Weekday Transit Ridership



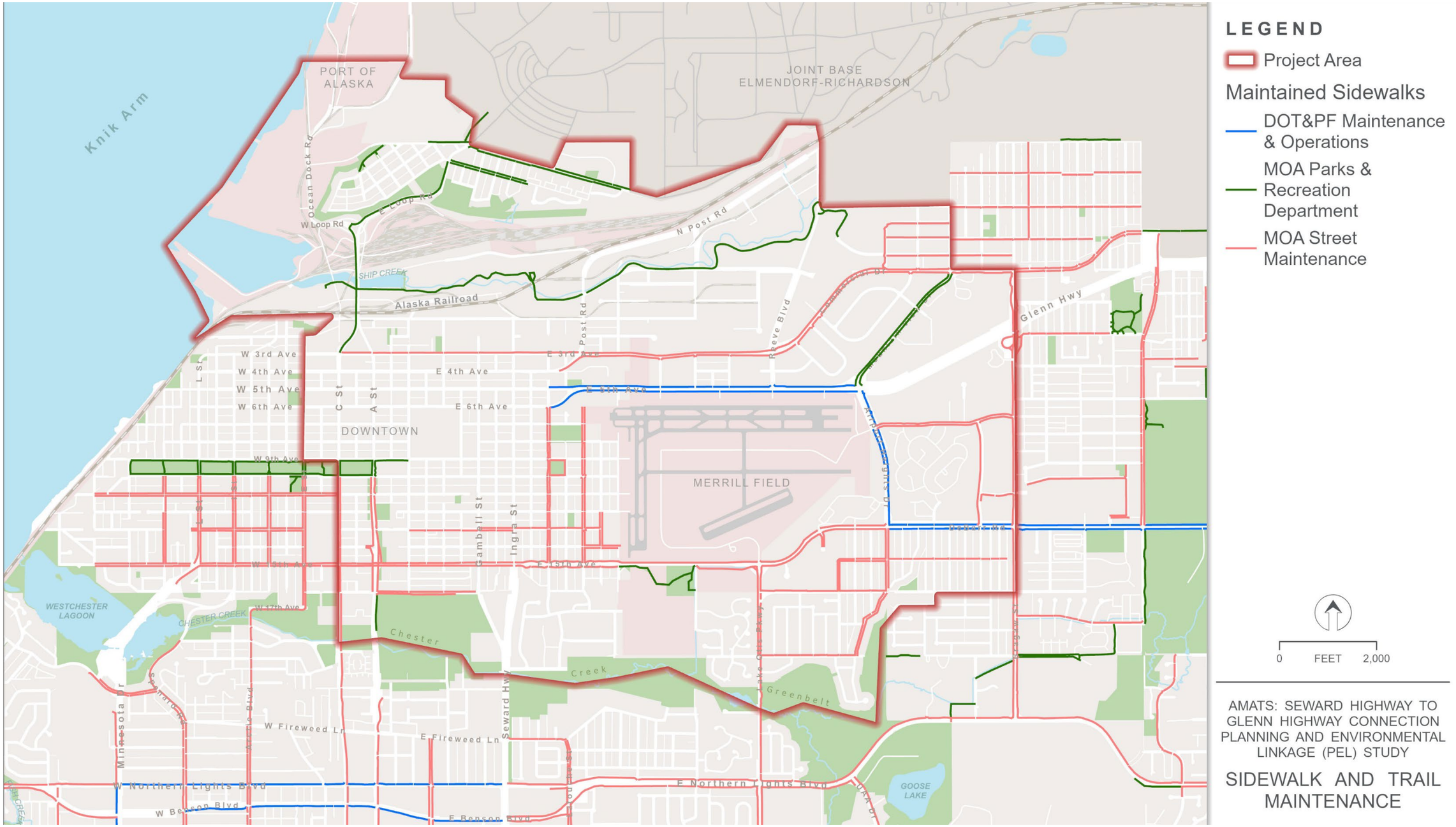
Source: MOA 2022

8.2.3 Non-Motorized Facilities

Sidewalks

The DOT&PF Maintenance & Operations, MOA Street Maintenance, and MOA Parks and Recreation Department share maintenance responsibilities for sidewalks and trails within the study area. Figure 22 shows which agency has the maintenance responsibility for sidewalks and trails within the study area.

Figure 22. Sidewalk and Trail Maintenance Responsibilities within the Study Area



Source: MOA n.d.

Pedestrian Network

The existing pedestrian network is primarily sidewalks and shared-use pathways. Sidewalks and/or sidepaths are available along many of the major arterials throughout the MOA and help provide connections to the existing shared-use pathway network and destinations such as employment centers and shopping areas and provide access into neighborhoods across Anchorage. Pedestrians are also served by the network of shared-use pathways in all seasons. Figure 23 shows the portions of the network owned by DOT&PF and MOA in the Anchorage Bowl; network portions that are owned by other entities are not included.

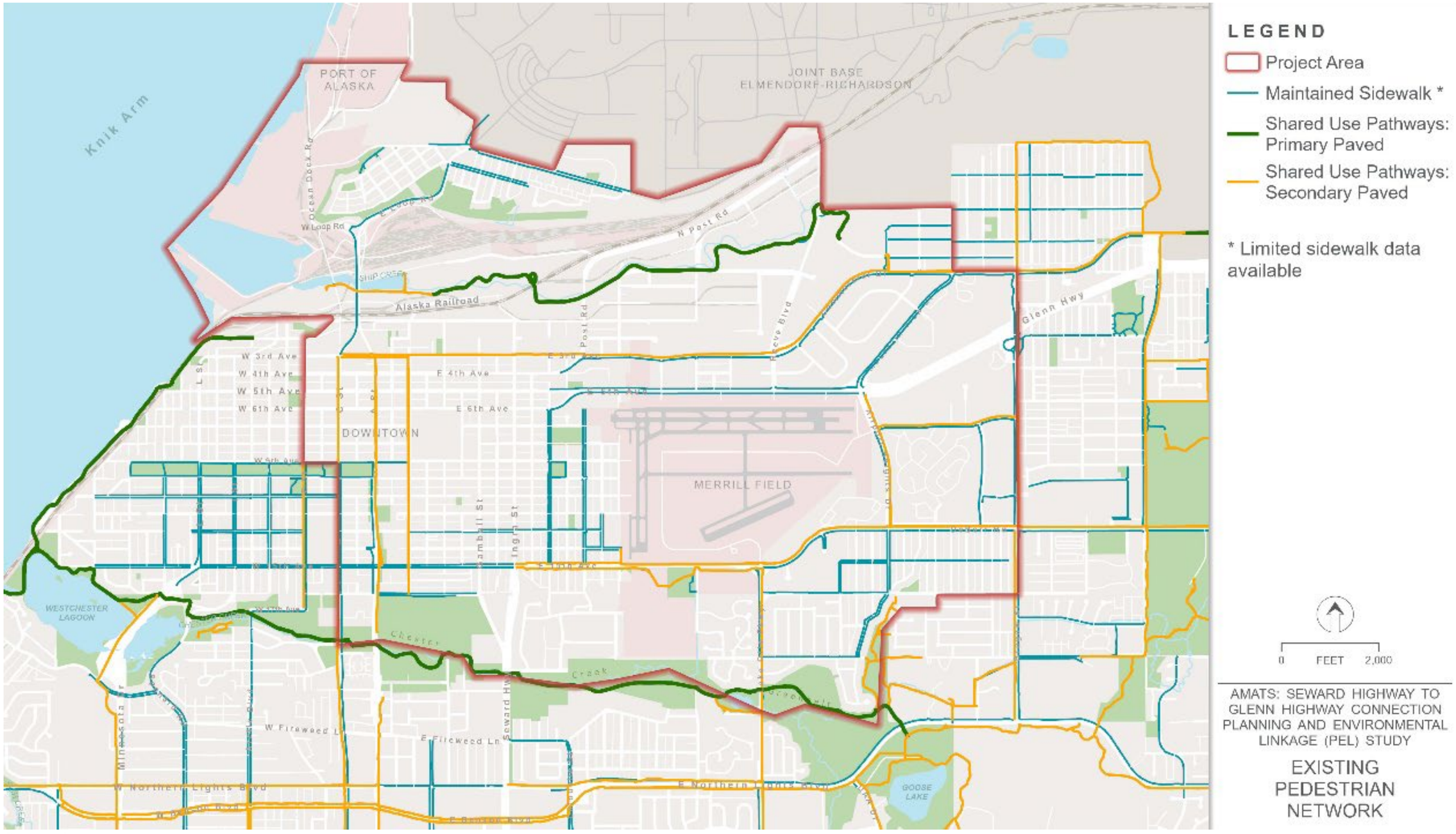
The Fairview neighborhood has one of the highest percentages of non-motorized travel in Anchorage. The neighborhood has a good street grid and a relatively complete sidewalk network. Key destinations for goods and services, such as the neighborhood Carrs-Safeway grocery store, are located on Gambell Street. Despite narrow sidewalks with no buffer from traffic as well as light poles and streetlights located within the sidewalk, both Gambell and Ingra Streets are heavily used non-motorized corridors. Much of the eastern half of the neighborhood is separated from commercial services like Carrs-Gambell by the eight-lane Gambell-Ingra Street couplet. The western half of the neighborhood is separated from the eastern half, which includes important community facilities like the Fairview Recreation Center and Fairview Elementary School. These wide streets with fast-moving traffic bisect the community, creating a barrier that adversely affects the mobility of and accessibility for people walking and bicycling. The *Non-Motorized Plan* prioritizes recommendations based on connectivity, health and equity, gap closure, safety, previous support, and public support (AMATS 2021). The recommended pedestrian network from the *Non-Motorized Plan* (AMATS 2021) is displayed on Figure 24 and listed in Table 7.

Table 7: Prioritized Pedestrian Projects in Study Area

Corridor/Street Name	To	From	Priority
3rd Avenue	Post Road	Ingra Street	Medium
5th Avenue	Reeve Circle	L Street	High
6th Avenue	East 5th Ave	L Street	High
A Street	West 8th Avenue	West 3rd Avenue	Low
C Street	West 9th Avenue	West 3rd Avenue	Low
Ingra Street	East 15th Avenue	East 5th Avenue	Medium
Gambell Street	East 16th Avenue	East 5th Avenue	Low
15th Avenue	Gambell Street	Eagle Street	Low
Bragaw Street	East Northern Lights Boulevard	Mountain View Drive	High
Mountain View Drive	Bragaw Street	Taylor Street	High

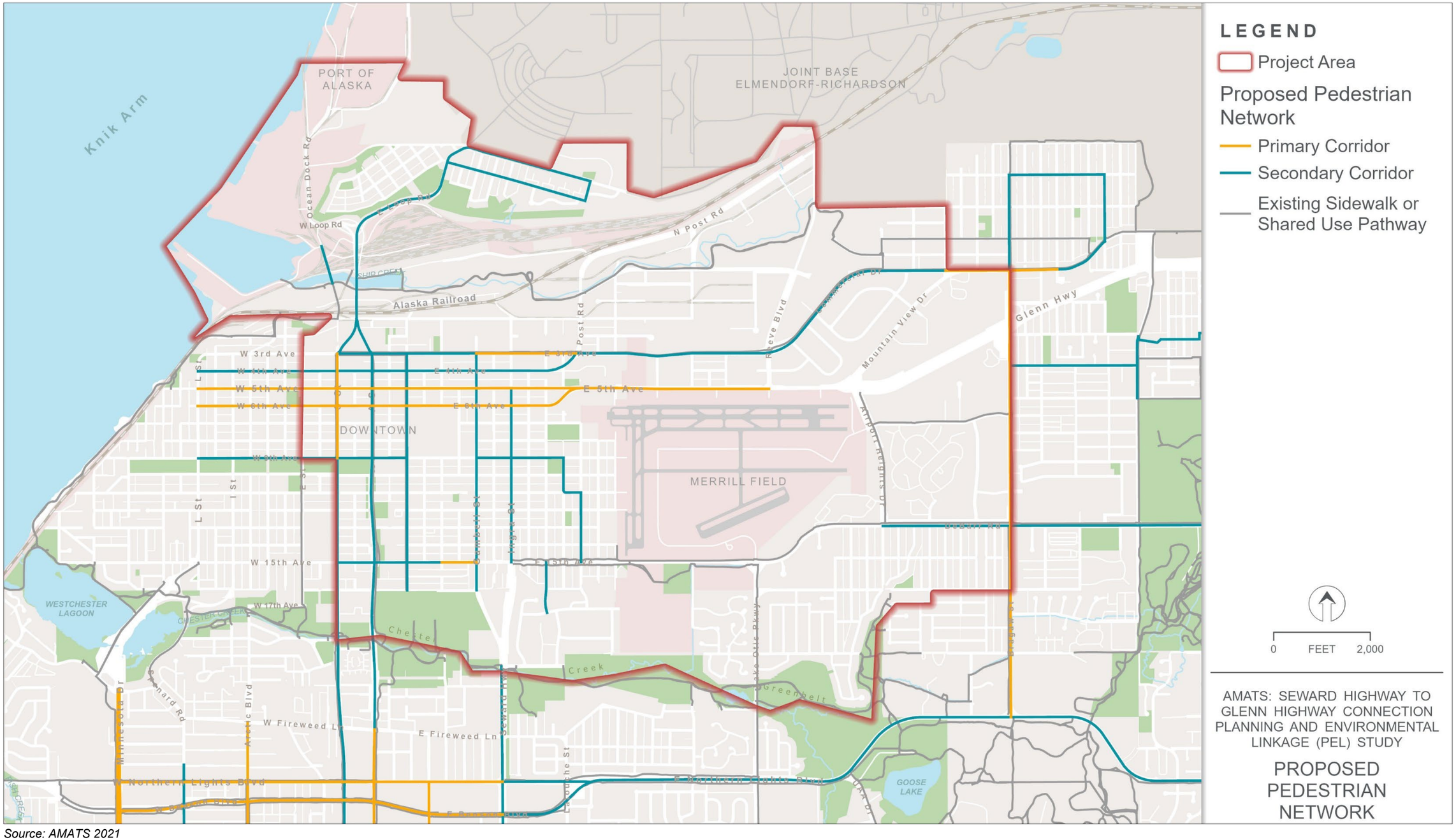
Source: AMATS 2021

Figure 23. Existing Pedestrian Network



Source: MOA n.d.

Figure 24 Proposed Pedestrian Network



Source: AMATS 2021

Bicycle Network

The existing bicycle network consists of a variety of shared-use pathways, bicycle pathways, and sidewalks as well as bicycle lanes and boulevards. The existing bicycle network is shown on Figure 25. The proposed bicycle network within the study area from the *Non-Motorized Plan* (AMATS 2021) is shown on Figure 26 and in Table 8.

Table 8: Priority Bicycle Projects in Study Area

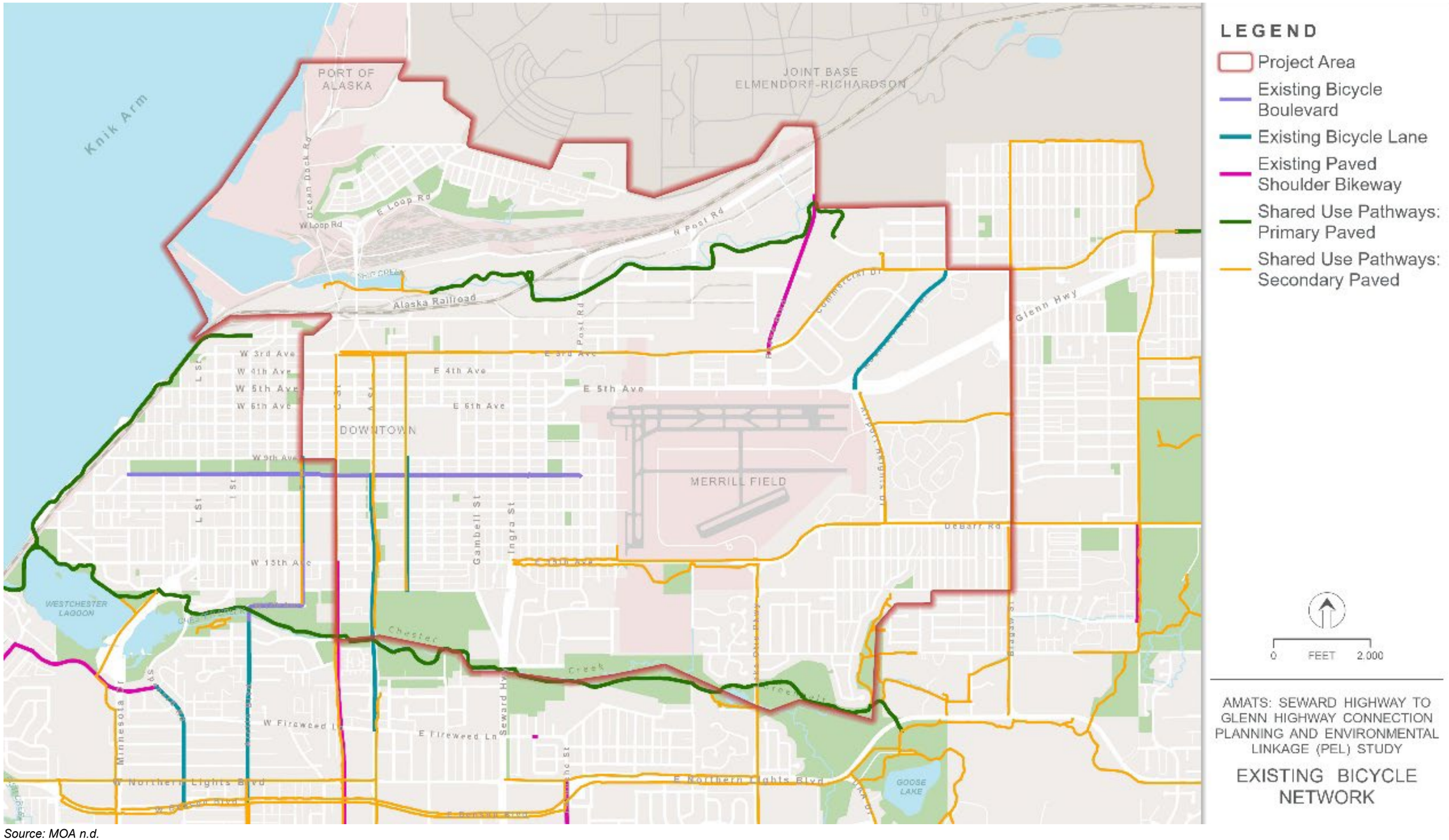
Corridor/ Street Name	To	From	Facility Type	Priority
Post Road	East 3rd Avenue	Viking Drive	Separated Bikeway	High
1st Avenue	C Street	H Street	Separated Bikeway	Medium
2nd Avenue	North C Street	E Street	Separated Bikeway	Medium
5th Avenue	Karluk Street	M Street	Separated Bikeway	High
6th Avenue	Karluk Street	L Street	Separated Bikeway	Medium
7th Avenue	Cordova Street	L Street	Separated Bikeway	Medium
15th Avenue	Ingra Street	Minnesota Drive	Separated Bikeway	Medium
16th Avenue	Sunrise Drive	Lake Otis Parkway	Enhanced Shared Roadway	High
17th Avenue	Juneau Drive	Karluk Street	Separated Bikeway	Medium
Sunrise Drive	East 16th Avenue	East 20th Avenue	Enhanced Shared Roadway	Medium
Karluk Street	East 20th Avenue	East 5th Avenue	Separated Bikeway	Medium
Gambell Street	East 15th Avenue	East 3rd Avenue	Separated Bikeway	Medium
Ingra Street	East 6th Avenue	East 3rd Avenue	Separated Bikeway	Medium
E Street	West 15th Avenue	West 2nd Avenue	Separated Bikeway	High
C Street	13th Avenue	12th Avenue	Enhanced Shared Roadway	High
C Street/ Ocean Dock	West Loop Road	West 1st Avenue	Separated Bikeway	Medium
Juneau Drive	East 20th Avenue	East 17th Avenue	Separated Bikeway	Medium
Proposed Trail	East Harvard Avenue	2nd Street	Shared Use Pathway	Medium
Cordova Street	East 15th Avenue	East 3rd Avenue	Separated Bikeway	Low

Source: AMATS 2021

Bicycle Level of Traffic Stress

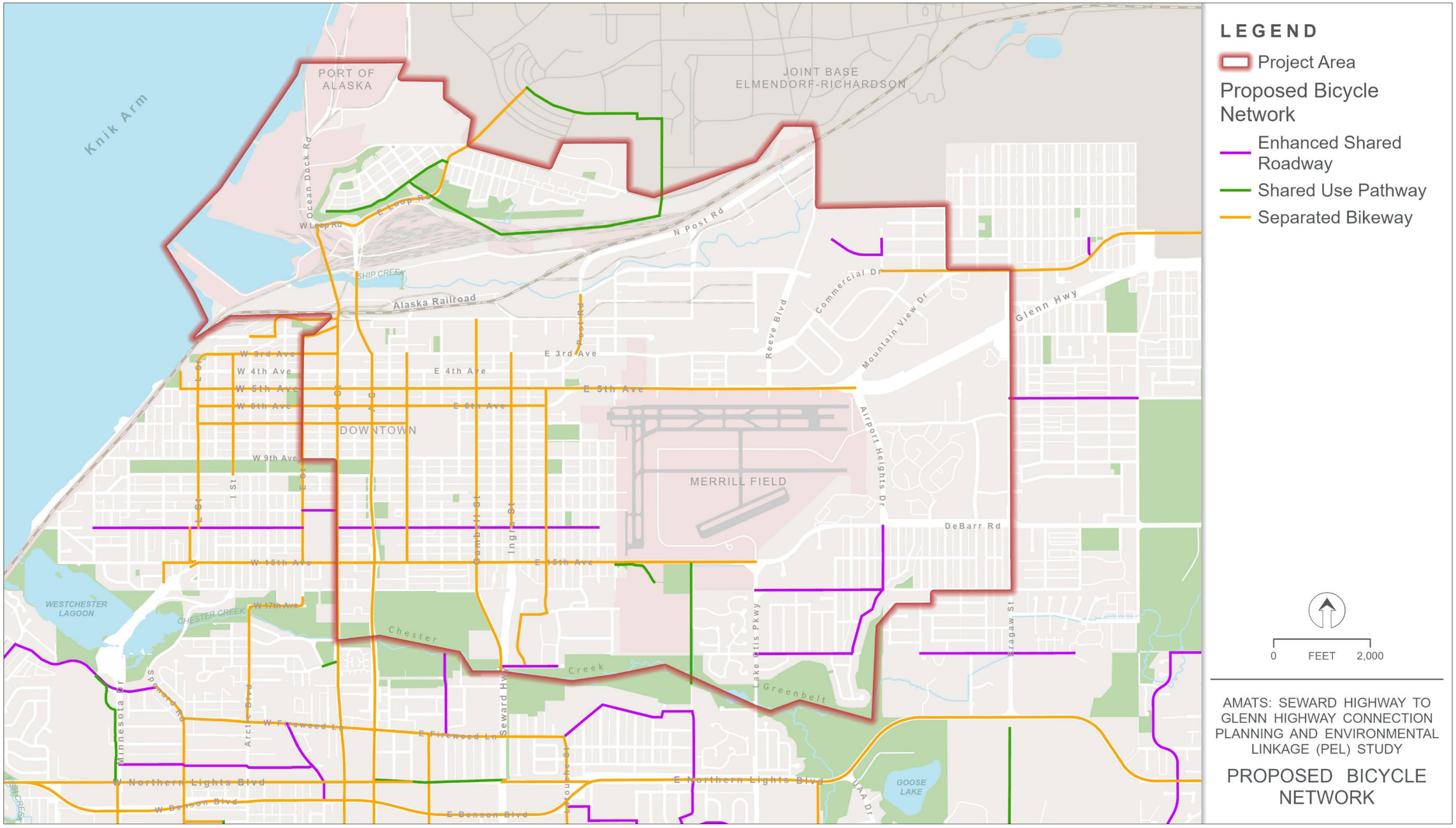
The bicycle Level of Traffic Stress (LTS) is a way to assess the comfort and connectivity of a bicycle network. It considers the impacts of posted speed limits, street width, and the presence and character of bicycle lanes. LTS measures how comfortable a road feels for a person biking. The roadway features, such as the presence of dedicated bicycle facility, can influence a person's comfort level and, therefore, their willingness to use the system. The AMATS *Non-Motorized Plan* (AMATS 2021) assessed LTS for the AMATS area; the results are shown on Figure 27. Roads within the study area that have higher LTS include Gambell Street, Ingra Street, and 5th Avenue.

Figure 25. Existing Bicycle Network



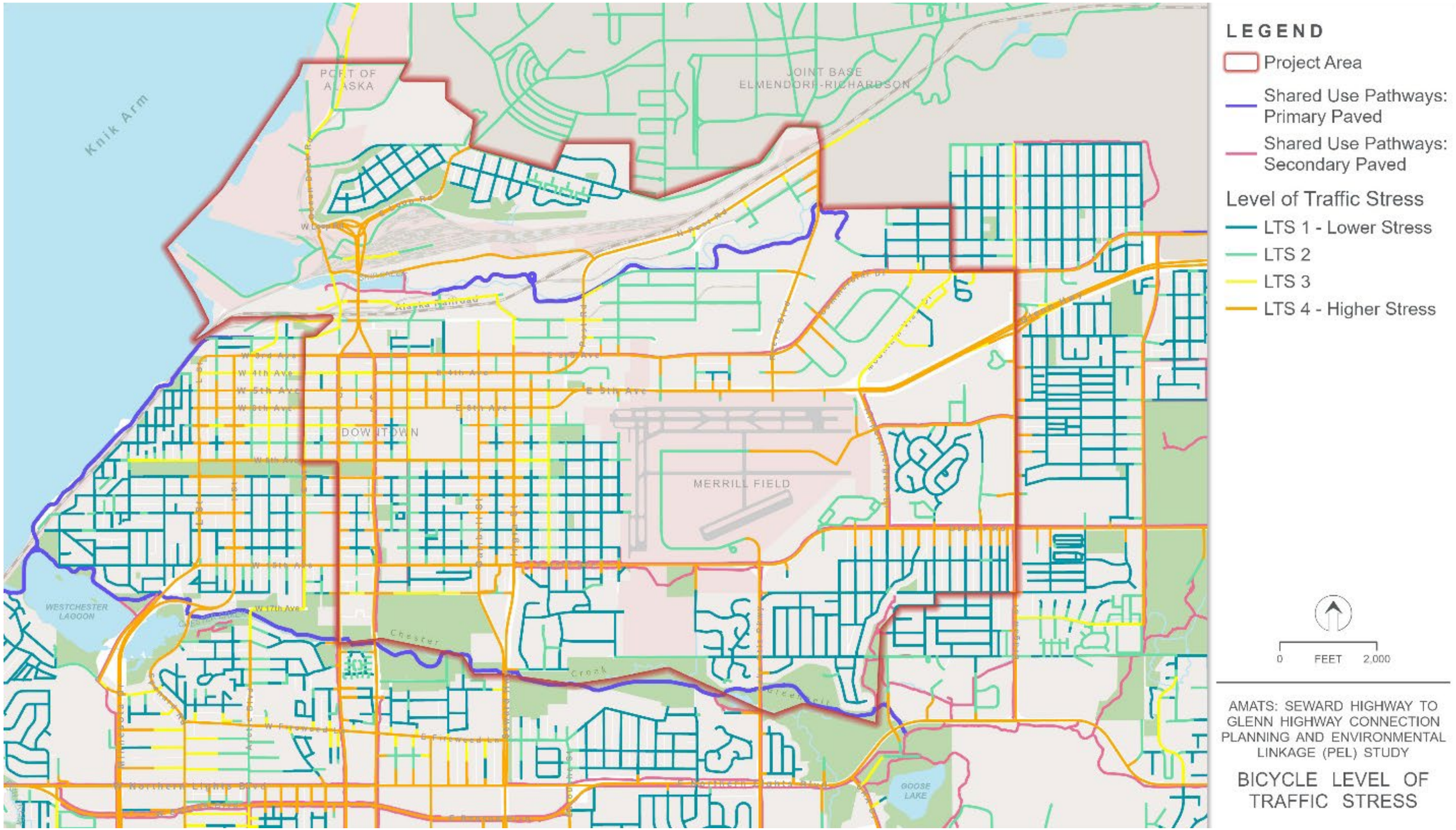
Source: MOA n.d.

Figure 26. Proposed Bicycle Network



Source: AMATS 2021

Figure 27. Bicycle Level of Traffic Stress



Source: MOA n.d.

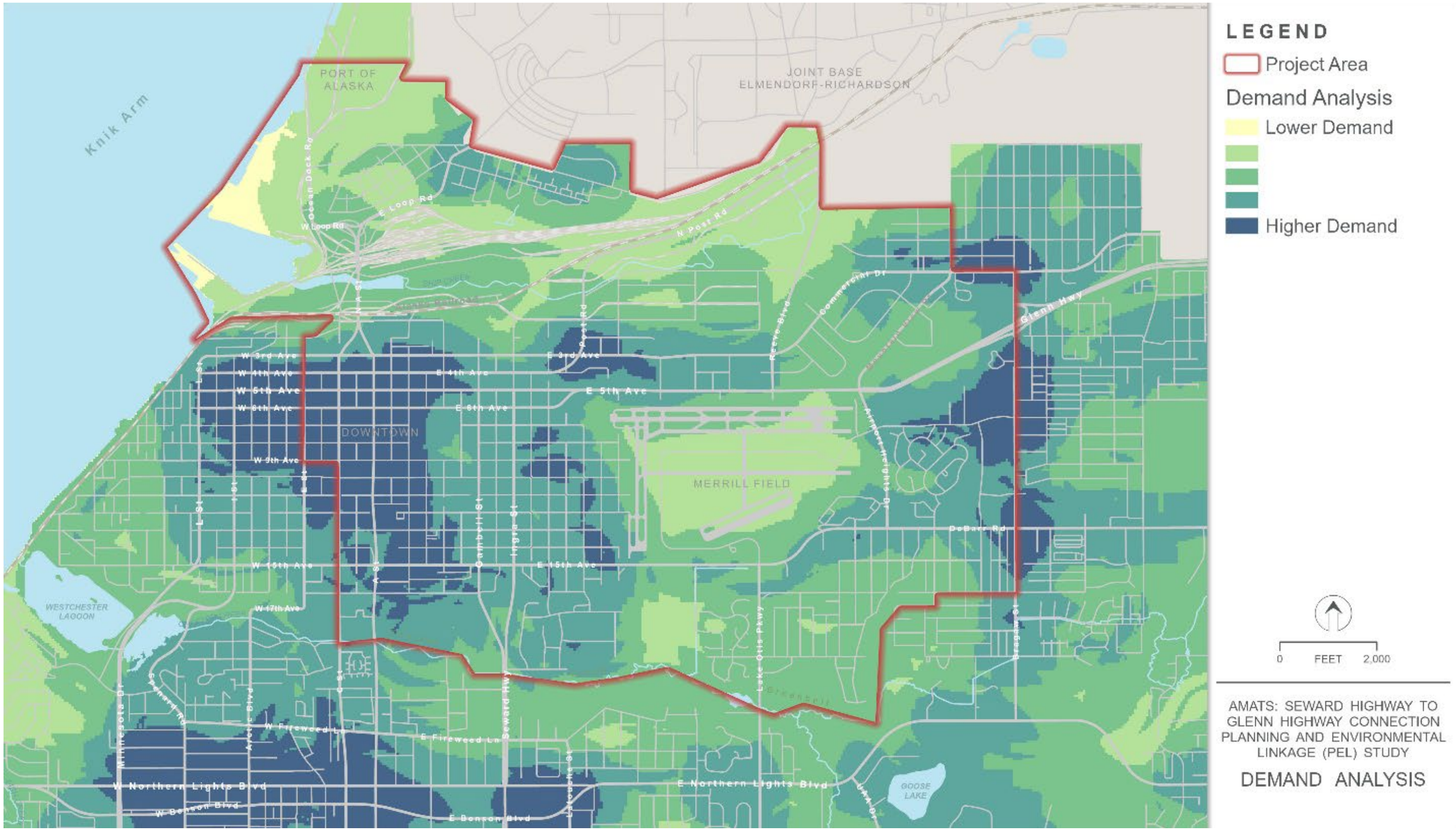
Demand Analysis

The AMATS *Non-Motorized Plan* (AMATS 2021) also assessed the potential demand for walking and biking through an evaluation of where people live, work, play, shop, access transit, and attend school. The results of this analysis are shown in Figure 28. A substantial portion of the study area, especially in the Fairview, Mountain View, and Downtown areas, have high demand. According to the AMATS *Non-Motorized Plan* (AMATS 2021), many of the areas with highest demand are also areas with higher LTS. This indicates the demand is not being met by the existing system.

Equity Analysis

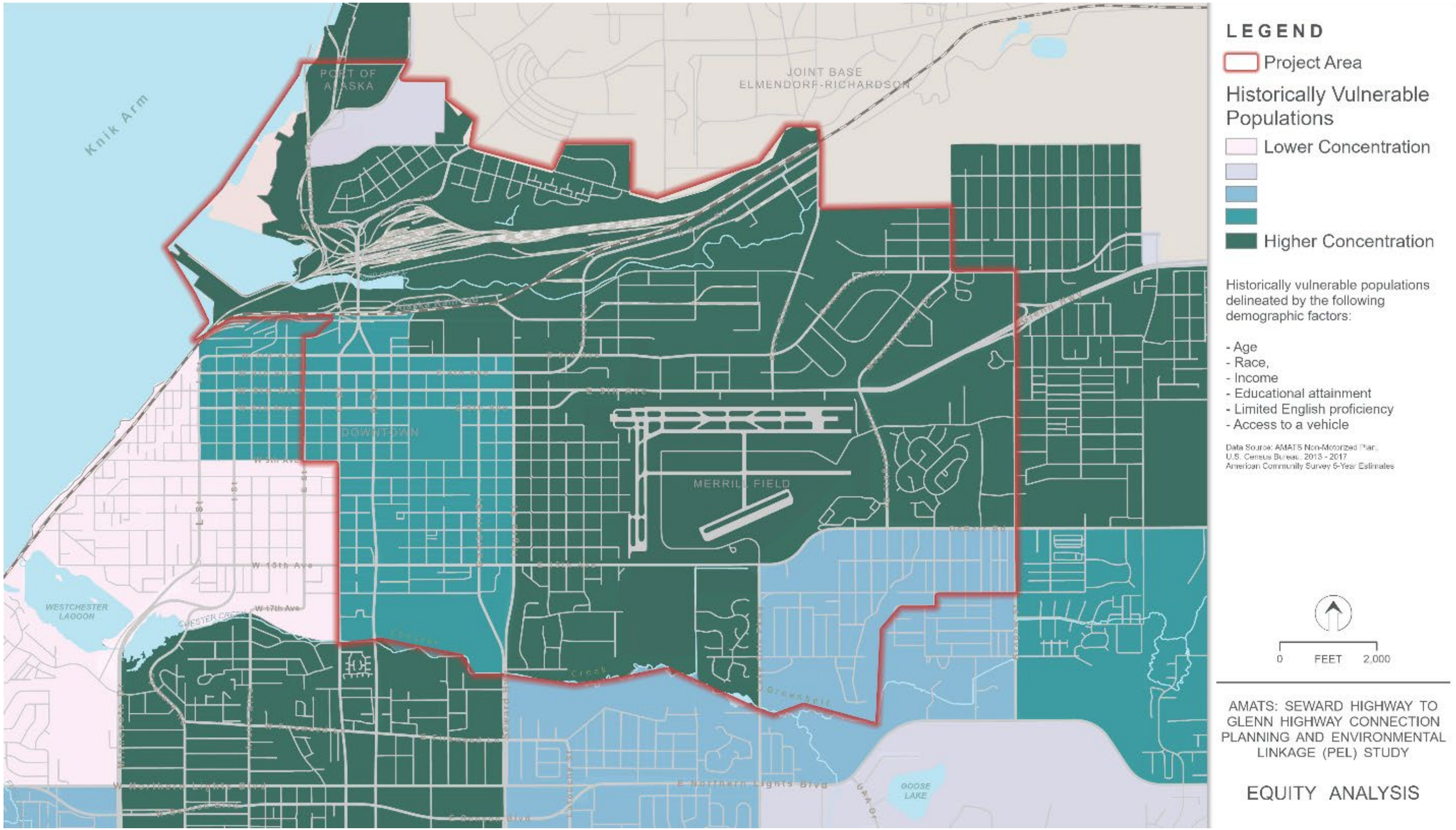
The AMATS *Non-Motorized Plan* (AMATS 2021) developed an equity analysis that considered demographic factors (age, race, income, educational attainment, limited English proficiency, access to a vehicle) that, when these factors were combined, indicated where concentrations of historically vulnerable populations occur. The results are shown on Figure 29. The areas around Merrill Field, Ship Creek, Mountain View, and Government Hill have some of the highest concentrations of historically vulnerable populations. This analysis indicates that the existing non-motorized system is not adequate to meet the demand, especially in these areas.

Figure 28. Non-Motorized Demand Analysis



Source: MOA n.d.

Figure 29. Equity Analysis

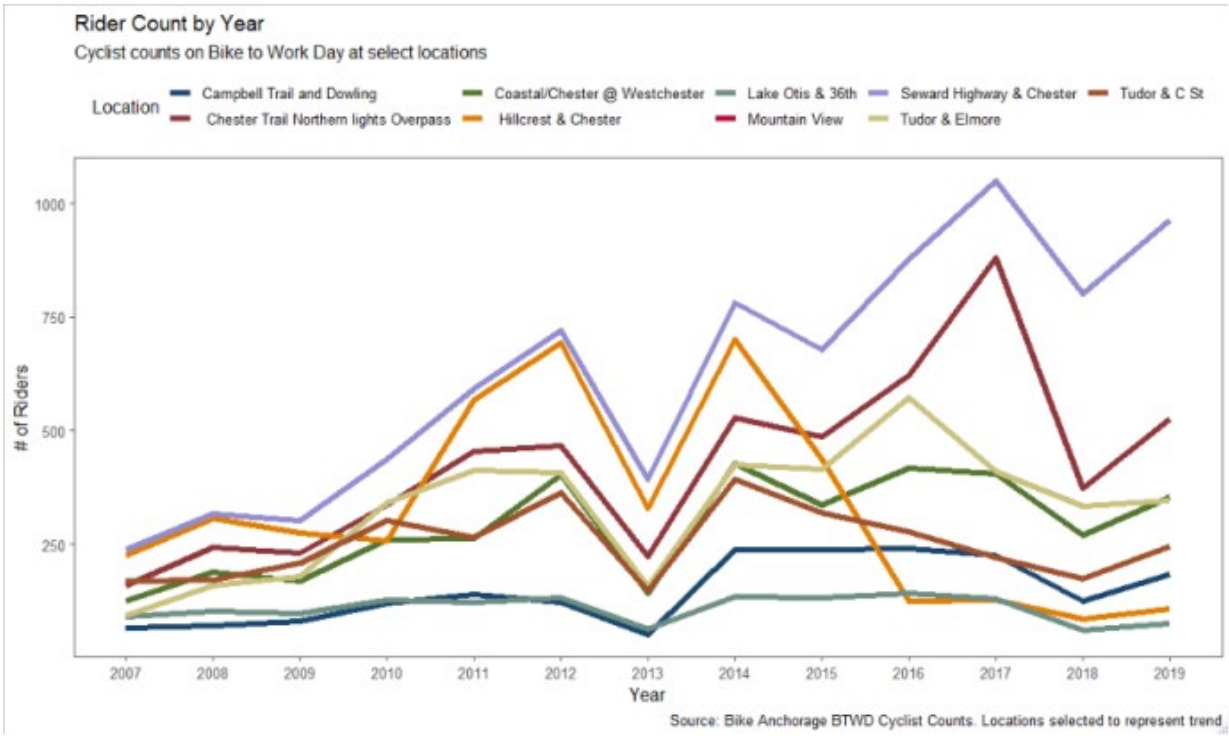


Source: MOA n.d.

Bike to Work

The MOA administers an annual survey on Bike to Work Day to better understand cycling in Anchorage. This data helps to understand the overall popularity of bike commuting rather than actual counts because issues such as traffic, weather, and road construction can affect the individual numbers. Figure 30 shows the rider count on Bike to Work Day at selected locations. The Seward Highway and Chester Creek locations show an overall growth trend. The Mountain View location also shows an overall growth trend but has more variability.

Figure 30. Bike to Work Day – Rider Counts by Year

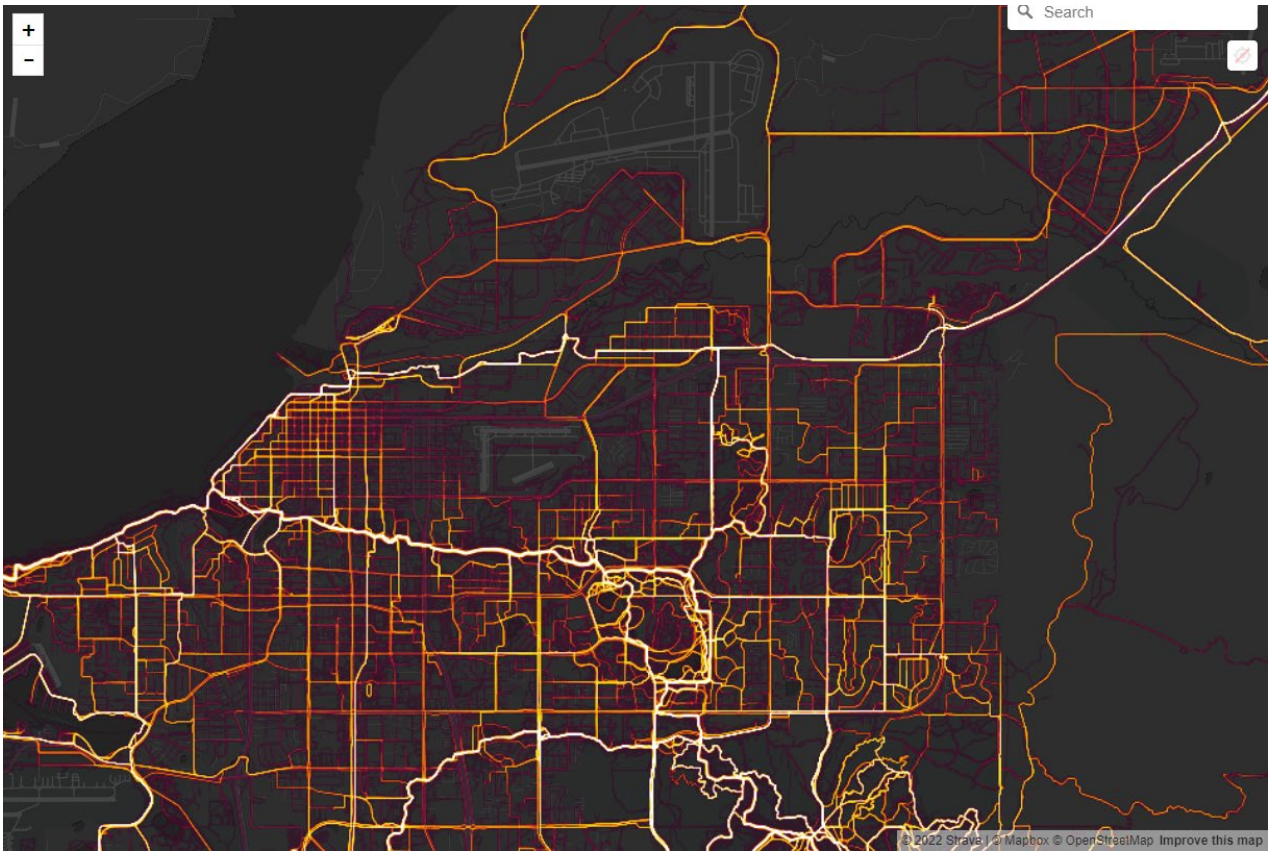


Source: Berry 2019

Fitness Tracker Users

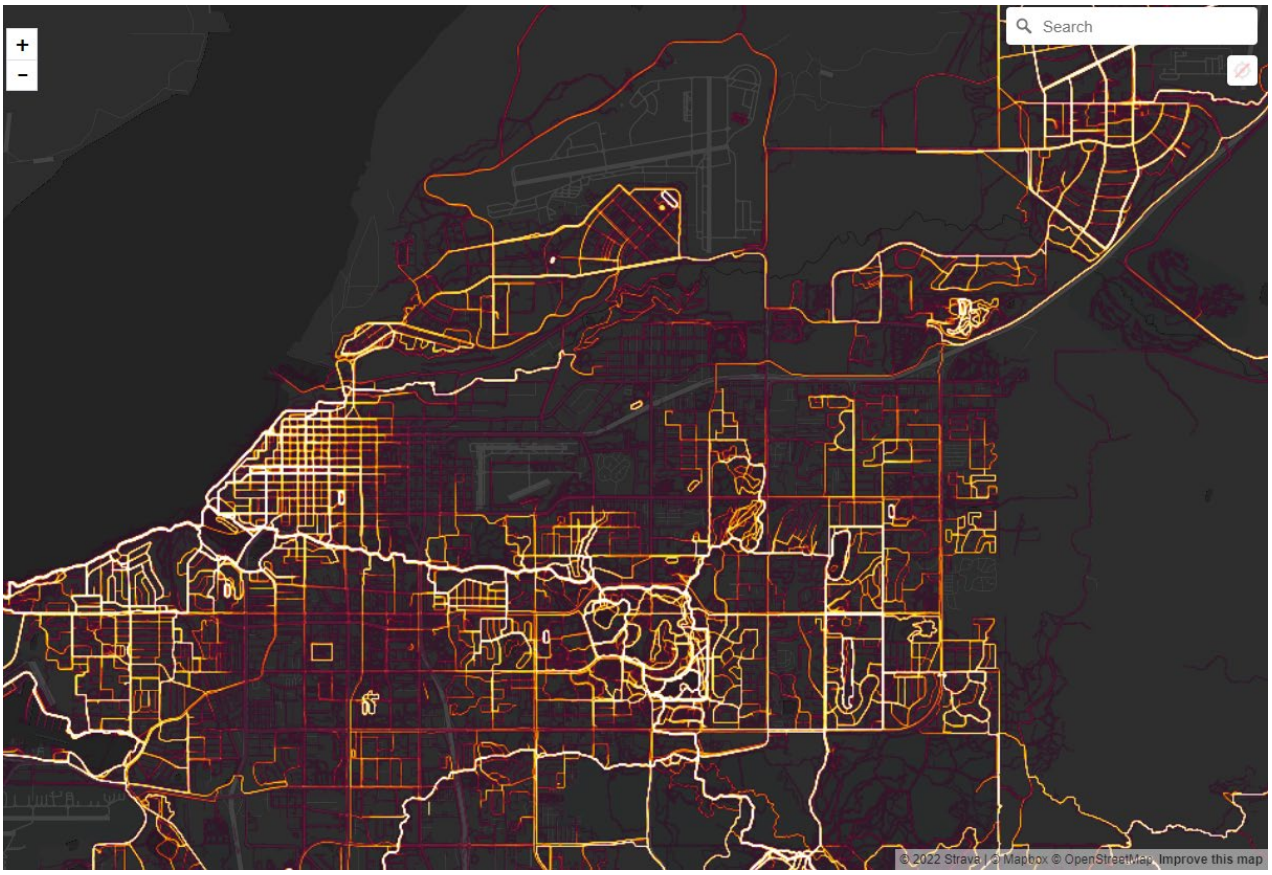
Strava is a fitness-tracking and social media app designed to allow users to track their fitness activities. Strava produces heat maps that show the most active areas for Strava users over the past year. These heat maps reflect aggregated, public activities that were recorded by Strava users. Figure 31 shows the Strava heat map produced by bicyclists in the area, while Figure 32 shows the heat map produced by runners/walkers. Lighter colors indicate more users than darker colors on the maps. The Chester Creek, Coastal, and Ship Creek Trails appear most heavily used by Strava users for bicycling. For runners/walkers, the same trails appear heavily used as well as the sidewalks along the Delaney Park Strip, bordering Downtown Anchorage.

Figure 31. Strava Heat Map, Bicycle



Source: Strava n.d.
Note: Lighter colors indicate more users than darker colors on the maps.

Figure 32. Strava Heat Map, Run/Walk



Source: Strava n.d.
Note: Lighter colors indicate more users than darker colors on the maps.

8.3 System Performance Recommendation

The wide variety and high concentration of different modal users show the conflicting functions of the Glenn and Seward Highway corridor through the study area. The corridor is a heavily used freight connection to and from the POA serving both local and regional destinations. It is designated as a freight route. Concurrently, the study area is also heavily used by mass transit riders and non-motorized users. The Transit Center is located Downtown, and ridership is high through the study area. Bicyclists and pedestrians, both for recreational and transportation purposes, use the corridor. Residents in Fairview tend to have lower incomes and make a greater percentage of their trips using non-motorized modes or transit than other areas of Anchorage. These varying modal users along the corridor where the Glenn Highway meets the Seward Highway create potential conflicts, as multiple travel functions and modes exist on the same roadways, reducing mobility and accessibility as well as affecting safety for all user groups. The problems discussed in this section have been included in the purpose and need statement, and evaluation criteria have been proposed to try to measure how alternatives will solve these problems. The PEL Study will describe how each alternative interfaces with and complements airports, rail and port facilities, mass transit services, and the needs of non-motorized travelers.

9. Safety

9.1 FHWA Purpose and Need Guidance

FHWA guidance recommends that safety is an element that should be investigated in identifying a project's purpose and need statement. FHWA guidance indicates:

> Safety – Explain if the proposed action is necessary to correct an existing or potential safety hazard. In addition, explain if the existing accident rate is excessively high and why, and how the proposed action will improve safety.[20]

9.2 System Analysis

9.2.1 Traffic Safety

Figure 33 shows the location of fatal and major injury crashes[21] on the arterial roads selected for analysis[22] in the project area between 2008 and 2017 (the previous 10 years of available crash data from DOT&PF). In the study area, 19 fatal and 136 major injury crashes occurred between 2008 and 2017. Of these 155 fatal and major injury crashes, 141 (91 percent) occurred primarily at intersections. Based on this information, seven hotspot intersections are identified on Figure 33. A hotspot intersection is an intersection with five or more fatal and major injury crashes occurring within the 10-year study period. The intersection with the highest number of fatal and major injury crashes (eight) is 15th Avenue and Gambell Street. This was followed by 6th Avenue and Ingra Street, and 5th Avenue and Concrete Street, which each had seven crashes.

Segment fatal and major injury crash rates were calculated using road segment lengths obtained from the State of Alaska Open Data Geoportal[23] and historical traffic volumes from the DOT&PF Traffic Analysis and Data Application website (DOT&PF n.d.). Major roads within the project area were divided into segments based on intersections with other major roads. The 10-year AADT was calculated for each segment, then used to calculate an annual average fatal and major injury crash rate across the 10-year period. The resulting fatal and major injury segment crash rates are shown on Figure 34.

The segment with the highest crash rate (145.7 fatal and major injury crashes per million vehicle miles traveled [MVMT]) is Ingra Street between 5th and 6th Avenues. The intersections at the start and end of this segment (Ingra Street/5th Avenue and Ingra Street/6th Avenue) have some of the highest numbers of crashes within the study area. The crash rate on this segment is more than double the next highest segment (6th Avenue between Gambell and Ingra Streets).

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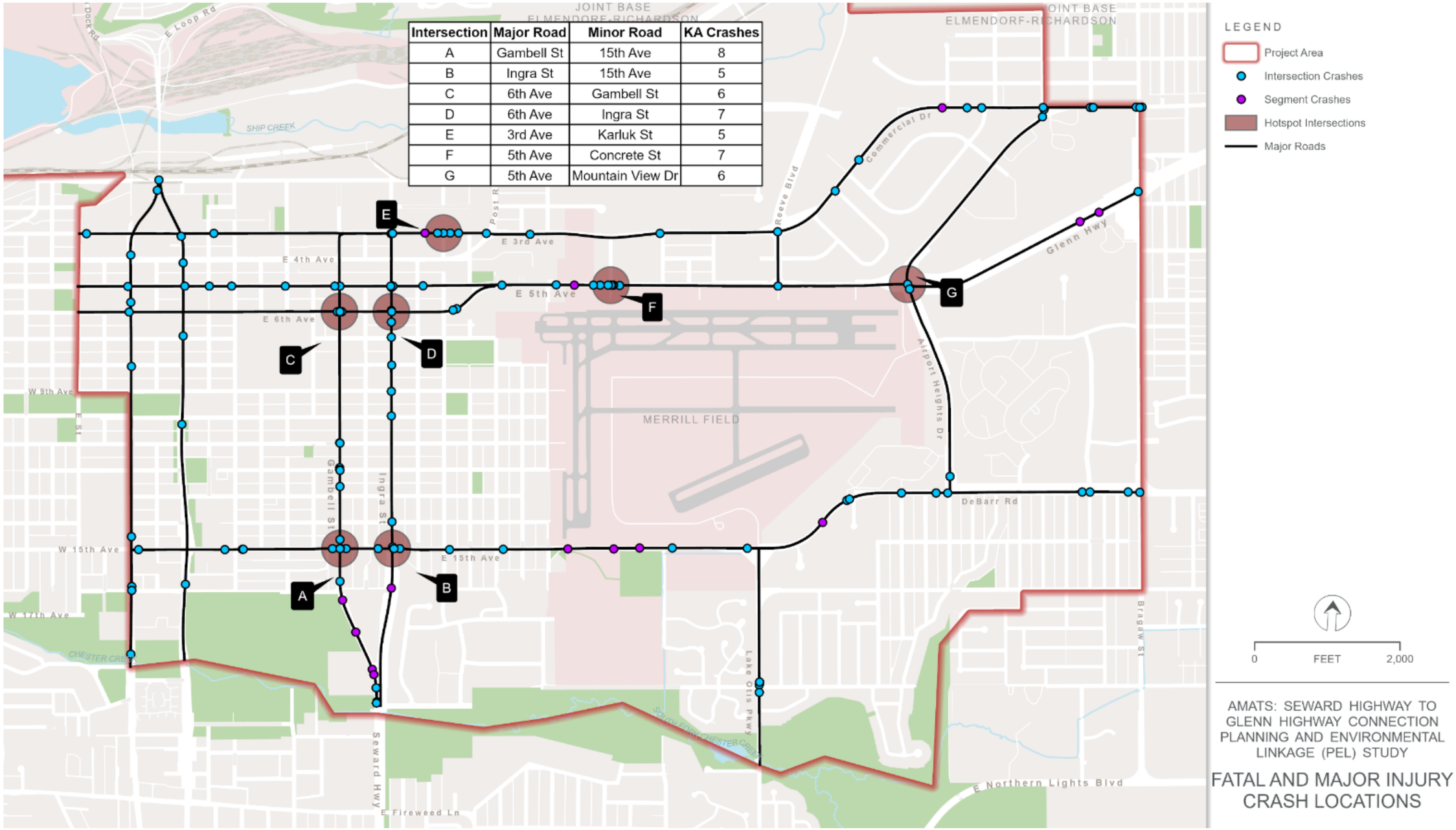
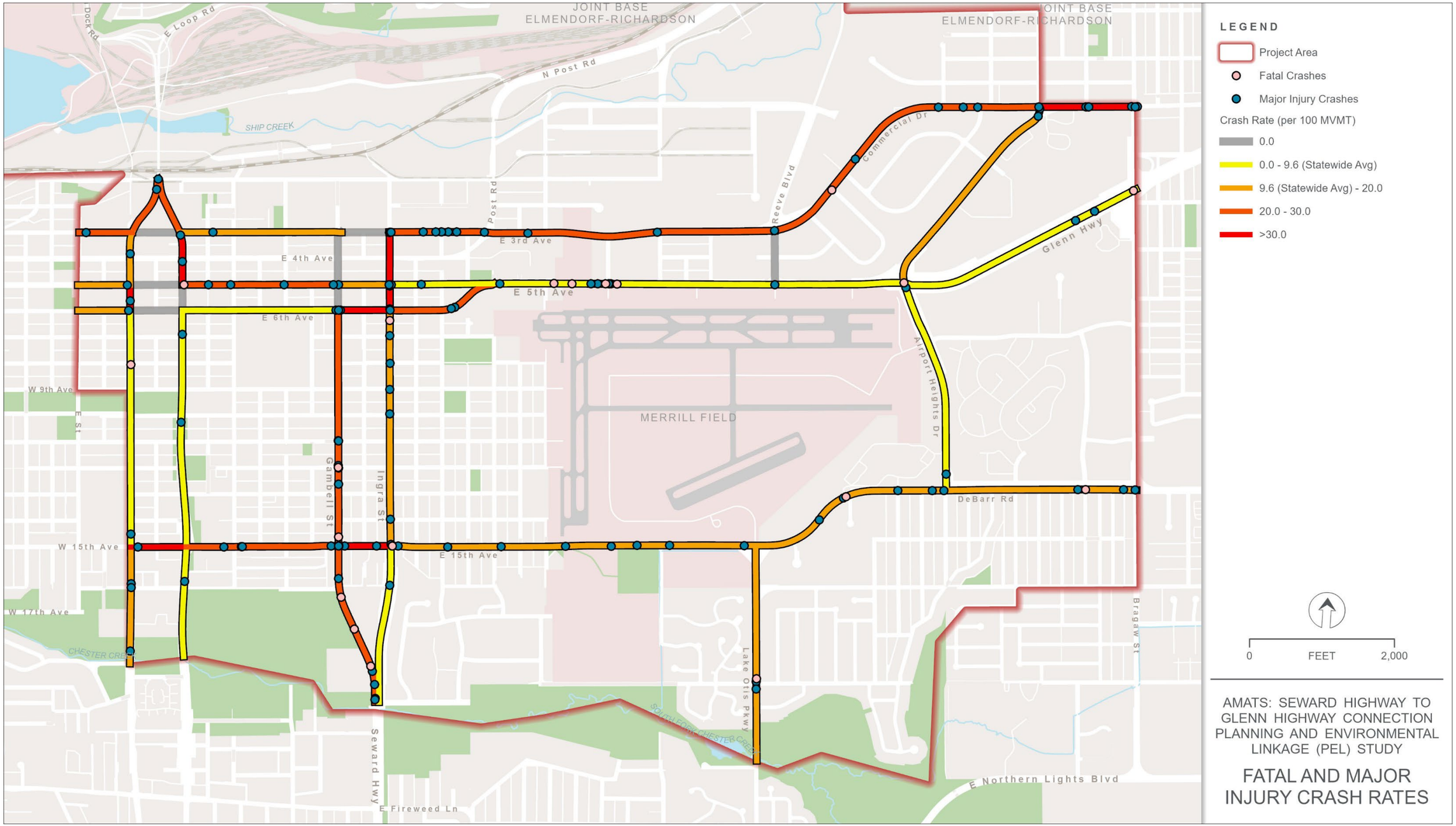
[20] https://www.environment.fhwa.dot.gov/legislation/nepa/guidance_preparing_env_documents.aspx
[21] Crashes include all crashes, including vehicle/vehicle, vehicle/pedestrian, and vehicle/bicyclists.
[22] The Seward and Glenn Highways (including 5th and 6th Avenues, and Gambell and Ingra Streets) as well as parallel/connecting arterial roads within the study area were identified for analysis.
[23] https://gis.data.alaska.gov/

Figure 33. Fatal and Major Injury Crashes, 2008–2017



Note: KA stands for fatal and serious injury crashes based on the KABCO scale for crash severity.
Source: DOT&PF n.d.

Figure 34. Fatal and Major Injury Segment Crash Rate, 2008–2017



While two intersections on the Glenn Highway-5th Avenue corridor have a high crash frequency, the crash rates along this corridor do not exceed the statewide average. This is due to the high traffic volumes along this corridor.

Eight segments had a crash rate of 0 during the 10-year study period.

The fatal and major injury segment crash rate was compared to the statewide rate provided by DOT&PF to determine if the crash rate of any segment in the project area was higher than the statewide rate. The results are shown in Table 9.

Thirty of the 48 segments (62.5 percent) analyzed have a fatal and serious injury crash rate that is above the statewide rate (9.6 per MVMT). In general, the crash rate on Glenn Highway-5th Avenue corridor (east of Medfra Street), as well as along A and C Streets, are below the statewide average, while the other study corridors exceed the statewide rate.

Table 9. Segment Crash Rates

Segment	Crash Rate (per 100 MVMT)
3rd Avenue (from E Street to C Street)	28.7
3rd Avenue (from C Street to A Street)	0.0
3rd Avenue (from A Street to Gambell Street)	12.3
3rd Avenue (from Gambell Street to Ingra Street)	0.0
3rd Avenue (from Ingra Street to Reeve Boulevard)	28.0
Commercial Drive (from Reeve Boulevard to Mountain View Drive)	20.3
5th Avenue (from E Street to C Street)	13.9
5th Avenue (from C Street to A Street)	0.0
5th Avenue (from A Street to Gambell Street)	20.4
5th Avenue (from Gambell Street to Ingra Street)	13.8
5th Avenue (from Ingra Street to 6th Avenue)	8.3
5th Avenue (from 6th Avenue to Reeve Boulevard)	8.6
5th Avenue (from Reeve Boulevard to Airport Heights Drive)	3.7
Glenn Highway (from Airport Heights Drive to Bragaw Street)	5.2
6th Avenue (from E Street to C Street)	16.5
6th Avenue (from C Street to A Street)	0.0
6th Avenue (from A Street to Gambell Street)	4.0
6th Avenue (from Gambell Street to Ingra Street)	67.8
6th Avenue (from Ingra Street to 5th Avenue)	20.1
15th Avenue (from C Street to A Street)	51.4
15th Avenue (from A Street to Gambell Street)	27.1
15th Avenue (from Gambell Street to Ingra Street)	47.6
15th Avenue (from Ingra Street to Lake Otis Parkway)	14.9
Debarr Road (from Lake Otis Parkway to Airport Heights Drive)	10.7
Debarr Road (from Airport Heights Drive to Bragaw Street)	10.2

Segment	Crash Rate (per 100 MVMT)
C Street (from A-C Couplet to 3rd Avenue)	24.8
C Street (from 3rd Avenue to 5th Avenue)	18.9
C Street (from 5th Avenue to 6th Avenue)	55.1
C Street (from 6th Avenue to 15th Avenue)	6.4
C Street (from 15th Avenue to Chester Creek)	14.9
A Street (from A-C Couplet to 3rd Avenue)	28.3
A Street (from 3rd Avenue to 5th Avenue)	51.4
A Street (from 5th Avenue to 6th Avenue)	0.0
A Street (from 6th Avenue to 15th Avenue)	7.6
A Street (from 15th Avenue to Chester Creek)	6.2
Gambell Street (from 3rd Avenue to 5th Avenue)	0.0
Gambell Street (from 5th Avenue to 6th Avenue)	0.0
Gambell Street (from 6th Avenue to 15th Avenue)	20.3
Gambell Street (from 15th Avenue to Chester Creek)	25.0
Ingra Street (from 3rd Avenue to 5th Avenue)	59.9
Ingra Street (from 5th Avenue to 6th Avenue)	145.7
Ingra Street (from 6th Avenue to 15th Avenue)	15.8
Ingra Street (from 15th Avenue to Chester Creek)	2.4
Reeve Boulevard (from 3rd Avenue to 5th Avenue)	0.0
Mountain View Drive (from 5th Avenue to Commercial Drive)	13.6
Mountain View Drive (from Taylor Street to Bragaw Street)	61.1
Airport Heights Drive (from 5th Avenue to Debarr Road)	7.7
Lake Otis Parkway (from 15th Avenue to Chester Creek)	14.7

Notes: The statewide rate is 9.6 MVMT. Cells highlighted in blue are above the statewide rate.

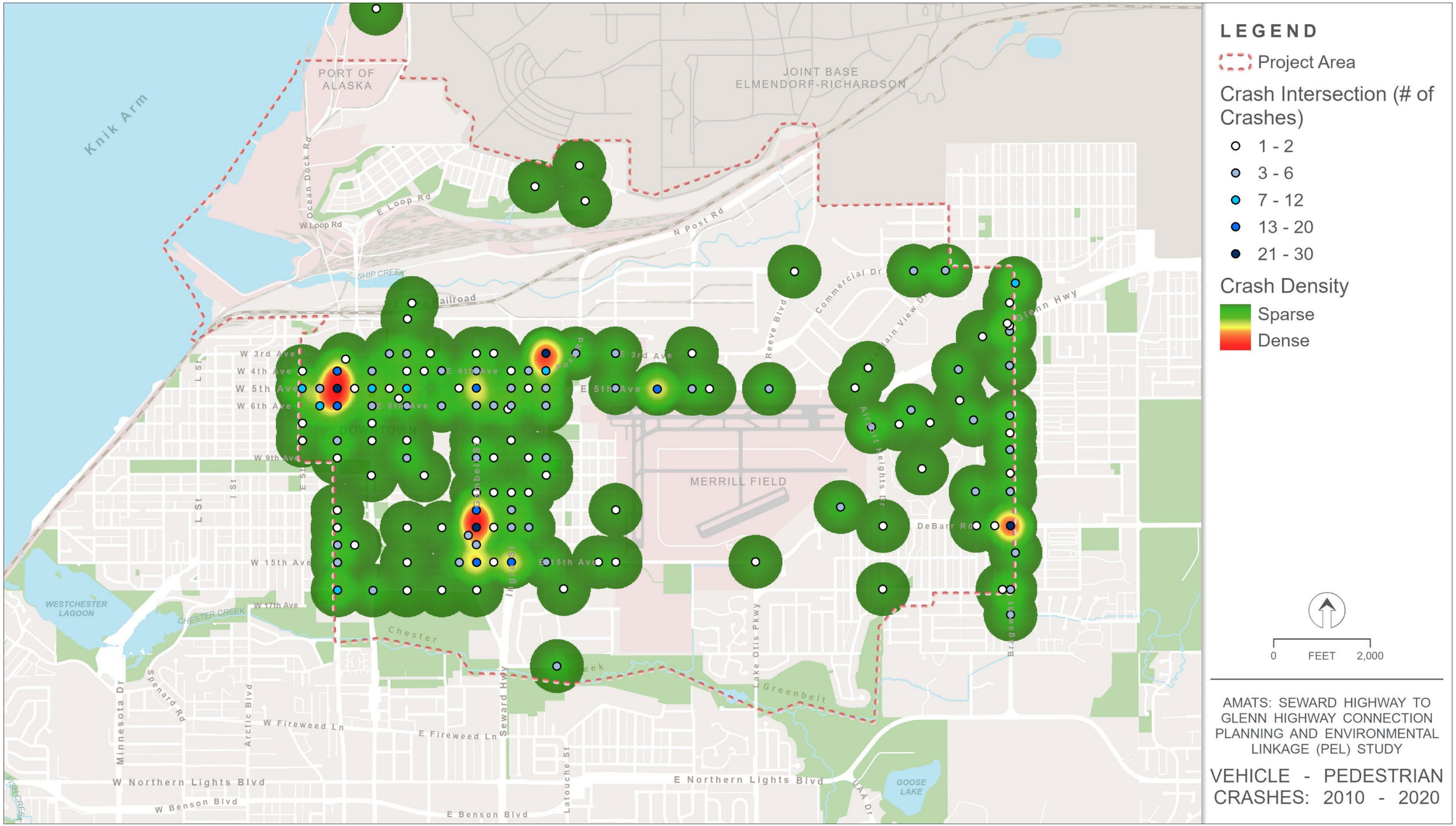
9.2.2 Non-Motorized Safety

The MOA Traffic Department provided non-motorized crash data between 2010 and 2020. This data was analyzed to produce figures that show the vehicle/pedestrian crash volume and density (Figure 35) as well as the vehicle/bicyclist crash volume and density (Figure 36).

Figure 35 shows the following high-density vehicle/pedestrian crash locations within the study area: 15th Avenue/Ingra Street; 12th–15th Avenues along Gambell Street; 5th Avenue/Gambell Street; 3rd–4th Avenues/Karluk Street; 3rd, 4th, and 5th Avenues/C Street, and Airport Heights Drive/Debarr Road.

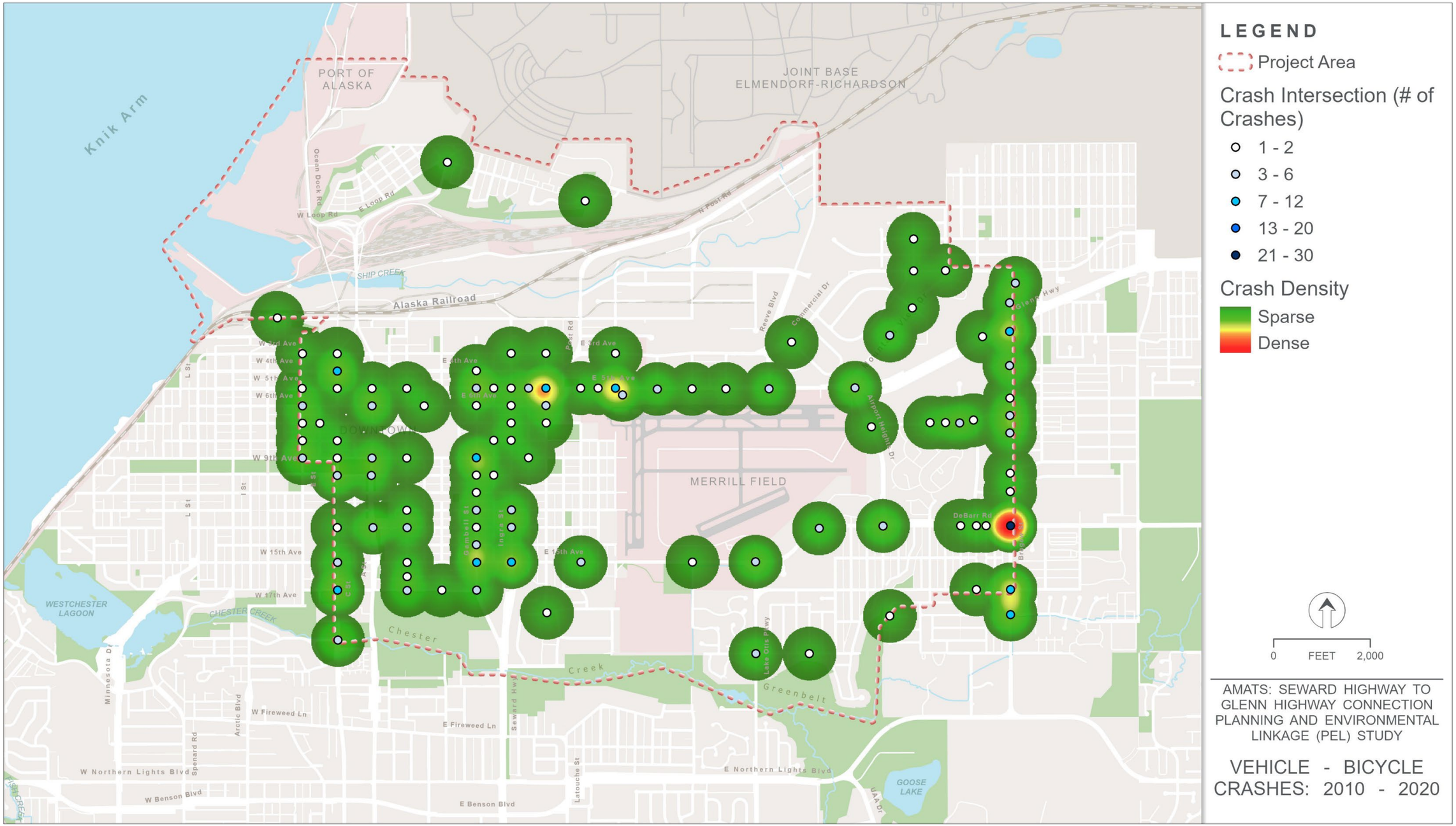
Figure 36 shows the following high-density vehicle/bicycle crash locations within the study area: 15th Avenue/Ingra Street; 15th Avenue/Gambell Street; 6th Avenue/Ingra Street; 6th Avenue/Karluk Street; 6th Avenue/Concrete Street; and Airport Heights Drive/Debarr Road.

Figure 35. Vehicle/Pedestrian Crash Density, 2010 to 2020



Source: MOA 2022

Figure 36. Vehicle/Bicyclist Crash Density, 2010 to 2020



Source: MOA 2022

While these intersections had the highest crash density, the maps show that, within the study area, crashes are more common along each of the NHS routes (see Figure 2). This is likely due to the higher traffic volumes and speeds on these facilities. The crash data also closely aligns with the public input related to the location of non-motorized issues and concerns (see Figure 16).

In 2018, DOT&PF performed an analysis of pedestrian in Central Region between 2006 and 2015 based on the crash density per mile (Thomas 2018). For pedestrian crashes, the analysis identified the "Top 10" worst segments (those above the 95th percentile) and recommended consideration of "extensive mitigation," including evaluating crosswalks, refuge islands, pathways, bicycle lanes, beacons, signal changes, new signals, and grade separations. The segment ranked as having the highest crash rate was Gambell Street between 9th and 15th Avenues. Other segments within the study area in the Top 10 worst segments included Mountain View Drive (#3), from Bragaw Street to 0.25 mile east of Bragaw Street; 6th Avenue (#5), from I to D Street; and 5th Avenue (#7), from B to K Street.

Additionally, the analysis identified those segments above the 75th percentile. Segments within the study area above the 75th percentile (up to the 95th percentile) include 5th Avenue (#12) between Sitka and L Streets, 3rd Avenue (#15) between Karluk and Hyder Streets, 15th Avenue (#19) between Fairbanks and Karluk Streets, Ingra Street (#24) between 13th and 11th Avenues, C Street (#33) south of 3rd Avenue to 6th Avenue, and 4th Avenue (#36) between Ingra and Karluk Streets.

9.3 System Performance Recommendation

According to available data, more than 60 percent of the road segments studied have a crash rate that exceeds the statewide rate. This is largely due to the high traffic volumes in the area as well as the roads needing to serve multiple purposes. Importantly, pedestrian crashes on several road segments within the study area are among the highest density per mile of any road segments in DOT&PF Central Region. Based on this data, improving roadway safety is a consideration for the purpose and need statement.

Fairview residents have expressed concerns about pedestrian and non-motorized user safety when traveling adjacent to and across several high-traffic volume roadways within this study area, including Gambell and Gambell Streets, and 5th and 6th Avenues. Data shows that multiple intersections have had more than one non-motorized related crash during the analysis period. Based on this data, improving safety for non-motorized users should be included in the purpose and need statement.

10. Roadway Deficiencies

10.1 FHWA Purpose and Need Guidance

FHWA guidance recommends that roadway deficiencies legislation is an element that should be investigated in identifying a project's purpose and need statement. FHWA guidance indicates:

> Roadway Deficiencies – Explain if and how the proposed action is necessary to correct existing roadway deficiencies (e.g., substandard geometrics, load limits on structures, inadequate cross-section, high maintenance costs, etc.). In addition, explain how the proposed action will correct these deficiencies.[24]

10.2 System Analysis

Roadway or facility deficiencies are physical characteristics of a facility that are functioning below the desired performance, including substandard geometrics, load limits on structures, inadequate cross-sections, and/or high maintenance costs. Needs associated with poor performance of roadways and bridges are typically identified through the pavement and bridge management systems. Design manuals and guidelines are used to determine if a facility meets current standards and policies.

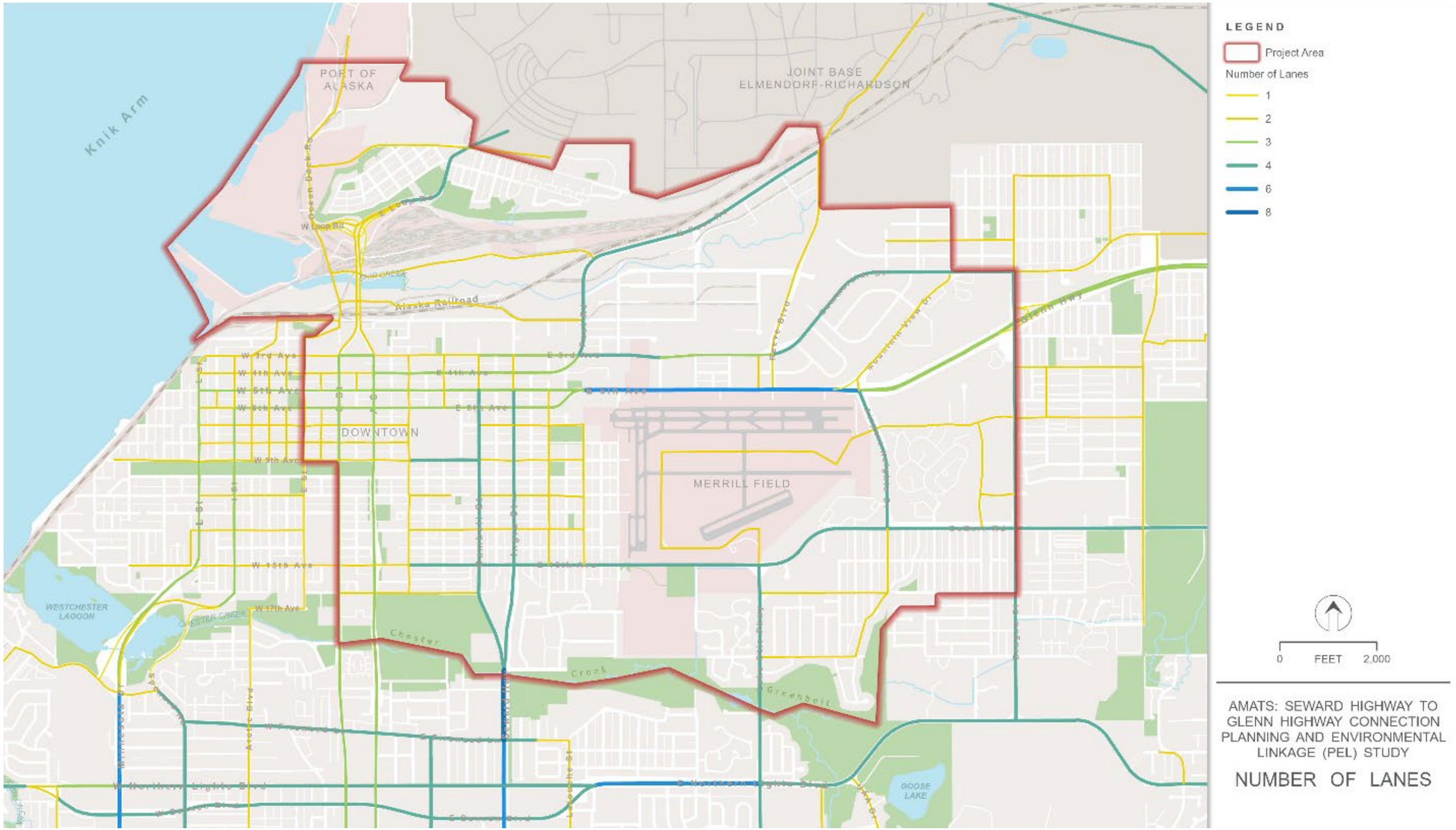
Roadway characteristics refer to the roadway's physical attributes.

10.2.1 Lane Configurations

Figure 37 shows the roadway lane configurations within the study area that affect traffic movement. The roadways that are colored white in Figure 37 are considered local or neighborhood roads and do not significantly affect traffic flows; they are predominately one lane in each travel direction.

[24] https://www.environment.fhwa.dot.gov/legislation/nepa/guidance_preparing_env_documents.aspx

Figure 37. Number of Lanes



Source: RSG 2022

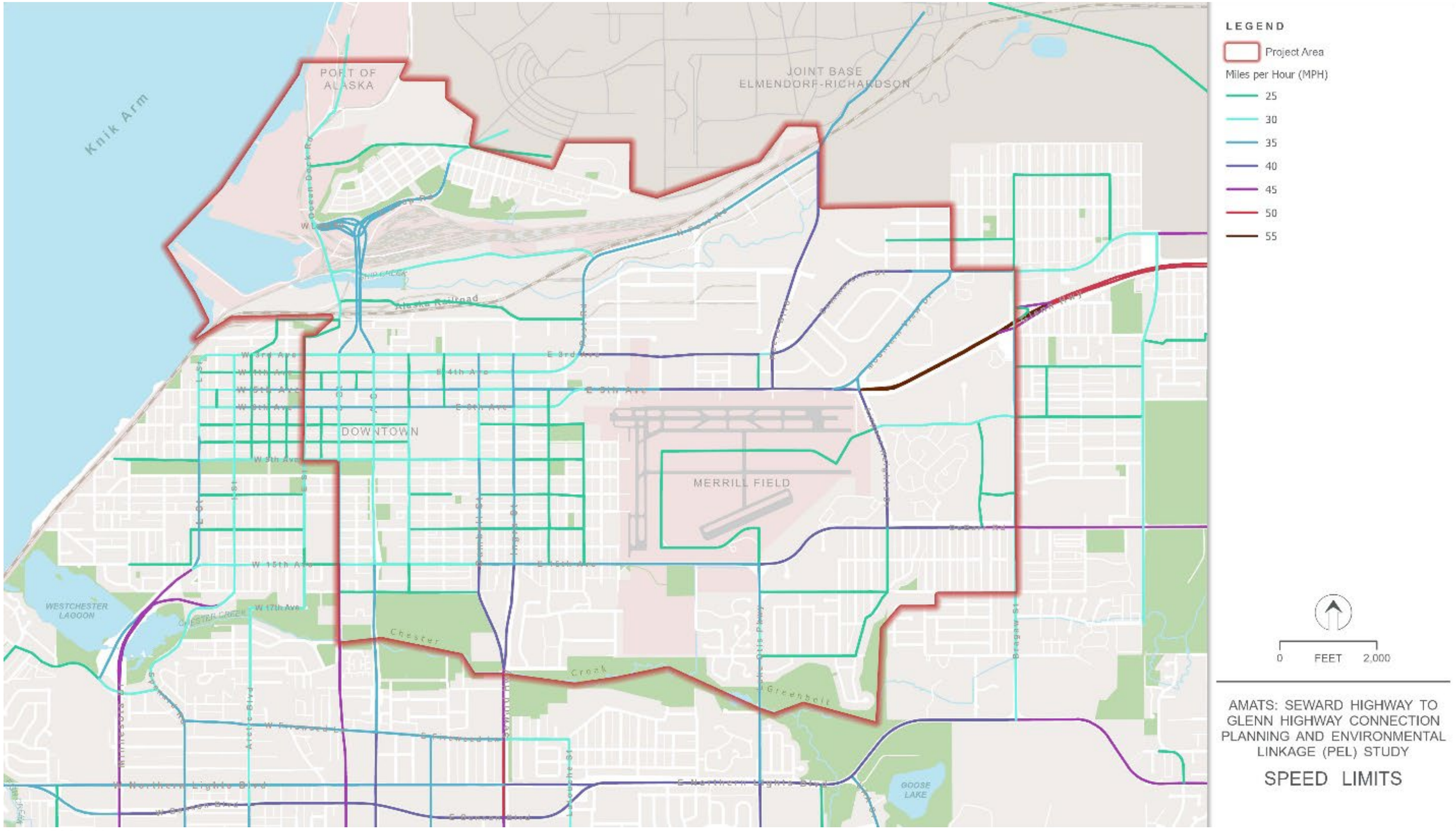
10.2.2 Speed Limits

Speed limits are posted to inform drivers of the maximum speed considered safe and reasonable under good conditions when the pavement is dry, the road is in good repair, and the weather is clear. When there are dynamic and rapid changes such as it is raining, snowing, icy, or other potential hazards are present, travelers typically respond by slowing down to drive for conditions. Reasonable speed limits lessen the difference in speeds between vehicles, which reduces the potential for conflicts between vehicles.

Posted speed limits for roads within the study area are shown in Figure 38. The highest posted travel speed is on the Glenn Highway, where it enters the study area (55 miles per hour [mph]) approaching its intersection with Airport Heights Drive. Speed limits vary throughout the Seward-Glenn Highway corridor, ranging from 25 to 35 mph westbound along the 5th Avenue/Gambell Street couplet to 45 mph on the Seward Highway as the couplets join to the south.

The corridor is designated as part of the Interstate Highway System. DOT&PF's Highway Preconstruction Manual establishes a minimum design speed goal for an urban interstate as 60 mph. Reasonable and safe speed limits are established to reflect potential safety conflicts between users, prevailing geometry, and the ability to see and judge conditions. The current speed limits have been set to reflect existing conditions and conflicts and do not meet the preferential minimum standards. Departures from the minimums on the interstate require a design waiver by the Preconstruction Engineer.

Figure 38. Posted Speed Limit



Source: RSG 2022

10.2.3 Pavement Conditions

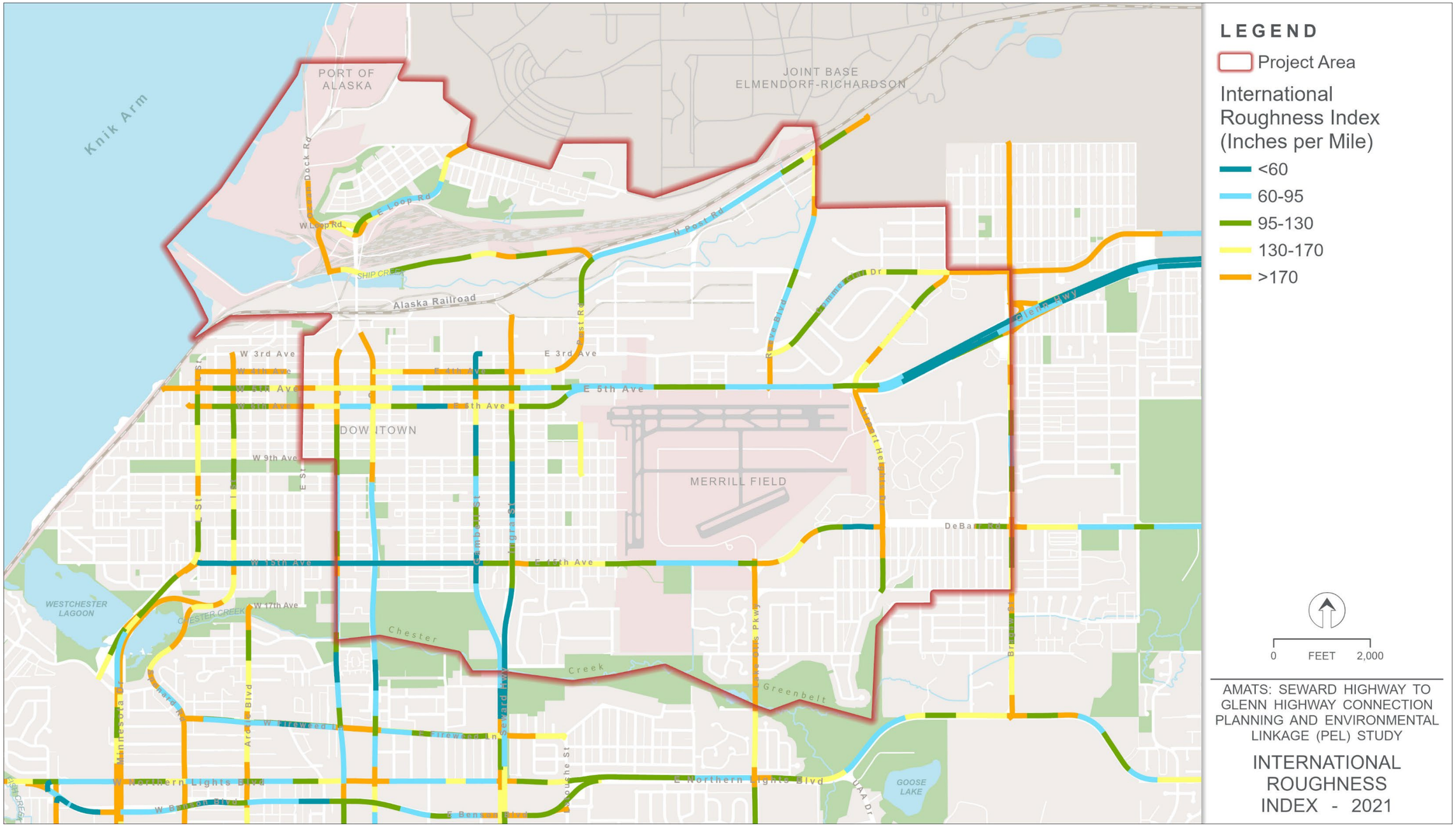
DOT&&PF uses several measures to rate the condition of highway pavement, including the International Roughness Index (IRI), rutting, and cracking.

IRI is a way to assess the overall pavement quality. A higher IRI value indicates a rougher road surface. FHWA has set an IRI guideline of 170 inches or less per mile for an acceptable road surface, and 95 inches or less per mile for a surface in good condition (DOT&PF 2012). DOT&PF's goal for new construction is an IRI of less than 60 inches per mile. Figure 39 shows the IRI for roads within the study area.

"Rutting is a longitudinal depression of the pavement structure in the wheel paths that can be caused either by pavement structural deficiency, inadequate compaction of the granular base, or by mix instability" (DOT&PF 2012). Studded tire use and heavy loads are two major contributors to rutting on Alaska roads. DOT&PF's trigger for a rehabilitation project is a rut depth of 0.5 inch. Ruts that are 0.75 inch or greater require immediate rehabilitation (DOT&PF 2012). As shown on Figure 40, most roads within the study area do not appear to have a rutting problem.

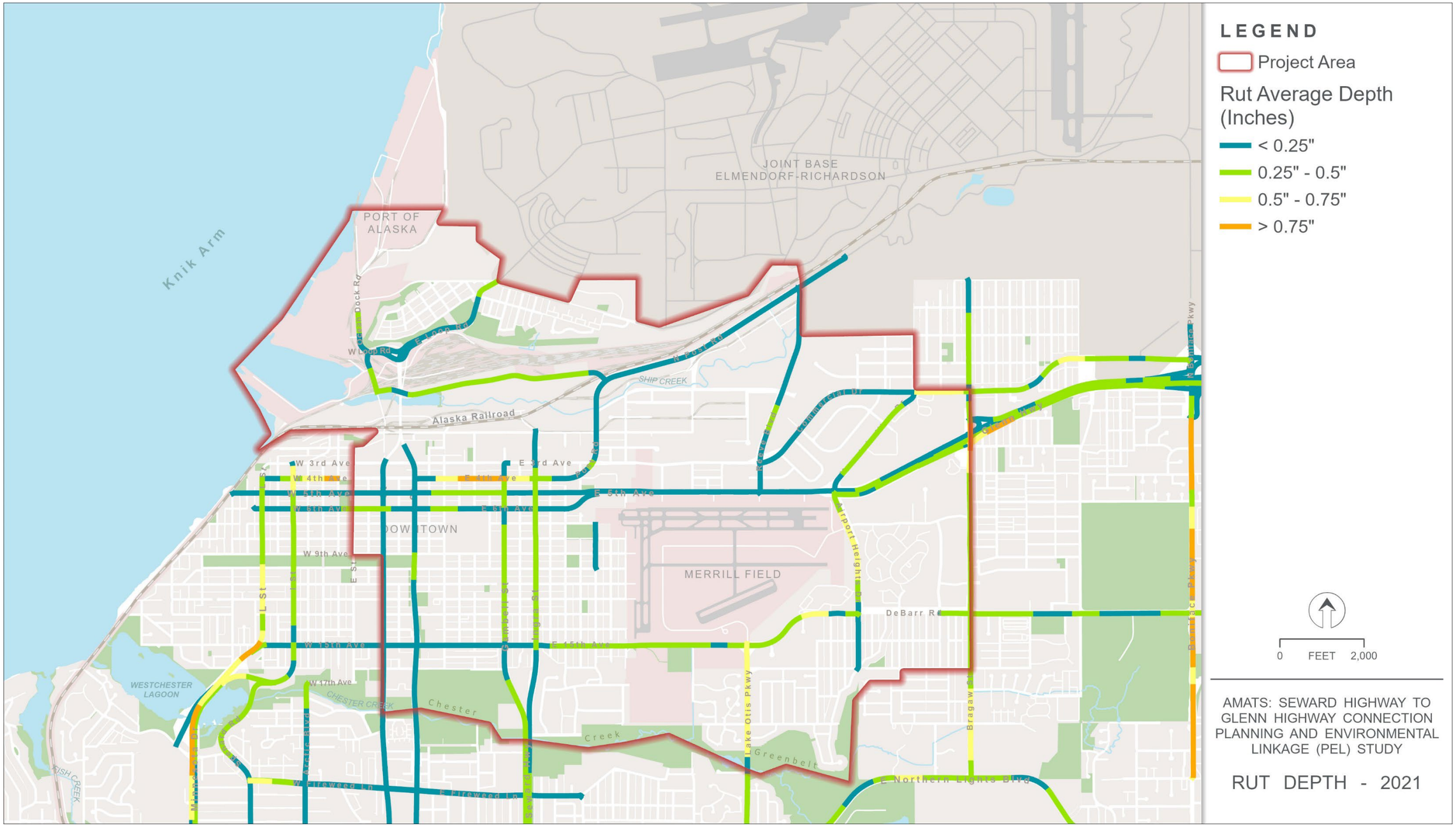
"Cracking is the separation of the pavement surface caused by failure of the asphalt to bind properly, fatigue, temperature changes, turning movement of vehicles, and other factors" (DOT&PF 2012). In general, a cracking percentage below 5 percent is considered good. As shown on Figure 41, roads within the study area do not have unacceptable amounts of cracking.

Figure 39. International Roughness Index, 2021



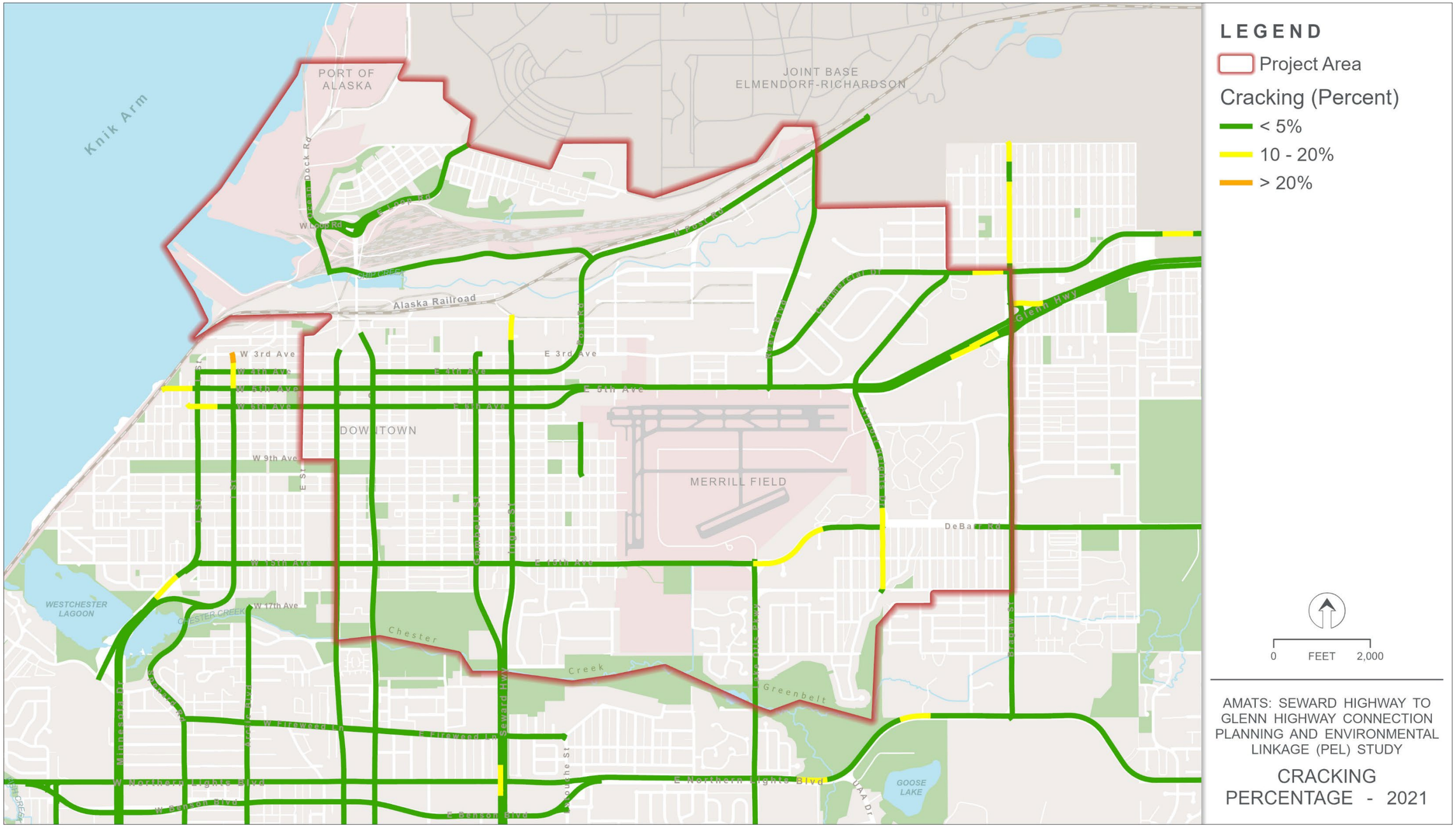
Source: DOT&PF n.d.

Figure 40. Rut Depth, 2021



Source: DOT&PF n.d.

Figure 41. Cracking Percentage, 2021



Source: DOT&PF n.d.

10.3 System Performance Recommendation

Similar to other topics in this report, speed limits and travel speeds on the Seward-Glenn Highway corridor in the study area reflect a conflict/disconnect between the regional and state functions intended for the Interstate Highway System and the needs expressed in local plans and through outreach for the project. As the speed limits shown above demonstrate, Interstate/NHS Intermodal speed limits are set below DOT&PF preferential minimums, reflecting the residential and commercial nature of the corridor, conflicting uses, and local conditions. Yet, regional through traffic is impacting local residential and commercial use resulting in undesirable speeds and conflicts. A balance of two sets of design goals is required to solve both uses. Regional design criteria suggest the need for a higher speed, low conflict corridor, and local design criteria suggest the need for a lower speed corridor allowing for more frequent but safer conflicts. Reducing conflicts between travel functions between regional and local functionality is a factor proposed in the purpose and need statement. This could result in two or more road designs within the same corridor.

Based on the available data, roadway pavement condition appears satisfactory and is not a factor proposed in the purpose and need.

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Appendix A:
List of Comments

(Published separately on the project website at http://sewardglennmobility.com/)