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Appendix B

Glossary

APPENDIX B - GLOSSARY

Access Time. The time required to walk, bicycle, or drive from the origin of the trip (for example, from home) to a (boarding) transit stop, plus the waiting time based on the frequency of transit service, and/or the transfer time and the walking or driving time from the transit (de-boarding) stop to the destination. For automobile trips, it is the time required to walk to and from parking places, and delays within parking facilities, if any.

Accessibility. The ease by which an individual can reach desired activities in any location by use of the transportation system.

Air Pollutant. Smoke, dust, fumes, or odors in the ambient air that have the potential for harmful effects.

Alighting. Term describing the departure of passengers from a bus or transit vehicle.

Alignment. Horizontal geometric elements, which define the location of the light rail track or roadway.

Alluvium. An unconsolidated, terrestrial sediment composed of sorted or unsorted sand, gravel, and clay that have been deposited by water in streams, rivers, and creeks.

Annualized Capital Cost. A one-time capital cost converted into an annual value that incorporates both the depreciation on the capital item and the foregone interest on the money invested in the project.

Aquatic Resource. The physical elements of the aquatic environment, such as streams, rivers, lakes, and shorelands; as well as life forms such as aquatic plants and fish that live within the aquatic environment.

Aquifer. An underground layer of water-bearing permeable rock or unconsolidated materials (gravel, sand, or silt) from which groundwater can be extracted using a water well.

Area Source. A general classification of the origin of an air pollutant (e.g., park-and-ride lots are area sources of carbon monoxide emissions).

Arterial. A major thoroughfare used mainly for through traffic rather than access to adjacent property. Arterials generally have greater traffic-carrying capacity than collector or local streets and are designed for continuously moving traffic.

Artifact. Any portable object used and/or modified by civilization (particularly during prehistoric times).

At-Grade. Term used to express that a feature, such as a rail track or crosswalk, and a roadway meet at the same elevation.

At-Grade Crossing. Any intersection of two or more flows of traffic at the same elevation (possibly involving more than one mode of transportation), such as light rail/road crossings.

Attainment Area. An attainment area is an area considered to have air quality as good as or better than the national ambient air quality standards for specific pollutants as defined in the Clean Air Act.

Average Annual Megawatt. The average hourly demand for or supply of electricity measured in megawatts over a year.

Average Daily Traffic (ADT). The total volume of traffic during a given time period divided by the number of days in that time period, representative of average traffic in a 1-day time period.

Average Time (also, Exposure Time). The duration of exposure to a given concentration of an air contaminant, specified in the ambient air quality standards (e.g., the two national standards of 9 parts per million and 35 parts per million specify averaging times of 8 hours and 1 hour).

Average Wait Time. Average time spent by passengers at a station or bus stop waiting for transit service.

Average Weekday. A measurement of average conditions during one weekday, i.e., Monday through Friday.

A-Weighted Sound Level (dBA). To approximate the way humans interpret sound, a filter circuit with frequency characteristics similar to the human hearing system is built into sound measurement equipment. Measurements with this filter enacted are referred to as A-weighted sound levels, expressed in dBA (see Decibel).

Background Concentration. The pollutant level that would exist at a site in the absence of air pollution sources in the neighborhood of the site.

Baseline Energy Consumption. Energy consumption, usually for a no-build alternative, that is used as a reference against which energy consumption for a build alternative is compared.

Best Management Practices (BMPs). Approved physical, structural, and/or managerial practices that, when used singularly or in combination, prevent or reduce pollutant discharges.

Bioretention Facility. A shallow landscaped depression with an engineered soil mix designed to filter runoff from a small contributing area, which can be in the form of a swale or cell. It is commonly referred to as a rain garden.

Boarding. Term describing the arrival of passengers onto a bus or transit vehicle.

Boarding Trips. A trip on a transit line or group of lines where each boarding of a transit vehicle is considered the start of a new trip. Number of trips boarding (entering) transit vehicles, regardless of whether the trip involves a transfer from another transit vehicle. A fare may or may not be collected for each boarding trip, depending on whether a transfer is used.

British Thermal Unit (Btu). An energy unit equal to the quantity of heat required to raise the temperature of 1 pound of water 1 degree Fahrenheit.

Buffer. An area adjacent a critical area (e.g., wetland or stream) that functions to avoid loss or decline in ecological functions and values. In addition to preserving the ecological functions of a

wetland system, a buffer physically isolates a critical area from potential disturbance and harmful intrusion, and works to minimize risk to the public from loss of life, well-being, or property damage.

Capacity, Person. The maximum number of persons that can be carried past a given location during a given time period under specified operating conditions without unreasonable delay, hazard, or restriction (usually measured in terms of persons per hour).

Capacity, Roadway. The maximum hourly rate at which persons or vehicles can reasonably be expected to traverse a point or uniform section of a lane or roadway during a given time period under prevailing roadway and traffic conditions.

Capacity, Vehicle. The maximum number of vehicles that can be accommodated in a given time by a transit or highway facility.

Capital Costs. Non-recurring costs required to construct transit systems, including costs of right-of-way, facilities, rolling stock, power distribution, and the associated administrative and design costs, as well as financing charges during construction.

Carbon Monoxide (CO). A colorless, odorless, tasteless gas, and one of the U.S. Environmental Protection Agency's criteria air pollutants released from automobile exhaust.

Carpool. A group of passengers and drivers organized to use one automobile on a regular basis, riding together, for the same trip purpose (generally the work trip).

Census Tract. A census tract is a small subdivision of an urban area used by the U.S. Census Bureau to identify population and housing statistics. Census blocks are subdivisions of census tracts and are the smallest unit of census geography for which the Census Bureau collects data. The boundaries of census blocks are generally streets or other notable physical features and often correspond to a city block. A census block group is a combination of census blocks, typically encompassing two to four city blocks. The U.S. Census collects some information at the block level, some at the block group level, and some at the tract level.

Channelization. The use of traffic markings or islands to direct traffic into certain paths. For example, a "channelized" intersection directs portions of traffic into a left turn lane through the use of roadway islands or striping that separates the turn lane from traffic going straight.

Circulation. The free movement or passage of a vehicle, pedestrian, bicycle, or other transportation mode through a given area.

Concentration (also, level). A measure of the air pollutant in the ambient air, having the units of mass per volume.

Conformity (air quality). A process that ensures federal funding and approval goes to transportation activities consistent with federal air quality goals. The Federal Highway Administration and the Federal Transit Administration jointly determine that specific regions meet air quality standards.

Construction Staging Area. During construction, a site temporarily used for materials or equipment storage, assembly, or other temporary, construction-related activities.

Corridor. A general path from one point to another; the Lynnwood Link Extension study corridor begins in Northgate and travels north to Shoreline, Mountlake Terrace, and Lynnwood.

Criteria Air Pollutants. Those air pollutants that have been recognized by the U.S. Environmental Protection Agency as potentially harmful and for which standards have been set to protect the public health and welfare. The criteria air pollutants are carbon monoxide, sulfur dioxide, particulates, nitrogen dioxide, ozone, hydrocarbons, and lead.

Day Night Sound Level (Ldn). Ldn is a 24-hour equivalent continuous sound level (Leq), but with a 10-dB penalty assessed to noise events occurring at night. Nighttime is defined as 10 pm to 7 am. This strongly weights Ldn toward nighttime noise because most people are more easily annoyed by noise during the nighttime hours when background noise is lower and most people are sleeping.

dBA. The sound level obtained through the use of A-weighting characteristics specified by the American National Standards Institute (ANSI) Standard S1.4-1971. The unit of measure is the decibel (dB), commonly referred to as dBA when A-weighting is used. The "A" weighting scale closely resemble human response to noise.

Decibel. The unit used to measure the loudness of noise.

De Minimis Finding. De minimis is a Latin phrase meaning something of insignificance or negligible. De minimis impacts are defined as those elements that do not adversely affect the activities, features, and attributes of a Section 4(f) resource or property.

Dewatering. The temporary removal of ground or surface water from a construction area to allow construction to be done under dry conditions.

Displacement. A property acquisition that would require removing an existing use.

Disturbed Habitat. A habitat in which naturally occurring ecological processes and species interactions have been significantly disrupted by the direct or indirect results of human presence and activity.

Drop-Off Zone. A station that provides temporary loading and unloading facilities for automobiles and/or buses. The station may be combined with feeder bus stations, stations that provide lateral bus transportation service for riders to transfer to a light rail mode.

Ecologically Sensitive Area. An area, valued locally for its rare or sensitive habitat, existing in a relatively undisturbed, natural state and supporting indigenous species.

Elevated Guideway. A guideway that is positioned above the normal activity level (e.g., elevated structure for light rail to cross over a street).

Emission. Particulate, gaseous, noise, or electromagnetic byproducts of the transit system or vehicle.

Emission Control. Method by which emissions are governed in an effort to minimize pollutants and/or noise.

Emission Inventory. A listing by emission source of the amounts of air pollutants released into the atmosphere (generally, in tons or kilograms per day).

Emission Source. The origin of an air pollutant (e.g., automobiles and trucks are sources of carbon monoxide, hydrocarbons, and nitrogen oxides).

Emission Standards. A limitation on the release of an air contaminant into the ambient air (e.g., the federal government limits carbon monoxide, hydrocarbon, and oxides of nitrogen (NOx) emissions per mile of travel in new automobiles).

Endangered Species. According to the Endangered Species Act of 1973, an endangered species is any species in danger of extinction throughout all or a significant portion of its range, other than an insect determined by the Secretary of the Interior to constitute a pest whose protection under the provisions of this act would present an overwhelming and overriding risk to man.

Equivalent Level (Leq). Leq is a measure of sound energy over a period of time. It is referred to as the equivalent sound level because it is equivalent to the level of a steady sound which, over a referenced duration and location, has the same A-weighted sound (dBa) energy as the fluctuating sound.

Express Service. Transit service where a very limited number of stops is made.

Facility. The means by which a transportation mode is provided. For example, a sidewalk is a facility for pedestrians as a highway is a facility for vehicles.

Fixed Guideway. A public transportation facility using a separate right-of-way for the exclusive use of public transportation or a system of vehicles that can operate on its own guideway constructed for that purpose (e.g., commuter rail, light rail).

Forest or Woodland Habitat. In the Puget Sound lowlands, a habitat type generally dominated by Douglas fir, western red cedar, and western hemlock, frequently with a hardwood understory. The ground cover is generally lush. Birds and small mammals abound, and larger mammals are common in large stands.

Frequency, Vehicle. Time rate of vehicle arrivals at a station stop or along a transit line.

Full Acquisition. The full parcel would be acquired and the current use would be displaced. Full acquisitions include parcels that might not be fully needed for the project but would be affected to the extent that current uses would be substantially impaired (e.g., loss of parking or access).

General Purpose Lane. Term used to describe a traffic lane on a highway that can be used by all types of vehicles including single-occupant automobiles, carpools, trucks, and motorcycles.

Glacial Till. This type of soil typically consists of a diverse mix of gravelly sand with scattered cobbles and boulders in a clay/silt matrix. It is very dense and is locally referred to as "hardpan." The predominant glacial till encountered in the project area is Vashon-age glacial till.

Grade Separated. Parallel or crossing lines of traffic that are vertically or horizontally physically separated from each other and do not share a common intersection.

Greenhouse Gases (GHG). Greenhouse gases include carbon dioxide (CO_2), methane (CH_4), ozone (O_3), water vapor, nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF6). These gas emissions are collectively leading to the greenhouse effect, trapping the sun's solar rays and leading to an increase in Earth temperature.

Groundborne Noise. Noise that is transmitted through the ground, typically reported in decibels.

Groundborne Vibration. A small but rapidly fluctuating motion transmitted through the ground, typically reported as velocity or acceleration.

Guideway. Specifically designed way traversed by transit vehicles constrained to the way (see Elevated Guideway).

Habitat Function. Terrestrial plant communities, wetlands, and aquatic systems such as streams provide a variety of functions in the environment. For instance, depending on the condition and location of a wetland, wetland functions might include water quality improvement, groundwater recharge, nutrient and sediment filtering, and habitat for a variety of animals, as well as education and recreation opportunities for people—the habitat function is one of several functions potentially performed by wetlands. Similarly, terrestrial and aquatic systems each also may perform many functions. When they provide habitat for animals, they are said to be performing or providing a "habitat function."

Habitat Value. The value of a plant community's function as determined by the habitat's ability to support the needs of biological species. High-value habitats are those that support or may support threatened, endangered, and/or sensitive species as determined by federal, state, and local jurisdictions.

Hazardous Materials. Hazardous materials are materials, which, because of their chemical, physical, or biological nature, pose a potential risk to life, health, or property when released. Such materials include hazardous waste, dangerous waste, hazardous substances, and toxic substances.

Headway. The headway between vehicles in public transit systems is the amount of time (usually in minutes) that elapses between two vehicles passing the same point traveling in the same direction on a given route.

High-Capacity Transit. A system of public transportation services within an urbanized region operating principally on exclusive rights-of-way; examples include light rail transit or express buses on exclusive bus ways and their supporting services.

High-Occupancy Vehicle (HOV). Any passenger vehicle that meets or exceeds a certain predetermined minimum number of passengers, for example, more than two or three people per automobile. Typically includes carpools with two or more people, vanpools, and buses.

Hours of Service. The number of hours during the day between the start and end of service on a transit route, also known as the service span.

Indirect Energy. A term used to denote all energy inputs for the construction, operation, and maintenance of a system.

Indirect Source. An entity that does not directly emit pollutants but attracts emission sources such as automobiles and trucks. Shopping centers, stadiums, and highways are examples of indirect sources.

Integration with Other Modes. Method by which a transit system interfaces with other modes of transportation.

Interchange. The system of interconnecting ramps between two or more intersecting roadways or guideways that are grade separated.

Interim Terminus. A station where the project would operate until the next portion of the project can be built. The terminus would typically include a station with tail tracks extending beyond the station for layover of trains.

Kilowatt (kW). A unit of electrical energy.

Kilowatt-hour (kWh). One kilowatt of energy used over one hour.

Land Development Pattern. The use, types, and intensity of development. Land development patterns affect trip demand, average trip length, and, therefore, energy consumption.

Landscaped Habitat. A habitat in urban areas having limited native species. Vegetation generally consists of mowed lawns and exotic trees and bushes.

Ldn. The day/night average noise level.

Leq. The equivalent steady-state sound level that, in a specified time period, would contain the same acoustic energy as the varying sound level during the same period; considers volume capacity, travel speeds, and delay.

Leq(h). The hourly value of Leq.

Level of Service (LOS). A qualitative measure that represents the collective factors of travel under a particular volume condition. A measure of traffic congestion.

Light Rail Transit (also Light Rail). A mode of mass transportation comprising light rail vehicles, which travel on steel tracks and are powered by electricity from overhead wires. This mode is characterized by its ability to operate in at-grade and/or grade-separated environments.

Link. Sound Transit's light rail system.

Liquefaction. Conversion of soil into a fluid-like mass during an earthquake or other seismic event.

Load Factor. The average ratio of passengers to seats, during a specified period of operation of a public transit route.

Local Service. A type of transit operation involving frequent stops and consequent low speeds, the purpose of which is to deliver and pick up transit passengers as close to their destinations or origins as possible.

Locally Preferred Alternative. Following the publication of the Draft EIS, the Sound Transit Board identifies a preferred alternative consisting of routes and station preferences. This is known as

a "locally" preferred alternative because the Federal Transit Administration has not yet selected a preferred alternative.

Low Income. A person whose median household income is at or below the U.S. Department of Health and Human Services poverty guidelines.

Low Income Population. Any readily identifiable group of low-income persons who live in geographic proximity, and, if circumstances warrant, geographically dispersed/transient persons (such as migrant workers or Native Americans) who will be similarly affected by the project.

Maintenance Area. Maintenance areas are geographic areas with a history of non-attainment of National Ambient Air Quality Standards (NAAQS) but which now consistently meet NAAQS.

Median Alignment. In rail operations, a type of alignment where tracks are positioned in the median on the street, as opposed to being positioned on one side of the street.

Megawatt (MW). 1,000,000 watts.

Microgram per Cubic Meter ($\mu g/m^3$). A unit of concentration equal to one thousandth of a gram per cubic meter.

Minimum Turn Radius. Generally assumed to be the minimum horizontal turn radius (tightest curve).

Minority. A person who is:

- Black - A person having origins in any of the black racial groups of Africa;
- Hispanic or Latino - A person of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race;
- Asian - A person having origins in any of the original peoples of the Far East, Southeast Asia, or the Indian subcontinent;
- American Indian or Alaskan Native - A person having origins in any of the original people of North or South America, including Central America, and who maintains cultural identification through tribal affiliation or community recognition; or
- Native Hawaiian or Other Pacific Islander - A person having origins in any of the original peoples of Hawaii, Guam, Samoa, or other Pacific Islands.

Minority Population. Any readily identifiable groups of minority persons who live in geographic proximity, and if circumstances warrant, geographically dispersed/transient persons (such as migrant workers or Native Americans) who will be similarly affected by the project.

Mobility. The ease of continuous movement along the transportation system.

Mode. A particular form or method of travel, such as pedestrian, bicycle, automobile, bus, or light rail.

Mode Share. The percentage of travelers that travel either by single-occupancy vehicle, high-occupancy vehicle, or transit modes on a given roadway facility.

Mode Split. Forecast of proportion of total person trips that would use each of the various modes of transportation that include transit and cars.

Model Toxics Control Act (MTCA). The Model Toxics Control Act Cleanup Regulation, WAC 173-340, implements the Model Toxics Control Act, RCW 70.105D, which addresses strict requirements for site discovery and reporting, site assessments, and site remediation. Most important, the regulation defines standard methods used to assess whether a site is contaminated or clean.

National Ambient Air Quality Standards (NAAQS). Federal limits on levels of atmospheric contamination necessary to protect the public from adverse effects on health (primary standards) and welfare (secondary standards).

National Historic Preservation Act of 1966 (NHRA). The Act that established the National Register of Historic Places and State Historic Preservation program and set forth guidelines and regulations for environmental review of projects involving federal funding.

National Register of Historic Places (NRHP). The official list of the nation's cultural resources determined to be worthy of preservation; the register is maintained by the National Park Service.

Network. A system of real or hypothetical interconnecting links that forms the configuration of transit routes and stops comprising the total system.

New Starts. A federal funding program administered by the Federal Transit Administration. Section 5309 New Starts funds are discretionary federal funds available for new fixed guideway systems and extensions to existing systems.

Noise Wall. A noise barrier (also called a sound wall) that is an exterior structure designed to protect inhabitants of sensitive land use areas from noise pollution. Noise walls are considered the most effective method of mitigating roadway, railway, and industrial noise sources.

Nonattainment Area. An area designated by the U.S. Environmental Protection Agency as currently violating the National Ambient Air Quality Standards, based on archival air quality data.

NO_x. Oxides of nitrogen (nitrogen oxide and nitrogen dioxide). The pollutants released during high-temperature combustion of fossil fuels such as diesel.

Off-Peak. Those periods of the day when demand for transit service is not at a maximum.

Operating Costs. Recurring costs incurred in operating transit systems, including wages and salaries, maintenance of facilities and equipment, fuel, supplies, employee benefits, insurance, taxes, and other administrative costs. Amortization of facilities and equipment is not included.

Operating Revenue. The gross income from operation of the transit system including fares, charter income, concessions, advertising, etc. Does not include interest from securities, non-recurring income from sale of capital assets, etc.

Operational Energy. The energy used for vehicle propulsion, facilities, and maintenance for a specified period, usually one year.

Originating Ride (or Trip). A one-way trip taken on a transit line or group of lines, where a transfer from one line to another is not considered to be the start of a new trip.

Overhead Catenary. The system of electrical transmission wires suspended over the track to supply power for the light rail vehicles.

Ozone. A gas consisting of three oxygen atoms formed in reactions of non-methane hydrocarbons and nitrogen oxides in the presence of sunlight. Ozone is one of the U.S. Environmental Protection Agency's criteria air pollutants.

Palustrine Wetland. Freshwater wetlands dominated by trees, shrubs, and emergent vegetation.

Park-and-Ride Lot. A lot that provides parking for patrons of a transit facility.

Parking Utilization. The number of parking spaces being utilized at a given location; it is calculated as the total number of parking spaces occupied divided by the total parking supply at a given location.

Partial Acquisition. Part of a parcel would be acquired, but the current use generally would not be displaced. In some instances, such as larger parcels that hold multiple uses, a business or residential unit on a parcel could be displaced, but most uses would remain.

Particulate Matter. A mixture of extremely small particles and liquid droplets that is made up of a number of components, including acids (such as nitrates and sulfates), organic chemicals, metals, and soil or dust particles. U.S. Environmental Protection Agency is concerned about particles that are 10 micrometers in diameter or smaller because those are the particles that generally pass through the throat and nose and enter the lungs.

Passenger Load/Passenger Load LOS. The number of passengers on a transit unit (vehicle or train) at a specified point.

Patronage. The number of person-trips carried by a transit system over a specified time period.

Peak Hour. The hour of the day in which the maximum demand for service is experienced, accommodating the largest number of automobile or transit patrons.

Peak Particle Velocity (PPV). Specifications for allowable levels of vibration from blasting, pile driving, and other construction processes with the potential of causing building damage are almost always expressed in terms of peak particle velocity because this is thought to be well correlated with maximum stresses in buildings. Peak particle velocity is the instantaneous positive or negative peak in the vibration signal.

Peak Period. A time period or periods when travel activity is at its heaviest.

Pedestrian Level of Service (LOS). An overall measure of walking conditions on a route, path, or facility.

Person Demand. The number of persons that use a specific roadway or highway facility, thus creating a demand for usage of the facility; it is often compared to roadway capacity to determine the level of congestion.

Person Throughput. The amount of persons that can pass a point on a roadway or pass through an intersection over a specified period of time.

Person Trip. A trip from a point of origin to a destination made by a person by any travel mode. Within transit, transfers are not counted. That is, a person traveling from home to work on a bus with one transfer creates only one-person trip.

Point Source. A general classification of the origin of an air or water pollutant, usually characterized as smokestacks or outfalls.

Pollution-Generating Impervious Surface (PGIS). Impervious surfaces considered to be a significant source of pollutants in stormwater runoff. Such surfaces include those subject to vehicular use, industrial activities (as defined in Washington State Department of Ecology's Stormwater Management Manual), or storage of erodible or leachable materials, wastes, or chemicals, and which receive direct rainfall or the run-on or blow-in of rainfall.

Polychlorinated Biphenyls (PCBs). Hazardous environmental pollutants upon which the federal government has placed additional controls regulating disposal.

Potentially Affected Area. This is defined differently by each technical discipline. It includes the area that could be affected by the light rail alternatives.

Poverty-Level Household. As used for the 2000 U.S. Census data, the average poverty threshold for a family of four persons was $17,603 in 2000. The defined family poverty level threshold varied by total number of family members, number of children under 18 years, and number of persons over age 65. For a detailed discussion of the poverty definition, see U.S. Bureau of the Census, *Current Population Reports, Series P-60, No. 171, Poverty in the United States: 1988 and 1989.*

Preferred Alternative. Following publication of the Draft EIS, the Sound Transit Board identifies a Preferred Alternative, including route and station options. The Final EIS will further evaluate the Preferred Alternative as well as other alternatives.

Queue. A line of vehicles, bicycles, or persons waiting to be served by the system in which the flow rate from the front of the queue determines the average speed within the queue. Slowly moving vehicles or people joining the rear of the queue are usually considered part of the queue. The internal queue dynamics can involve starts and stops.

Recessional outwash. Sediment deposited by meltwater streams flowing away from a retreating glacier during the last episode of glaciation.

Reliability. How often transit service is provided as promised; affects waiting time, consistency of passenger arrivals from day to day, total trip time, and loading levels.

Right-of-Way. The corridor (horizontal and vertical space) owned by the transit agency for the transportation way.

Riparian Habitat. A habitat type associated with stream or river margins and characterized by dense vegetation consisting primarily of willow, alder, and cottonwood species, supporting a wide variety of waterfowl, songbirds, amphibians, and small mammals.

Route. The course followed by a transit vehicle as a part of the transit system.

Runoff. The rainwater that directly leaves an area in surface drainage, as opposed to the amount that seeps out as groundwater.

Screenline. A screenline is an imaginary line across a section of freeways or arterials. Screenlines are often used in traffic analyses to determine how much volume is entering or exiting a particular area.

Section 106. Section 106 of the National Historic Preservation Act of 1966 established a procedure to review the potential effects on cultural resources by projects that involve a federal action.

Section 4(f). Section 4(f) of the U.S. Department of Transportation Act restricts the United States Department of Transportation's approval of projects affecting the following properties: publicly owned land from a public park, recreation area, or wildlife and waterfowl refuge, or any land from a significant historic site.

Section 401. Section 401 of the Clean Water Act is a certification program administered by the Washington Department of Ecology under guidelines of the U.S. Environmental Protection Agency to ensure projects applying for a Section 404 permit comply with state water quality standards and other requirements of the state law.

Section 404. Section 404 of the Clean Water Act is a permit program administered by the U.S. Army Corps of Engineers under guidelines by the U.S. Environmental Protection Agency to protect the nation's waters from dredged and fill sources.

Section 6(f). Section 6(f) of the Land and Water Conservation Act of 1965 established restrictions on, and replacement requirements for, the use of land acquired with funds authorized under the Land and Water Conservation Fund Act.

Segment. Refers to the three geographic sections of the Lynnwood Link Extension (A, B, and C) in which the proposed alternatives reside, as defined in Chapter 2 of the EIS.

Sensitive Receptor (Auditory). A local area or site that supports activities easily disrupted by audio intrusions or distractions, such as a school, historic landmark, or residential neighborhood.

Sensitive View. A view that is identified by local jurisdictions as requiring protection.

Sensitivity Analysis. A "what-if" type of analysis to determine the sensitivity of the outcomes to changes in parameters; if a small change in a parameter results in relatively large changes in the outcomes, the outcomes are said to be sensitive to that parameter.

Service Frequency. The number of transit units (vehicles or trains) on a given route or line, moving in the same direction, that pass a given point within a specified interval of time, usually 1 hour.

Side-Track Alignment. In rail operations, a type of alignment where the tracks are positioned on one side of the street, as opposed to being positioned in the median of the street.

Signal Phasing. A group of three traffic-signal timed intervals (green, yellow, red) that are assigned to an independent traffic movement or combination of movements.

Social Interaction. Intra-neighborhood communication and circulation using street, sidewalk, and bikeway connections between residential areas and community facilities, retail businesses, and employment centers. Also includes verbal interaction and telecommunications facilities.

Sounder. Sound Transit's commuter rail system, which travels from Everett to Lakewood, through Seattle.

Sound Transit 2 (ST2). A package of high-capacity transit investments in the regional transit system, adopted by the Sound Transit Board in July 2008, which included light rail as the mode choice for the project corridor. ST2 includes a major expansion of the Link light rail system. ST2 would extend light rail from North Seattle into Snohomish County, across Lake Washington into East King County, and south of Sea-Tac International Airport to Federal Way.

Staging Area. Section of land near a construction site designated for equipment and truck storage, maintenance, and warm-up prior to engagement in construction activities.

State Implementation Plan (SIP). A plan required of each state by the Clean Air Act that describes how the state will attain and maintain the National Ambient Air Quality Standards.

Stormwater. Stormwater is rain and snow melt that runs off surfaces such as rooftops, paved streets, highways, and parking lots. As water runs off these surfaces, it can pick up pollution.

Stormwater Detention. The temporary storage of stormwater runoff and subsequent release at a slower rate.

Stormwater Treatment. Stormwater ponds and underground vaults are used to remove sediments and dissolved metals from stormwater. They collect sediments on the bottom of the pond or vault, where maintenance workers can clean them out on a regular basis.

Subarea. A unique portion of the Regional Transit Authority taxing district, one of five as defined in *Sound Move* (Snohomish County, North King County, East King County, South King County, and Pierce County).

Subduction Zone. An area where one crustal plate is descending below another. The Puget Sound area is close to a subduction zone, which is formed by the Juan de Fuca plate descending below the North American plate. This action can cause significant seismic activity.

Terminal. The terminating point of transportation routes with transfer facilities and, often, amenities for passenger convenience.

Terminus. A transit station located at the end of a transit (including light rail) line.

Threatened Species. According to the Endangered Species Act of 1973, any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

Title 23, Code of Federal Regulations, Part 771 (23 CFR Part 771) (Revised 1987). Federal Highway Administration and Federal Transit Administration regulations governing the preparation of environmental impact statements and related documents.

Total Maximum Daily Loads (TMDL). For 303(d)-listed water bodies, TMDLs are developed by the Washington State Department of Ecology for the pollutants that exceed water quality standards as a means for ultimately attaining the standards.

Till. A poorly sorted, gravel-like deposit of sediment that is left behind by a glacier, which does not show stratification. Till is sometimes called boulder clay because it is composed of clay, boulders of intermediate sizes, or a mixture of these.

Total Suspended Particulates (TSP). Air pollutants that consist of solid particles (dust, lead, salts, etc.) suspended in the atmosphere. TSP is a U.S. Environmental Protection Agency's criteria air pollutant.

Total Travel Time. The total elapsed time between the beginning and ending of a trip, including travel, terminal, and waiting time.

Traction Power Substation (TPSS). An electrical station that provides the power needed to drive the trains. The substations are housed in either standalone structures, or within transit stations, typically within or adjacent to the right-of-way. The substations would typically be built about 1.5 miles apart.

Transfer Ratio. The number of boarding trips divided by originating trips.

Transfer Time. The elapsed trip time required to change between modes (e.g., bus to light rail) or to transfer between routes of the same mode (e.g., bus to bus).

Transfer. The portion of a trip between two connecting transit lines, both of which are used for completion of the trip.

Transit. A transportation system principally for moving people in an urban area and made available to the public usually through paying a fare.

Transit Center. A station with shelters where a large number of transit vehicles and passengers can be brought together with safety and convenience.

Transit-Oriented Development. The Transportation Research Board provides several definitions of transit-oriented development that emphasize high-quality walking environments, mixed land uses, and high-density developments linked to transit. Generally, transit agencies agree that what constitutes a transit-oriented development is a pattern of dense, diverse, pedestrian-friendly land uses near transit nodes that, under the right conditions, translates into higher transit patronage.

Transit Service Reliability. Reliability is defined as the degree to which transit service can be counted on for consistent, on-time performance.

Transit Street Classification System. The City of Seattle's system for designating certain streets as being important for transit. This is part of the city's overall street classification system.

Transportation Corridor (also, Corridor). The group of travel movements (or travel flows) between two or more locations. A corridor might have components or subcorridors. A corridor

includes all facilities, transit and highway, that might be used to accommodate the specified travel movement.

Transportation Systems Management (TSM). Incorporates relatively low-cost approaches to improving mobility without constructing major new transportation facilities. TSM generally emphasizes smaller physical improvements and operational changes such as intersection improvements, minor widenings, traffic engineering actions, operational changes such as queue jumps or queue bypass lanes for buses, expanded bus service, transit centers, and improved transit access.

Travel Time (in vehicle). The time required to travel between two points, not including terminal or waiting time.

Trip. The one-way movement of one person between the origin and the destination, including transfers, and the walk distance to and from the means of transportation.

Trip Demand. The number and type (public or private origin and destination) of trips measured, calculated, or forecasted in a specified area having a given land development pattern. Trip demand also depends on prevailing economic, behavioral, and attitudinal conditions.

Trip Length. The number of miles per trip. This is usually an average number for a specified trip type, area, and analysis year.

Turn Pocket. Term used to describe a traffic lane that separates turning vehicles from through lanes. For example, a left-turn pocket is also commonly known as a left-turn lane.

Unity. In visual analysis, the visual coherence and compositional harmony of the landscape.

Use of Section 4(f) Land. According to regulations of the U.S. Department of Transportation, use of Section 4(f) land is defined as: (1) acquisition of title or easement to land, or (2) in unusual circumstances, serious indirect impacts, such as increase in noise, visual intrusion, or access obstruction.

Vehicle Hours of Travel (VHT). The total vehicle hours expended traveling on the roadway network in a specified area during a specified time period.

Vehicle Mile. The amount of travel equivalent to one vehicle traveling one mile.

Vehicle Miles of Travel (VMT). The total number of vehicle miles traveled within a specific geographic area over a given period of time.

Vehicle Occupancy. The number of persons per vehicle. Usually an average number for a specified trip type, area, and analysis year.

Vehicle Throughput. The number of vehicles, usually on a highway, that get through a screenline over a short time period such as an hour.

Vibration Velocity. Vibration velocity is the basic measure of groundborne vibration. It is a measure of the rate at which particles in the ground are oscillating relative to the equilibrium point.

Vibration Velocity Level. It is generally accepted that, over the frequency range important for groundborne vibration from transit systems, human response to vibration is best correlated to the root mean square (rms) vibration velocity. In this EIS, rms vibration velocity is always expressed as decibels relative to 1 micro-inch per second.

Viewer Sensitivity. The extent of the viewer's concern for a particular view or viewshed. Viewer sensitivity to the viewed environment is classified as low, average, or high.

View. A scene observed from a given vantage point.

Viewshed. An area of land, water, or other environmental element that is visible to the human eye from a fixed vantage point.

Visual Character. Refers to identifiable visual information, including visual elements and major environmental features.

Visual Encroachment. The imposition of an object, or objects, on a view such that the view is disrupted, obstructed, or otherwise modified from its original state.

Visual Quality. Refers to the evaluation of the visual experience to the public and is described in terms of vividness, intactness, and unity. *Vividness* refers to the way landscape components combine in distinctive and memorable visual patterns. *Intactness* refers to whether the natural and human-built visual patterns form a consistent landscape, or whether highly contrasting features intrude into the view. *Unity* refers to the visual coherence and compositional harmony of the landscape considered as a whole.Visual quality is an assessment of the visual character and is categorized as low, medium, or high, as follows:

Low Visual Quality. Views that lack a dominant visual character in which there is a low level of fit between disparate elements. In some cases, these views appear disorganized with features that seem out of place, or are views with some compositional harmony but include eyesore elements that can dominate one's perception.

Medium Visual Quality. Views with a unity or compositional harmony between elements of the landscape that produce a pleasing overall impression in which encroaching elements are minor and do not substantially alter the perception of the landscape as a unit. These views lack vivid, memorable features and are generally characterized as common or ordinary.

High Visual Quality. Views with vivid, memorable, distinctive features in a landscape with compositional harmony or that fit between elements of the landscape that is free from encroaching elements.

Volume to Capacity (v/c) Ratio. The ratio of demand flow rate to capacity for a highway or arterial facility; a v/c ratio below 1.0 means that traffic volumes are below the capacity of the roadway, when identified as greater than 1.0, the traffic volume has theoretically exceeded the carrying capacity of the roadway.

Washington State Department of Ecology 303(d) List. The federal Clean Water Act (CWA), adopted in 1972, requires states to restore their waters to be "fishable and swimmable." The CWA established a process to identify and clean up polluted waters. Every 2 years, all states are required to prepare a list of water bodies that do not meet water quality standards. This list is called the 303(d) list because the process is described in Section 303(d) of the CWA.

Appendix C

Environmental Justice Analysis

APPENDIX C. ENVIRONMENTAL JUSTICE ANALYSIS

C.1. INTRODUCTION

This appendix describes the analysis and public outreach conducted to identify and address potential environmental justice issues that could arise from the Lynnwood Link Extension. Environmental justice has been addressed in compliance with Presidential Executive Order 12898, Federal Actions to Address Environmental Justice to Minority Populations and Low-Income Populations (February 11, 1994); the U.S. Department of Transportation (USDOT) Order 5610.2, Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (April 15, 1997); and the USDOT Order 5610.2(a) (May 2, 2012) updating the USDOT policy to consider environmental justice principles in all programs, policies, and activities. Together, these orders require USDOT agencies, including the Federal Transit Administration (FTA), to:

1. Avoid, minimize, and mitigate disproportionately high and adverse effects on minority and low-income populations.
2. Ensure full and fair opportunities for public involvement by members of minority and low-income populations during the planning and development (including the identification of potential effects, alternatives, and mitigation measures).
3. Prevent the denial of, reduction in, or significant delay in the receipt of benefits by minority and low-income populations.

FTA environmental justice policy guidance (FTA Circular C 4703.1) defines a disproportionately high and adverse effect as one that:

- Is predominantly borne by a minority or low-income population, or
- Will be suffered by the minority population and/or low-income population and is appreciably more severe or greater in magnitude than the adverse effect that will be suffered by the non-minority population and/or non-low-income population.

The USDOT Order also provides guidance that "In making determinations regarding disproportionately high and adverse effects on minority and low-income populations, mitigation and enhancement measures that will be implemented and all offsetting benefits to affected minority and low-income populations may be taken into account, as well as the design, comparative impacts, and the relevant number of similar existing system elements in non-minority and non-low-income areas" (USDOT 5610.2(a) Section 8(b)).

Under USDOT Order 5610.2(a), a minority person is a person who meets the following criteria:

- Black or African American (a person having origins in any of the Black racial groups of Africa)
- Asian American (a person having origins in any of the original peoples of the Far East, Southeast Asia, or the Indian subcontinent)
- American Indian and Alaskan Native (a person having origins in any of the original people of North and South America [including Central America], and who maintains cultural identification through tribal affiliation or community recognition)
- Native Hawaiian and Other Pacific Islander (a person having origins in any of the original peoples of Hawaii, Guam, Samoa, or other Pacific Islands)
- Hispanic or Latino (a person of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race)

A low-income person is identified as:

- A person whose median household income is at or below the Department of Health and Human Services poverty guidelines

The U.S. Census Bureau updates poverty thresholds each year for use by the Department of Health and Human Services using the change in the average annual Consumer Price Index for All Urban Consumers. As such, separate poverty guidelines do not exist for different regions, states, counties, or cities in the United States.

The Lynnwood Link Extension would traverse the cities of Seattle and Shoreline in King County, and Mountlake Terrace and Lynnwood in Snohomish County. As of 2010, nearly 126,000 residents and an estimated 60,000 jobs were located in census tracts within 0.5 mile of the project corridor, which is anchored by major regional commercial centers at Northgate and Lynnwood. With preparation of the Lynnwood Link Extension Alternatives Analysis (Sound Transit 2011a), Sound Transit's research has shown that neighborhoods in the project corridor have higher percentages of minority and low-income persons than the overall King-Snohomish county region. These regional characteristics are similar to the Sound Transit service district for the urbanized Snohomish, King, and Pierce counties (Sound Transit 2011d). Attachment C-1 briefly describes the 18 neighborhoods that are adjacent to the project corridor and analyzed in this appendix. Attachments C-2 through C-12 provide demographic characteristics of the study area.

The following sections are provided in the rest of this appendix:

Section 2, Regulatory Framework

Section 3, Methodology and Approach

Section 4, Minority and Low-income Populations

Section 5, Outreach to Minority and Low-income Populations

Section 6, Environmental Justice Analysis

Section 7, Conclusions

Section 8, References

C.2. REGULATORY FRAMEWORK

The analysis of potential impacts on minority and low-income populations was prepared following the federal, state, and regional government regulations, policy, and guidance listed below:

Federal

- Title VI of the Civil Rights Act of 1964
- Age Discrimination Act of 1975
- Americans with Disabilities Act of 1990
- Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended
- Presidential Executive Order 12898—Federal Actions to Address Environmental Justice to Minority Populations and Low-Income Populations
- Presidential Executive Order 13166—Improving Access to Services for Persons with Limited English Proficiency
- U.S. Department of Transportation Order 5610.2—Order to Address Environmental Justice in Minority Populations and Low-Income Populations
- Title 42 United States Code (USC) Section 4601, Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended
- Title 49 of the Code of Federal Regulations (CFR) Part 21, Nondiscrimination in Federally Assisted Programs of the Department of Transportation, Effectuation of Title VI of the Civil Rights Act of 1964
- USDOT FTA, Circular FTA C 4702.1A, Title VI and Title VI-Dependent Guidelines for Federal Transit Administration Recipients (May 13, 2007)
- USDOT FTA, Final Circular FTA C 4703.1, Environmental Justice Policy Guidance for FTA Recipients (August 15, 2012)
- Community Impact Assessment: A Quick Reference for Transportation, Publication No. FHWA-PD-96-036 (September 1996)

State of Washington

- Washington Relocation Assistance—Real Property Acquisition Policy Act of 1971, as amended
- Governor's Executive Order 93-07, Affirming Commitment to Diversity and Equity in the Service Delivery and in the Communities of the State

Sound Transit

- Sound Transit/Washington State Department of Transportation (WSDOT)/Federal Highway Administration (FHWA)/FTA Environmental Action Team Issue Paper No. 36, Implementing Environmental Justice Pursuant to Executive Order 12898 and the Department of Transportation Order to Address Environmental Justice in Minority Populations and Low-Income Populations (October 4, 2001)
- Sound Transit Resolution 98-20-1: A resolution of the Board of the Central Puget Sound Regional Transit Authority adopting revised Real Property Acquisition and Relocation Policies, Procedures and Guidelines and superseding Resolution 98-20 (Adopted November 14, 2002)

C.3. METHODOLOGY AND APPROACH

For the analysis of potential impacts, Sound Transit identified a study area that extends 0.5 mile from the project alternatives. This area includes neighborhoods adjacent to the project corridor, but their boundaries may extend beyond 0.5 mile from the alternatives. The 0.5-mile area of effect is consistent with the project's transportation analysis and it encompasses the study areas used for other environmental topics covered in the Draft Environmental Impact Statement (Draft EIS).

C.3.1 Data Sources

Sound Transit used existing reports and documentation to develop the discussion of the affected environment. Much of this information was obtained from local, state, and federal agency Web pages. The following is a list of the key data sources used in the analysis:

- U.S. Census Bureau 2010 decennial census data on racial and ethnic minority populations, household types, and age, as well as basic information about housing in adjacent neighborhoods and within 0.5 mile of the alternative alignments and stations
- U.S. Census Bureau 2006–2010 American Community Survey data on languages spoken at home, limited English proficiency, country of origin of persons born outside of the United States, transit-dependency, and low-income populations for adjacent neighborhoods and populations within 0.5 mile of the alternative alignments and stations
- Washington State Office of the Superintendent of Public Instruction demographic statistics, enrollment in transitional English language programs, and participation in the federal free or subsidized lunch program for elementary school attendance in areas located wholly or partially within 0.5 mile of the project corridor
- Information about existing and planned low-income housing projects within about 0.5 mile of the project corridor from study area public housing authorities (Seattle Housing Authority, King County Housing Authority, and Snohomish County Housing Authority)
- Location of community facilities within about 0.5 mile of the project corridor from local government Web pages as well as other Internet sites
- Information about other baseline environmental conditions from project technical analysts for transportation; land use; economics; noise and vibration; air quality and greenhouse gases; visual and aesthetics; public services, safety, and security; and parks and recreational resources
- Conceptual horizontal and vertical alignment and engineering drawings for project alternative alignments and stations from the project design engineers

Based on the U.S. Census Bureau data, minority or low-income populations were identified within 0.5-mile buffer areas or within census geographies where these populations were present at greater percentages than the regional average. The King-Snohomish two-county region averages 32.7 percent minority and 9.7 percent low income.

As described in Section 5, Outreach to Minority and Low-income Populations, Sound Transit also contacted agencies, groups, and individuals as part of the project's public involvement program, and received information on the project corridor neighborhoods, historic development, demographics, and community character and resources. This information also helped to identify community values, needs, and key activity centers.

C.3.2 Impact Assessment and Potential Mitigation

The environmental justice analysis considers direct construction and operation impacts, indirect and secondary impacts, and cumulative impacts, including the likelihood, scale or severity, and duration of potential impacts. In addition, potential mitigation measures to avoid, reduce, or minimize adverse impacts are identified, including those for other elements of the environment that would mitigate impacts.

C.3.3 Environmental Justice Impacts

In Chapter 5, Section E of FTA Circular C 4703.1 (August 15, 2012), FTA recommends that National Environmental Policy Act (NEPA) environmental documents address six components in analyzing potential environmental justice impacts:

A. Define the project study area and describe environmental justice (minority and low-income) populations in the study area.

B. Identify project adverse construction and operation effects on human health or the environment for the community as a whole and identified minority and low-income populations. Determine if these effects are predominantly borne by an environmental justice population, or if these effects would be appreciably more severe or greater in magnitude than those experienced by non-minority and/or non-low-income population. An adverse effect would include effects on a resource that is especially important to an environmental justice population.

C. Identify if proposed mitigation or enhancement measures would reduce or minimize these effects on environmental justice populations comparable to the whole community. If disproportionately high effects on an environmental justice population occur, then additional practical mitigation measures or enhancements should be considered.

D. Identify offsetting benefits that would accrue to the affected environmental justice population compared to the community as a whole.

E. Discuss any remaining effects, if any, and why further mitigation is not proposed. If not practical, discuss why effects cannot be avoided or minimized and describe how the affected environmental justice populations have been involved in the decision-making process.

F. Compare mitigation and environmental enhancement measures proposed for areas that have minority or low-income populations with those measures proposed for areas that do not have identified minority or low-income populations.

The analysis of potential disproportionately high and adverse effects on minority and low-income populations considers the No Build Alternative and the light rail alternatives. Direct construction and long-term effects, indirect and secondary effects, and cumulative effects were examined for all elements of the environment. The analysis also examined project benefits accruing to minority and low-income populations, which may offset effects that could not be avoided or otherwise mitigated. The primary sources for this analysis were the technical reports and Draft EIS sections prepared for transportation as well as the other environmental elements evaluated for the Lynnwood Link Extension.

The environmental effects of each element were reviewed to determine if the alternatives would result in adverse effects notwithstanding proposed mitigation measures. Project impacts that were effectively mitigated would not cause disproportionately high and adverse effects.

C.4. MINORITY AND LOW-INCOME POPULATIONS

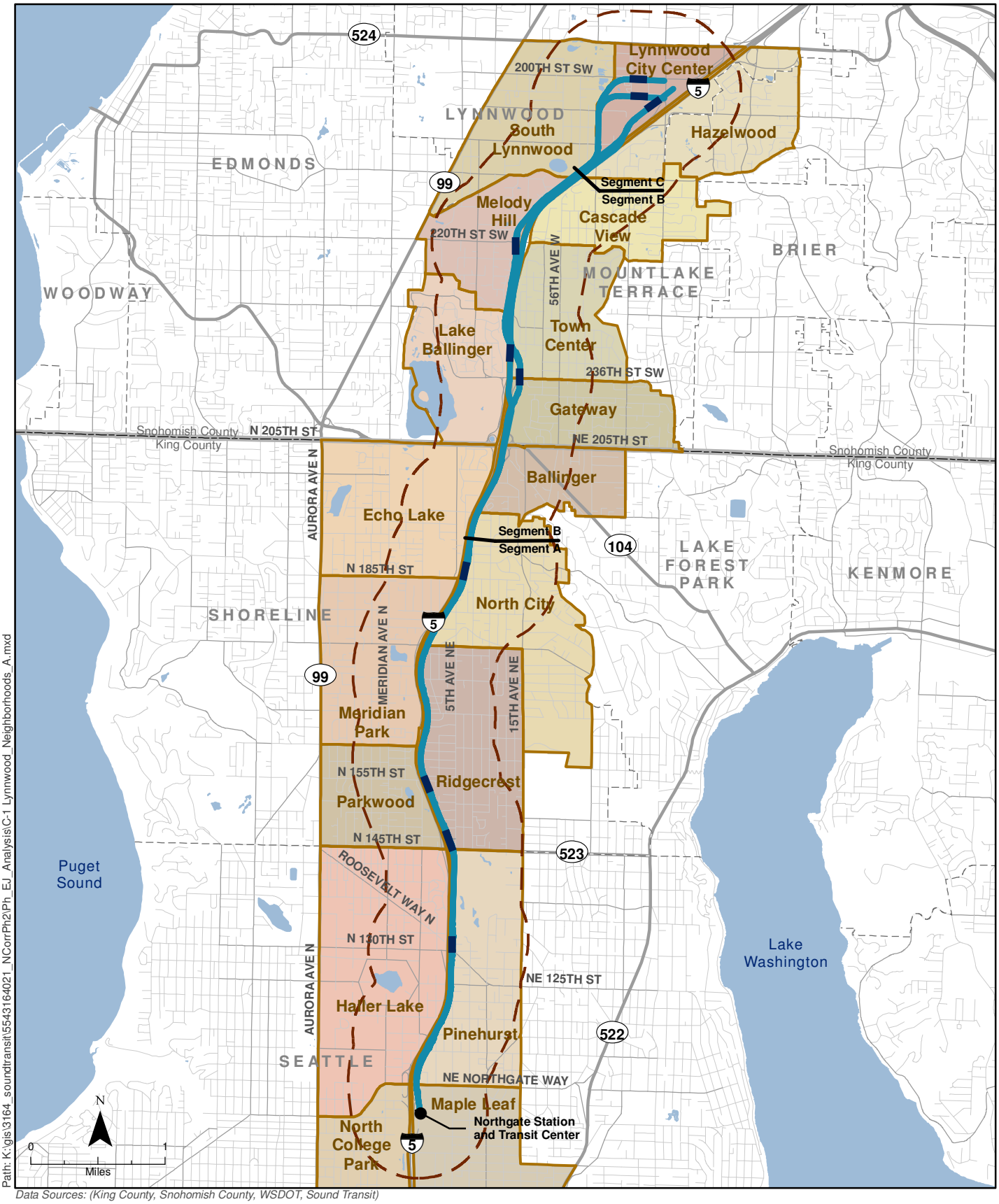
This section describes the presence of racial and ethnic minority populations as well as low-income populations in the project corridor's adjacent neighborhoods and populations within 0.5 mile of the alternatives.

C.4.1 Study Area

The study area comprises 18 neighborhoods adjacent to the project corridor (Figure C-1). Except for the Hazelwood neighborhood, they are officially designated by local governments, primarily for planning purposes. Many also have active community councils or recognized neighborhood contacts. As shown in Figure C-1, ten neighborhoods in Seattle and Shoreline are adjacent to Segment A, eight neighborhoods are adjacent to Segment B, and three are adjacent to Segment C. An estimated 126,000 residents live in the project corridor based on 2010 census tracts within 0.5 mile of the project corridor. Attachment C-1 contains brief land use, character, and demographic statistics for each neighborhood.

Much of the study area was developed by homebuilders in the three decades following World War II. The typical single-family houses in the study area are small- to moderate-sized homes. The neighborhood street pattern is generally a grid with major arterials following section lines. Newer residential development, particularly in the northern portion of the study area, incorporated more curvilinear street patterns, particularly east of the Interstate 5 (I-5) and State Route (SR) 104 interchange and near lakes and ravines. Recent development in these neighborhoods adjacent to I-5 has been largely infill and redevelopment. Large regional activity centers with business employment and major shopping malls are adjacent to the planned Northgate Station and the proposed terminus of the Lynnwood Link Extension near the existing Lynnwood Transit Center.

Study area neighborhoods have many community facilities, including public and private schools, municipal offices, fire and police stations, libraries, community and senior centers, parks and recreation resources, medical clinics and hospitals, religious institutions, and cemeteries. These community facilities provide residents with many opportunities to formally and informally interact and develop a sense of neighborhood identity and cohesion.



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Data Sources: (King County, Snohomish County, WSDOT, Sound Transit)

Light Rail Alternatives
Station Location
Roadway
Local Street
City Boundary
County Boundary
Waterbody
Study Area

Figure C-1
Neighborhoods

Lynnwood Link Extension

C.4.2 Minority Populations

The study area population is racially and ethnically diverse. Attachments C-2 through C-7 present the demographic characteristics of neighborhoods in the study area, and Attachments C-7 through C-11 provide demographic data for populations within approximately 0.5 mile of the alternative alignments and stations. Figure C-2 shows the distribution of minorities within the project corridor based on the 2010 decennial census. The map is colored to show the geographic distribution of 2010 census blocks for different proportions of minorities. The highest densities shown have proportions of minorities that are greater than the regional minority rate.

Overall, the study area population is more diverse than the King-Snohomish two-county region, with a higher proportion of Asian, mixed race, and Hispanic populations. Minorities (non-White and Hispanic persons) comprise 37 percent of the study area population compared to 32.7 percent for the region (Census 2010a). Some neighborhood elementary schools reflect even higher proportions of non-White and Hispanic groups; over 19 percent of students are enrolled in transitional bilingual programs, particularly Spanish, Chinese, Korean, Vietnamese, Tagalog, and several African languages (WOSPI 2012).

Sound Transit and FTA invited federally recognized tribes to be involved in the project, and to suggest areas or facilities of particular interest or concern. Section C.5.3 discusses tribal outreach. Census data for the corridor show Native Americans comprise up to 1.6 percent of the population.

The community facilities represent the diverse racial and ethnic populations residing in the project corridor neighborhoods. Examples include the Korean Catholic School, Jewish Community School, Berhane Hiwot Eritrean Church, Evangelical Chinese Church, Saint Mary's Coptic Orthodox Church (Egyptian), St. Nectarios American Orthodox Church (Russian), Vietnamese Alliance Church, and the Latvian Evangelical Lutheran Church. These religious institutions serve families within the project corridor and the region. Many also function as ethnic cultural centers with co-located elementary schools and calendars of events that include recreational programs, language classes, and folk dancing. The Catholic churches with Spanish-language services and church schools with scholarship funds available for low-income students reflect the Hispanic and low-income populations in the project corridor. Local housing authorities also have several apartment complexes in the study area to meet the needs of low-income populations.

The data confirm the study area neighborhoods are racially and ethnically diverse. In 15 of the 18 neighborhoods, the proportion of minority residents exceeds the King-Snohomish two-county regional average. Asians are by far the dominant non-White race in most neighborhoods. The proportion of populations of one other race alone or mixed race exceeding Asian populations occurs in only four neighborhoods. These racially diverse characteristics appear to be correlated with sizable Hispanic

populations.[1] Similarly, the analysis also confirmed that the proportion of minorities residing within 0.5 mile of alternative alignments exceeds the regional rate of 32.7 percent. Minority individuals make up about 38 percent of the population adjacent to the Segment A alternatives, approximately 37 to 38 percent of the population adjacent to the Segment B alternatives, and over 45 percent of the population adjacent to the Segment C alternatives.

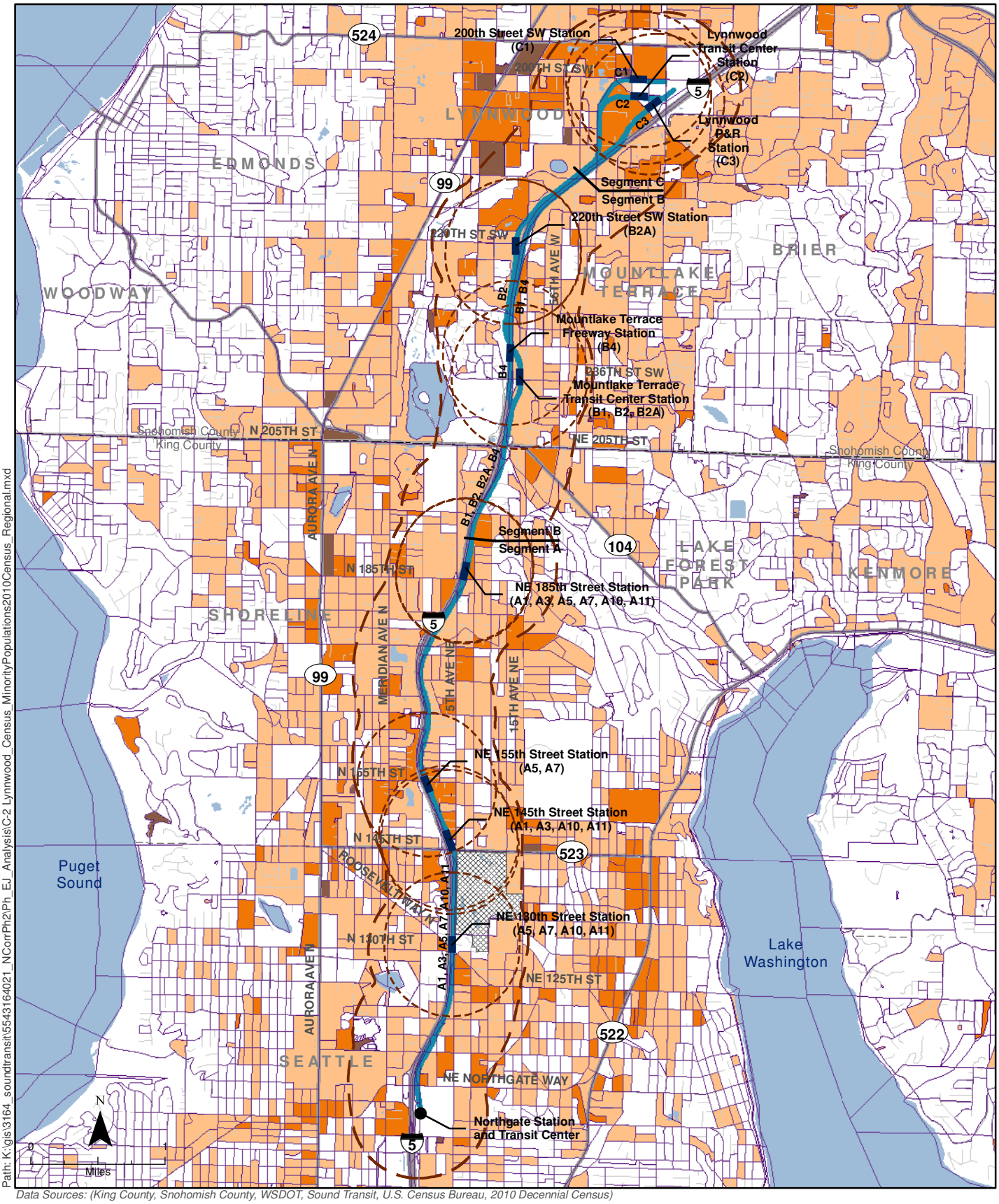
In addition Sound Transit recently conducted a Title VI analysis of the transit agency's service district (urbanized areas of Snohomish, King, and Pierce counties). Using 2010 decennial census data, this analysis determined that 31.1 percent of the district's population is minority (Sound Transit 2011d). This is slightly lower than the two-county regional minority population 32.7 percent rate used in this environmental justice analysis.

C.4.3 Foreign-born and Limited English Proficient Populations

To help identify racial and ethnic minority populations, research was conducted to identify foreign-born and limited English proficient populations. While not all such populations would be considered a minority group under the Executive Order for Environmental Justice, the project's outreach program used the research to help develop its communication and involvement methods. Foreign-born individuals comprise an estimated 21 percent of the population in census tracts adjacent to the project corridor (Census 2010b) where data also indicate minority populations are present. Slightly more than half (54 percent) of these foreign-born individuals were born in Asian countries, mainly from China (14 percent), the Philippines (11 percent), Korea (8 percent), and Vietnam (7 percent). These population groups are sizable, each comprising over 1,000 individuals. An additional 20 percent are from Latin American countries, with nearly three-quarters from Mexico. African-born individuals, particularly from Ethiopia and Eritrea, comprise approximately 10 percent of the foreign-born population. An additional 9 percent is from European countries. These foreign-born ethnic groups are scattered throughout the study area.

Almost 75 percent of the study area population speaks only English, but an estimated 13 percent do not speak English very well (see Attachment C-4). In some census tracts, larger proportions (exceeding 20 percent) have difficulty with English. This is higher than the two-county regional characteristics used in this environmental justice analysis, where an estimated 10 percent of the population does not speak English very well. For comparison, Sound Transit's recent Title VI analysis of the transit agency's service district determined that only 4.7 percent of the district's population either does not speak English or does not speak English well (Sound Transit 2011d).

[1] The reason for the high proportions of persons reporting in the census data that they are of some other race alone is because Hispanic persons often consider their Hispanic ethnicity a race.



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Data Sources: (King County, Snohomish County, WSDOT, Sound Transit, U.S. Census Bureau, 2010 Decennial Census)

2010 Census Blocks
- 0 - 25%
- 26 - 50%
- 51 - 75%
- 76 - 100%
- Non-populated Park Area

- Light Rail Alternatives
- Station Location
- Roadway
- Local Street
- 1/2 Mile Station Buffer
- Study Area
- City Boundary
- County Boundary
- Waterbody

Figure C-2
Minority Populations
2010 Census
(Percentage of Minority Individuals)
Lynnwood Link Extension

Of all persons who speak a foreign language, the largest proportion includes those who speak Spanish—an estimated 25 percent. Individual census tracts, however, have foreign-language-speaking populations exceeding 35 percent. Chinese is the most common of the Asian languages spoken, at 16 percent. Korean and Vietnamese represent 8 percent and 5 percent, respectively. An additional 10 percent speak an African language, particularly Ethiopian and Eritrean, based on statistics concerning the place of birth of foreign-born individuals. An estimated 9 percent speak Tagalog. The foreign languages in each of these six language groups are spoken by an estimated 1,000 or more persons.

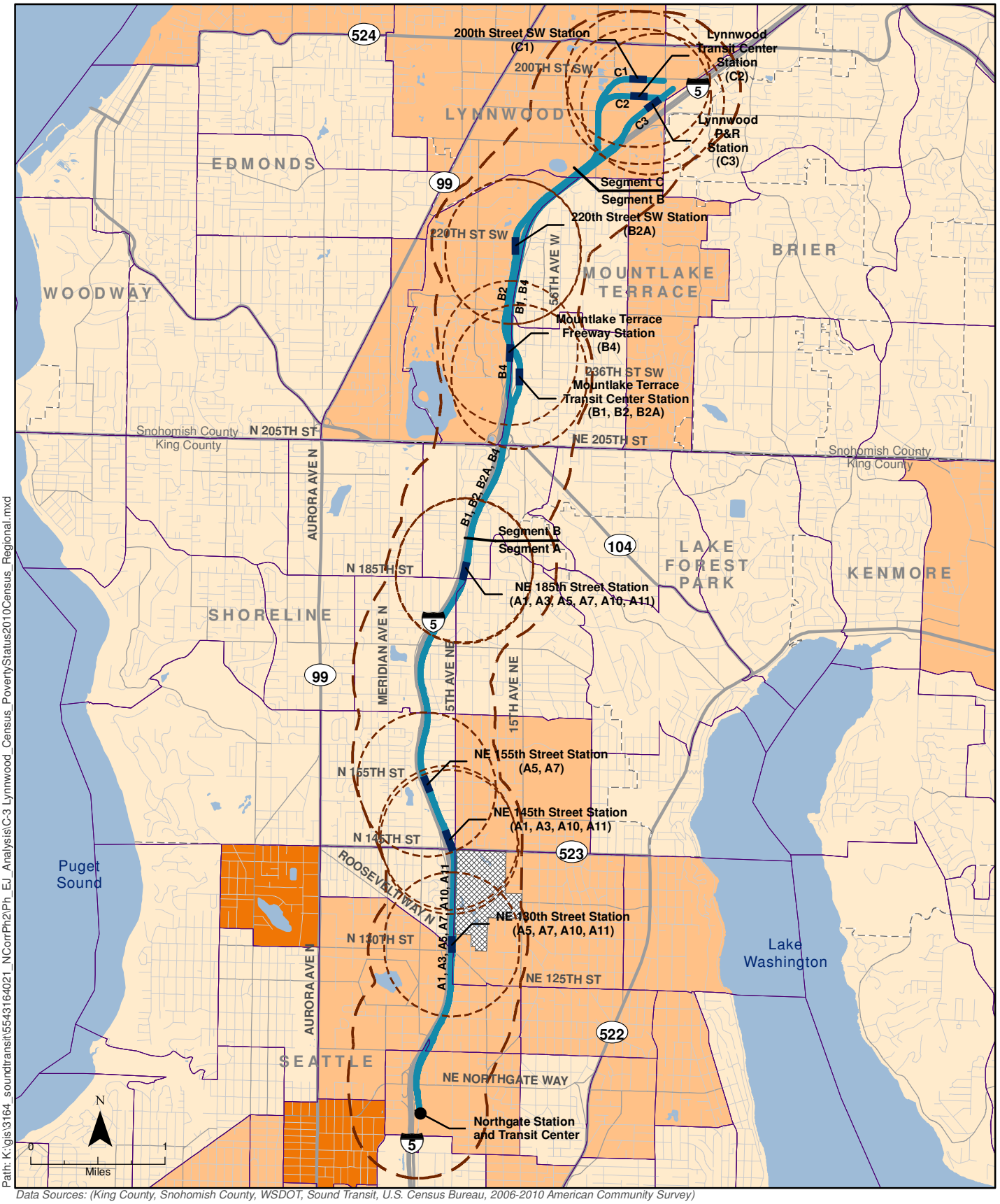
Sound Transit also contacted public elementary schools to identify the three most common languages spoken by students enrolled in the school's Transitional Bilingual Program (see Attachment C-12). In addition to the languages indicated above, the survey confirmed the students also speak Russian, Ukrainian, and Somali.

C.4.5 Low-income Populations

Household income in the study area is less than in the region, with 2009 median household income reported as $56,300, or 83 percent of the region's median household income. The study area poverty rate of 11.3 percent is almost 2 percentage points higher than the regional poverty rate of 9.7 percent (Census 2010a, 2010b). For comparison, the recently completed Sound Transit Title VI analysis of the transit agency's service district determined that 10.6 percent of the district's population is low income (Sound Transit 2011d).

Almost half of the corridor neighborhoods, or eight neighborhoods, have low-income populations that are greater than the regional rate. These neighborhoods include North College Park, Pinehurst, Haller Lake, Ridgecrest, Lake Ballinger, Melody Hill, South Lynnwood, and the Lynnwood City Center. In contrast, two corridor neighborhoods have smaller proportions of low-income persons: Gateway (3.7 percent) and Town Center (3.7 percent). Figure C-3 shows the geographic distribution of low-income populations in the study area based on 2010 census tract data. The highest densities of low-income persons are found east of I-5 at about NE 145th Street and west of I-5 between NE 205th Street and the Lynnwood City Center.

To compare the distribution of minority to low-income populations at the block group level, an additional analysis was conducted using finer-grained 2000 census block group data (Figure C-4) because the 2010 American Community Survey did not collect consistently reliable income information at the census block group level. Figure C-4 shows the geographic distribution of different proportions of low-income populations. The older data retain value because low-income populations tend to live in clusters rather than spread broadly across the study area (Census 2011). A comparison of Figures C-3 and C-4 shows that most of the 2000 block groups with higher percentages of low-income populations are correlated geographically to the 2010 census that also have higher percentages of low-income populations.



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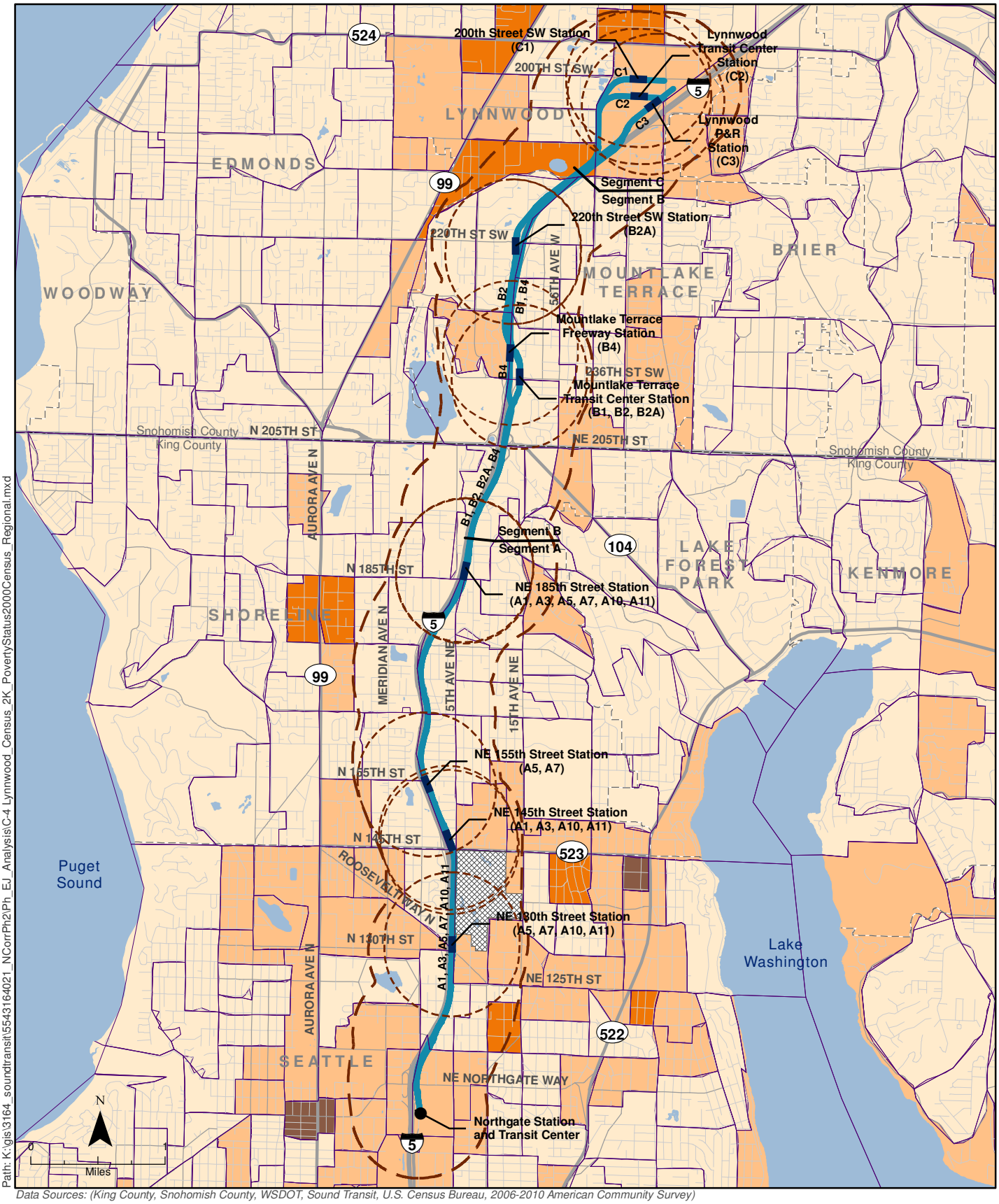
Data Sources: (King County, Snohomish County, WSDOT, Sound Transit, U.S. Census Bureau, 2006-2010 American Community Survey)

2010 Census Tracts
- 0 - 10%
- 11 - 20%
- 21 - 30%
- 31 - 100%
- Non-Populated Park Area

- Light Rail Alternatives
- Station Location
- Roadway
- Local Street
- 1/2 Mile Station Buffer
- Study Area
- City Boundary
- County Boundary
- Waterbody

Figure C-3
Low-income Populations
2010 Census
(Percentage of Individuals Below Poverty Level)

Lynnwood Link Extension



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Data Sources: (King County, Snohomish County, WSDOT, Sound Transit, U.S. Census Bureau, 2006-2010 American Community Survey)

2000 Census Block Groups
- 0 - 10%
- 11 - 20%
- 21 - 30%
- 31 - 100%
- Non-populated Park Area

- Light Rail Alternatives
- Station Location
- Roadway
- Local Street
- 1/2 Mile Station Buffer
- Study Area
- City Boundary
- County Boundary
- Waterbody

Figure C-4
Low-income Populations
2000 Census
(Percentage of Individuals Below Poverty Level)
Lynnwood Link Extension

C.5. OUTREACH TO MINORITY AND LOW-INCOME POPULATIONS

With minorities and low-income persons in the study area, Sound Transit's public outreach program includes a targeted effort to engage these populations in the public decision-making process for the Lynnwood Link Extension. The following sections describe the public involvement plan, project scoping, outreach program, and targeted outreach to minority and low-income populations. Additional information is in the project's *Early Scoping Summary Report* (Sound Transit 2010), which was developed during the Alternatives Analysis phase for the project, and in the *Environmental Scoping Summary Report* (Sound Transit 2011c), which covered the project's public involvement activities at the initiation of the Draft EIS. Outreach to minority and low-income populations preceding the publication of the Draft EIS is described in Section 5.3.

C.5.1 Public Involvement Planning

In addition to the formal public meetings and outreach conducted during early scoping and environmental scoping, Sound Transit conducted over 30 stakeholder interviews with public and community service organizations at the start of the project outreach activities in late 2010. The stakeholders described a corridor that is diverse in terms of race, ethnicity, income, employment, language, culture, and knowledge and use of existing transit services. Stakeholders commented they had difficulties accessing some transit services (such as east-west, non-peak period, non-peak direction, and third-shift services). The stakeholders recommended several outreach tools and communication methods to engage community members, and they helped Sound Transit identify community organizations operating in the project corridor that are likely to represent minority and low-income individuals (Table C-1).

Table C-1. Community Organizations

Alliance of People with Disabilities	North Seattle Family Center
Arab Center of Washington	Northgate Community Services for the Blind
Catholic Community Services	Northwest Paralyzed Veterans
Center for Human Services	Refugee and Immigrant Services Northwest
Washington State Department of Social and Health Services (DSHS), Department of Vocational Rehabilitation	Seattle Deaf Blind Service Center
	Seattle Goodwill
Everett Housing Authority	Senior Services of Snohomish County
Familias Unidas	Shoreline Senior Center
Housing Hope	Snohomish County Housing Authority
Islamic Idriss Mosque	United Way Snohomish County
King County Housing Authority	Washington DSHS, Alderwood Office
Korean Women's Association	Worksource Lynnwood
Lake City North Helpline Food Bank	

Source: Sound Transit 2011a

The *Public Involvement Plan* (Sound Transit 2011b) presents additional information on the stakeholder interviews and other outreach activities and techniques Sound Transit is using to engage the corridor's populations. Appendix D of the *Public Involvement Plan* is the *Plan for Involving Hard-to-Reach Populations*, which addresses targeted environmental justice outreach activities for minorities and low-income persons. These public involvement plan elements are considered "living" documents that will be updated as the project progresses and as those in the corridor learn more about the project and its potential impacts.

C.5.2 Project Scoping

C.5.2.1 Early Scoping

On September 27, 2010, the FTA and Sound Transit published an early public and agency scoping notice in the Federal Register to advise government agencies and members of the public that they intended to explore alternatives for improving transit service between Northgate and Lynnwood. The early scoping process was part of the Alternatives Analysis then required under Title 49 USC 5309. The *Early Scoping Summary Report* (Sound Transit 2010), published in December 2010, documents the public's comments, as well as Sound Transit's advertising, public notice, and outreach efforts.

C.5.2.2 Environmental Scoping

On September 29, 2011, Sound Transit and FTA published in the Federal Register a Notice of Intent (NOI) to prepare an EIS and initiate environmental scoping for a light rail project. The NOI invited public and agency comments on the scope of the EIS and announced the public scoping meetings. Sound Transit published the *Environmental Scoping Summary Report* (Sound Transit 2011c) in December 2011, which describes Sound Transit's outreach and the public and agency comments received during scoping. Notifications were published in the following publications: La Raza, Korean Daily, Seattle Chinese Times, Russian World Newspaper, Seattle Chinese Post, and tu Decides. Translated posters and comment forms were available in Korean, Russian, Chinese, and Spanish at the three mid-October scoping meetings.

C.5.3 Targeted Outreach Activities and Comments

Since the start of the public outreach activities, Sound Transit has conducted special targeted outreach activities to engage minority and low-income populations. The following paragraphs describe these activities and the major themes of comments received. See Appendix L for further documentation on outreach to low income and minority populations.

Cinco de Mayo Festival Events

In May 2011 and 2012, the public involvement team attended the Familias Unidas Latina Resource Center and South Everett Neighborhood Center Cinco de Mayo festival events. The annual events attracted an estimated 300 to 500 attendees. With a sizable number of Spanish-speaking attendees, booth materials (fact sheet and e-newsletter) were translated into Spanish and a Spanish interpreter was present to answer questions. Most people commented that they were excited about the planned Northgate Station and light rail extension to Lynnwood. Specific comments, however, raised the following concerns: safety and security of transit users, earthquake preparedness, transit use by disabled persons, use of transit midday, noise impacts, and the importance of providing shelter at transit stations. People asked about the project routes, stations, and implementation schedule; project staff added names and contact information to the stakeholders list for future e-newsletter updates (English/Spanish versions). The translated materials were essential because approximately a quarter to half of the interactions were conducted in Spanish.

Ethnic Elders Resources Fair

On October 1, 2011, and September 29, 2012, the public involvement team attended the annual Ethnic Elders Resources Fair at the Everett Community College. Interpreters were available at the 2011 event, and a Spanish-speaking staff member assisted at the booth. The 2012 fair included workshops in Tagalog, Chinese, Vietnamese, Korean, Spanish, Russian, and English to accommodate the diverse elderly residents. Most booth visitors were identified as Korean, Vietnamese, or Russian; many spoke limited English but were aided by translators. The project team mostly fielded inquiries on how to get from point A to point B using existing transit services. A realtor who serves Chinese populations in North Seattle commented he wanted to learn about the project because he recognized homes that could be affected by the Lynnwood Link Extension.

Drop-in Meetings, Community Briefings, and Project Updates

Additional targeted outreach activities included the following:

- In March 2012, the public involvement team organized drop-in meetings to be held in conjunction with community classes. One meeting was held at the Lynnwood Library at the same time as a Korean computing class; another meeting was held at the Mountlake Terrace Library concurrent with an English as a Second Language class.
  In November 2012, a project update meeting was held with representatives of the Seattle Latvian Evangelical Lutheran Church, which is located immediately adjacent to the proposed right-of-way to be acquired under some of the project alternatives in Segment A.

In December 2012, project posters were distributed to a number of organizations providing services to minority and low-income populations in the project corridor. Based on new corridor analysis, the number of languages used to translate the printed matter increased from four (Spanish, Korean, Chinese, and Russian) to six (Spanish, Korean, Chinese, Traditional Vietnamese, Tagalog, and Amharic). These same languages were used in traveling displays at various community centers during December 2012. Starting in December 2012, the public involvement team initiated efforts to offer community briefing meetings to over 70 study area community organizations. These included ethnic, faith, neighborhood, and veterans groups; senior centers and public housing authorities; and social service agencies. Some community groups declined offers for briefings, but requested information by e-mail such as copies of briefing meeting materials, newsletters, and links to the project Web site. Others asked to be contacted again in the future. Translations were provided for six foreign languages at some meetings.

- In April 2013, Sound Transit prepared a new project flier that was posted to the project's Web page, mailed to over 83,000 businesses and residents, and emailed to over 2,400 email subscribers. The flier noted the upcoming publication of the Draft EIS and announced the pending comment period and public hearings to be held in summer 2013, and included messages in six languages. The flier also alerted property owners who may be affected by required acquisition that they would receive a special letter in advance of the Draft EIS publication and provided with an opportunity to meet with Sound Transit staff.

Comments on the project during meetings and community briefings in areas with low income or minority populations pertained to the final decision-making process, parking at the proposed stations, construction noise and traffic, and property acquisition.

Tribal Outreach

As described in the *Lynnwood Link Extension Coordination Plan* (Sound Transit 2012), FTA and Sound Transit contacted the following federally recognized tribes during environmental scoping: Muckleshoot Indian Tribe, Snoqualmie Tribe, Suquamish Tribe, Tulalip Tribes, and the Yakama Nation. FTA invited these tribes to become participating agencies, but to date, tribal comments have only been received from the Muckleshoot Indian Tribe; the Tribe stated their concerns about impacts on fisheries, habitat, and water quality during scoping, and they also provided comments on an early agency review of the Draft EIS. Sound Transit and FTA met with the Muckleshoot Indian Tribe to further discuss ecosystem and fisheries issues and

define additional coordination and analysis for the Draft EIS. In conjunction with the Section 106 process required under the National Historic Preservation Act, Sound Transit and FTA also contacted representatives from the Duwamish Tribe and the Snohomish Tribe, which are not federally recognized.

Publication of the Draft EIS and Future Outreach

Targeted outreach activities will continue after the publication of this Draft EIS through final design, construction, and operation. The Draft EIS public comment notices announcing the availability of the Draft EIS and upcoming public hearings used local ethnic and foreign language media, and had messages in six languages with contact information for those with limited English proficiency. They were distributed at community facilities and mailed to project area residents and businesses. Sound Transit will use translators at the four planned public hearings. Many other opportunities and methods are available for members of the public to submit comments on the Draft EIS. For additional information, see the Draft EIS Fact Sheet.

C.6. ENVIRONMENTAL JUSTICE ANALYSIS

This section discusses anticipated adverse and beneficial effects on minority and low-income populations and neighborhoods. The objective is to determine if the Lynnwood Link Extension would result in disproportionately high and adverse impacts on minority and/or low-income populations.

C.6.1 Summary of Potential Environmental Justice Impacts

The analysis of potential environmental impacts follows the methodology described in Section 3.3, Environmental Justice Impacts. Table C-2 identifies potential adverse project effects on human health and the environment for the neighborhoods as a whole and for each element of the environment. Table C-2 also identifies adverse effects on minority and low-income populations, but these impacts are not more severe or more common for minority and low-income populations compared to others. The proposed mitigation and enhancement measures listed in Table C-2 would reduce or minimize the effects on the population as a whole as well as minority and low-income populations. In addition, Table C-2 indicates offsetting benefits for minority and low-income populations.

Table C-2. Environmental Impacts, Potential Mitigation, and Benefits for Minority and Low-income Populations

Element of the Environment	Adverse Impacts	Impacts on Minority and Low-income Population(s)	Potential Design Measures, Mitigation and Enhancement	Benefit(s) to Minority and Low-income Population(s)
Transportation - Streets - Transit - Bicycle and Pedestrian	• Increased local street congestion, bicycle and pedestrian activity around transit stations, particularly considering passenger drop-off/pick-up activity, nearby bus stops, and park-and-ride lots at each transit station, except the NE 130th Street Station. • Up to 8 additional local and arterial intersections adversely affected (below acceptable level of service [LOS]) in Segment A compared to the No Build Alternative due to signal delays and turning-movement congestion. • One arterial street intersection in Segment B would operate below acceptable LOS. • Up to 5 local and arterial street intersections affected by turning-movement congestion in Segment C. • Existing on-street and off-street parking would be removed under all of the Segment A alternatives; only a few would be removed under Segment B and C alternatives. • Depending on alternative, the amount of station parking provided, and the demand for parking, spillover parking in adjacent neighborhoods might occur. • Temporary construction impacts would result from reduced highway and local roadway capacity, direct access ramps to the Mountlake Terrace Transit Center, truck traffic, loss of parking, road and nighttime closures, changes in bus routes, reduced capacity of transit park-and-ride bicycle and pedestrian facilities, and changes to property access. • All alternatives would require temporary closure of the existing pedestrian bridge over I-5 at NE 195th Street during reconstruction of the bridge.	• Same as for general populations in the affected neighborhoods.	• Reconfiguration of the northbound NE 130th Street off-ramp under Alternatives A1, A5, and A10 to improve highway operations; similar improvements for the NE 145th Street interchange. • Proposed station designs include pedestrian facilities fronting the station area and roadways reconstructed as part of the project. • Local and arterial street intersection improvements would be implemented where intersection LOS would degrade to levels that do not meet jurisdiction standards. • Bicycle and pedestrian improvements would be implemented at transit stations consistent with system access plans to accommodate projected increase in bicycle and pedestrian travel associated with the proposed project.	• Regional reduction in automobile travel, reduced vehicle miles of travel, and reduced vehicle hours of travel; similar reduction in bus transit in the high-occupancy vehicle (HOV) lanes would somewhat increase capacity and/or improve operations. • Slightly reduced vehicle volumes and congestion in the I-5 study corridor. • Increased person throughput (up to 10 percent) in the I-5 corridor, particularly in evening peak periods. • Direct rail service from Lynnwood to Northgate, the University District, Capitol Hill, downtown Seattle, the Rainier Valley, and Seattle-Tacoma International Airport; and connections to Bellevue, Overlake, and Redmond. • Substantially improved transit service reliability in the corridor, increased frequency throughout the day (5- to 10-minute headways), and daily service extended to19 hours. • Travel time savings to regional destinations, e.g., from Lynnwood to Northgate and downtown Seattle an estimated 10 to 17 minutes, respectively. • A new bicycle/pedestrian bridge from 232nd Street SW to the Mountlake Terrace Freeway Station (Alternative

Table C-2. Environmental Impacts, Potential Mitigation, and Benefits for Minority and Low-income Populations

Element of the Environment	Adverse Impacts	Impacts on Minority and Low-income Population(s)	Potential Design Measures, Mitigation and Enhancement	Benefit(s) to Minority and Low-income Population(s)
				B4) in the I-5 median (none now).
Acquisition, Displacement, and Relocation	• Segment A displacement impacts (107 to 122 residences, 0 to 1 non-residential) in the Pinehurst, Ridgecrest, and North City neighborhoods. • Segment B displacement impacts (0 to 5 residences, 0 non-residential) in the Melody Hill neighborhood. • Segment C displacement impacts (0 to 77 residences, and 1 to 31 non-residential) in the Lynnwood City Center neighborhood.	• Same as for general populations in the affected areas.	• Property owners and displaced residents and businesses would receive compensation and relocation assistance consistent with the federal Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, the state of Washington's relocation and property acquisition law and regulations (Washington Administrative Code [WAC] 468-100 and Revised Code of Washington [RCW] 8.26), and Sound Transit's adopted Real Estate Property Acquisition and Relocation Policy, Procedures, and Guidelines (Resolution #R98-20-1). • The use of federally designated highway beautification areas for project right-of-way would be replaced with other property along I-5.	• No unique benefits, although the requirements of the federal Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, the state of Washington's relocation and property acquisition law and regulations (WAC 468-100 and RCW 8.26) all have specific policies on the requirements for replacement housing. This housing can exceed the standard of the housing to be replaced.
Land Use	• Acquisitions, both full and partial, in all segments represent a small portion of the areas to be served, considering the length of the corridor and the project footprint, with overall low land use impacts. • Acquisitions convert existing uses to transportation-related use. • All alternatives consistent with regional and local plans and policies. • Indirect project impacts, particularly in the 220th Street SW and Lynnwood Station areas, could occur and lead to redevelopment with mixed-use, higher-density transit-oriented development. • No construction impacts on land use.	• No adverse impacts.	• None required.	• Redevelopment in station areas may increase community identity and cohesion, including affordable housing and/or retail services lacking in some neighborhoods.

Table C-2. Environmental Impacts, Potential Mitigation, and Benefits for Minority and Low-income Populations

Element of the Environment	Adverse Impacts	Impacts on Minority and Low-income Population(s)	Potential Design Measures, Mitigation and Enhancement	Benefit(s) to Minority and Low-income Population(s)
Economics	• Property acquisition would displace some businesses: Alternative C1—31 businesses (108 employees), Alternative C2—3 businesses (72 employees), and Alternative C3—1 business (47 employees). • Property tax reductions: 0.1% in Segment A, 0 to 0.4% in Segment B, and 0.2 to 0.4% of revenues. • Increased expenditure for construction materials and associated sales tax revenue; increased demand for construction workers. • Temporary increase in construction impacts on traffic congestion and reroutes, noise, vibration, dust, and visual obstruction that would affect nearby businesses, particularly near the proposed stations at 220th Street SW and the existing Lynnwood Transit Center.	• Same as for the general population in the affected areas. • Businesses that would be displaced in Segment C are located in a neighborhood with minority and low-income populations. • Construction may complicate access and reduce visibility of businesses in areas with low-income and minority populations, including Northgate, Mountlake Terrace, and Lynnwood.	• See potential mitigation for Transportation; Acquisition, Displacement, and Relocation; and Noise and Vibration. • Provide 24-hour construction telephone hotline, which includes translation services. • Provide business cleaning services on a case-by-case basis during construction. • Provide detour, open for business, and other similar construction signage. • Establish effective communications with the public during construction. • Implement promotion and marketing measures to help affected business districts maintain their customer base, consistent with Sound Transit policies, during construction. • Maintain access as much as possible to each business and coordinate with businesses during times of limited access during construction. • Provide a communications ombudsman during the construction period.	• Opportunities for redevelopment in station areas, particularly at 220th Street SW and near the Lynnwood Transit Center, may attract new businesses and jobs to neighborhoods near station areas. • Property values and property tax revenues could increase in the vicinity of proposed stations to benefit local governments. • Improved access to employment centers and expanded employment opportunities for minority and low-income persons residing in the project corridor. • Federal expenditures associated with construction could result in over $1.233 billion in direct expenditure and annual employment of over 1,200 jobs in the region. • Positive construction effects include construction worker expenditures at nearby businesses.

Table C-2. Environmental Impacts, Potential Mitigation, and Benefits for Minority and Low-income Populations

Element of the Environment	Adverse Impacts	Impacts on Minority and Low-income Population(s)	Potential Design Measures, Mitigation and Enhancement	Benefit(s) to Minority and Low-income Population(s)
Social and Neighborhood	• Few to minor effects on community facilities and services under some alternatives. • No cohesion impacts because alternative alignments would not create neighborhood barriers or otherwise divide communities. • Segment A—displacement of the ethnic Latvian Evangelical Lutheran Church (Alternatives A1, A5, A10), an important cultural center for the Puget Sound Latvian community. • Segment B—no displacement of community facilities. • Segment C—no displacement of community facilities, but Alternative C1 would displace 46 units in the 76-unit Cedar Creek Condominium complex. • Temporary construction impacts, including dust, and traffic congestion.	• Displacement of residences, a church, or businesses could affect some low-income or minority individuals. • Construction impacts on minority and low-income populations in adjacent neighborhoods.	• See potential mitigation under Acquisition, Displacement, and Relocation for community facilities. • Potential mitigation for other elements of the environment (air quality, noise, visual, transportation, etc.) would reduce construction impacts affecting access or the quality of life in adjacent neighborhoods.	• Improved access to some community facilities that serve minority and/or low-income populations located in the project corridor as well as other neighborhoods.

Table C-2. Environmental Impacts, Potential Mitigation, and Benefits for Minority and Low-income Populations

Element of the Environment	Adverse Impacts	Impacts on Minority and Low-income Population(s)	Potential Design Measures, Mitigation and Enhancement	Benefit(s) to Minority and Low-income Population(s)
Visual and Aesthetics	• Light rail alternatives would have areas with high visual impacts. • Impacts include removal or thinning of mature trees and dense vegetation currently screening I-5; changed views from the highway; views where the light rail facility or stations would dominate, particularly where guideways or stations are elevated; new parking structures out of character with adjacent single-family residences; new bicycle/pedestrian bridge over northbound I-5 to proposed Mountlake Terrace Freeway Station; new and/or taller noise barriers or retaining walls; lighting; and station area light/glare effects. • Temporary construction impacts include clearing, demolition, construction of new facilities, equipment use and storage, material hauling and storage, construction staging areas, and lighting along the corridor.	• Some adverse long- and short-term visual and aesthetic impacts in neighborhoods with minority and low-income populations along the corridor.	• During final design, the light rail alignment, placement of noise barriers and retaining walls, and landscaping could be modified to provide additional opportunities for landscaping and buffers. • Retaining walls could include landscaped areas on both sides to soften their appearance. • Relocated streets could accommodate street trees, landscape buffers, and other aesthetic features. • Stations and park-and-ride facilities could include islands of landscaping within areas of pavement and around site perimeters. • Appropriately sized landscaping elements could be installed between columns under elevated guideways. • Retaining walls and noise barriers could be designed with visually interesting elements, such as design treatments with texture, patterns, and color. • Construction mitigation measures would include restoring the construction zone in intermediate stages, shielding light sources, designing construction screens to limit visibility of work areas that intrude on adjacent activities, installing construction barriers with pedestrian-oriented murals or other displays of graphic interest or project construction information, and installing viewing areas for pedestrians along construction screens.	• None.

Table C-2. Environmental Impacts, Potential Mitigation, and Benefits for Minority and Low-income Populations

Element of the Environment	Adverse Impacts	Impacts on Minority and Low-income Population(s)	Potential Design Measures, Mitigation and Enhancement	Benefit(s) to Minority and Low-income Population(s)
Air Quality and Greenhouse Gases	• No new violations of federal air quality standards. • Slight decrease in regional air emissions anticipated. • Temporary construction impacts include increased levels of pollutants, particularly emissions from construction equipment and trucks, and fugitive dust and particulates associated with grading and excavation.	• No adverse effects. • Construction effects on minority and low-income populations in neighborhoods along the entire corridor.	• No mitigation is required or proposed for light rail operation. • Potential construction mitigation includes mitigation measures and best management practices (BMPs) to control inhalable particulate matter (PM_{10}), fine particulate matter ($PM_{2.5}$), and emissions of carbon monoxide and nitrogen oxides.	• Improved air quality in the longer term due to reduced criteria pollutants and mobile source air toxics compared with both the existing and No Build Alternative conditions.
Noise and Vibration	• There are noise- and vibration-sensitive properties along the entire corridor. • All alternatives integrate design measures to avoid noise impacts on noise-sensitive properties. • All alternatives incorporate design measures to avoid vibration and ground-borne noise impacts. • Construction-related noise can be produced by heavy equipment, trucks, pneumatic tools, generators, concrete pumps, and similar equipment. Construction vibration can be caused by jackhammers, pavement breakers, hoe rams, bulldozers, backhoes, and soil compactors with pavement breaking (highest levels of vibration). All construction would be conducted consistent with state and local ordinances, noise permits, or variances, particularly for nighttime activities.	• No adverse impacts with design measures that control noise levels.	• All adverse noise and vibration effects would be mitigated consistent with federal, state, and local government regulations. • Potential measures for noise include noise barriers and sound insulation. • Relocation of existing noise barriers would be completed as early as possible during construction to minimize construction noise. • Potential mitigation for vibration include a tire-derived aggregate (shredded tires) in a layer below the track ballast, ballast mats, and resiliently supported ties. • Construction activities would implement a variety of measures to comply with local regulatory requirements, ordinances, permits, or variances, particularly for nighttime construction activities.	• Relocated noise barriers that mitigate transit noise could also reduce noise levels below existing levels. • New noise barriers where none currently exist may reduce noise levels below existing levels.

Table C-2. Environmental Impacts, Potential Mitigation, and Benefits for Minority and Low-income Populations

Element of the Environment	Adverse Impacts	Impacts on Minority and Low-income Population(s)	Potential Design Measures, Mitigation and Enhancement	Benefit(s) to Minority and Low-income Population(s)
Ecosystem Resources	• Project may result in permanent loss or degradation of in-stream or riparian habitat; altered hydrology; water quality degradation; habitat connectivity; vegetation, wildlife, and wildlife habitat; wetlands and buffers; and forest cover. However, the project would be designed to comply with all federal, state, and local regulations controlling potential risks to ecosystem resources through project planning, design, and use of required BMPs to avoid operational and construction-related adverse impacts on ecosystem resources.	• No adverse impacts to active fisheries, including fishing areas used by tribes or others	• Project design measures would avoid and minimize impacts on environmentally sensitive resources and provide compensatory mitigation measures where adverse effects are unavoidable for no net loss of ecosystem function. • Construction BMPs, including the preparation of a temporary erosion and sediment control plan; construction stormwater pollution prevention plan; spill prevention, control, and countermeasures plan; concrete containment and disposal plan; dewatering plan; fugitive dust plan; and other permit conditions would minimize impacts such that no additional mitigation measures would be required.	• None.
Water Resources	• Project would result in temporary construction and long-term increased pollution-generating and non-pollution-generating impervious surfaces, changes in water quality and flow control facilities, and placement of columns supporting elevated tracks in stream buffers and Scriber Creek floodplain. However, the project would be designed to comply with all federal, state, and local regulations controlling potential risks to water resources through project planning, design, and use of required BMPs to avoid operational and construction-related adverse impacts on water resources.	• No adverse impacts.	• Project design measures would minimize impacts such that no additional mitigation measures would be required. • Construction BMPs, including the preparation of a temporary erosion and sediment control plan; spill prevention, control, and countermeasures plan; concrete containment and disposal plan; dewatering plan; and fugitive dust plan would minimize impacts such that no additional mitigation measures would be required.	• None.
Energy Impacts	• Light rail alternatives would result in lower energy consumption regionally. • No adverse energy construction impacts.	• No adverse impacts.	• None required.	• Overall reduction in energy consumption would benefit all populations.

Table C-2. Environmental Impacts, Potential Mitigation, and Benefits for Minority and Low-income Populations

Element of the Environment	Adverse Impacts	Impacts on Minority and Low-income Population(s)	Potential Design Measures, Mitigation and Enhancement	Benefit(s) to Minority and Low-income Population(s)
Geology and Soils	• Low risks for adverse impacts from steep slope and landslide hazard areas. • Corridor located in seismically active region. • Some construction risks from erosion, slope instability, seismic ground-shaking, vibration, settlement, temporary excavations, and dewatering.	• No adverse impacts.	• Geology and soils risks would be avoided or minimized with the use of engineering design standards and BMPs.	• None.
Hazardous Materials	• No acquisition of any high-risk sites under Segment A and B alternatives; however, contamination may be encountered during construction. • Segment C alternatives require acquisition of all or parts of three to four parcels with known higher risk sites. • Use and generation of hazardous materials would not occur at stations. • Temporary construction activities could cause accidental release or spill of hazardous materials along the project corridor.	• During construction, accidental releases or spills of hazardous materials could affect minority and low-income populations in neighborhoods adjacent to the alignment. These potential risks are the same as for the general population.	• Environmental due diligence would be performed for properties along the project corridor before acquisition. • Use of contaminated sites, or portions of such, would be avoided to minimize construction and long-term impacts. • Plans governing handling of hazardous materials and spill response would be implemented during construction and operation. • Contractors would be required to develop project-specific plans to implement BMPs to ensure management of hazardous materials during construction is consistent with state and federal regulations.	• Acquired parcels with hazardous materials would be cleaned up in some neighborhoods with minority and low-income populations.
Electromagnetic Fields	• No adverse effects because no sensitive equipment would be in operation within 1,000 feet of alternative alignments and stations. • Electromagnetic fields would be below exposure guidelines for human health.	• No adverse impacts.	• None required.	• None.

Table C-2. Environmental Impacts, Potential Mitigation, and Benefits for Minority and Low-income Populations

Element of the Environment	Adverse Impacts	Impacts on Minority and Low-income Population(s)	Potential Design Measures, Mitigation and Enhancement	Benefit(s) to Minority and Low-income Population(s)
Public Services, Safety, and Security	• No impact on response time for police, fire, or emergency services because of grade-separated guideways. • No impact on public safety and security with engineering design and operational security measures, including crime prevention through environmental design and an emergency response, safety, and security plan. • Potential construction effects on emergency response times and routes.	• Short-term temporary construction impacts on travel routes and time for police, fire, and emergency services in neighborhoods with minority and low-income populations.	• Implement transportation mitigation measures to minimize construction and operation transportation impacts. • Use Sound Transit design and operation standards to minimize emergency conditions, and establish safety and security measures. • Develop emergency response and safety and security plans and programs in cooperation with local jurisdictions. • Minimize construction impacts through coordination with police, fire, and local emergency response services.	• None.
Utilities	• No long-term impacts on utilities under any segment alternative, although some utility facilities may be relocated to ensure long-term access. • Short-term temporary construction impacts on utilities.	• Construction impacts may temporarily interrupt some utility services for minority and low-income populations, but affected areas would be limited. • Some utility relocations would involve construction on private properties that may be owned by minority or low-income persons.	• Coordination with utilities during final design would protect long-term reliability of utility service and access, and maintenance of utility facilities. • Design measures would be implemented to minimize the effects of stray current that could affect nearby utility facilities. • Inadvertent damage to utilities during construction would be minimized through potholing and preconstruction surveys during final design. • Construction of temporary utility lines may be necessary during the construction period to ensure continuous service or to minimize disruptions.	• None.

Table C-2. Environmental Impacts, Potential Mitigation, and Benefits for Minority and Low-income Populations

Element of the Environment	Adverse Impacts	Impacts on Minority and Low-income Population(s)	Potential Design Measures, Mitigation and Enhancement	Benefit(s) to Minority and Low-income Population(s)
Cultural, Archaeological, and Historic Resources	• No adverse impacts on archaeological resources or traditional cultural properties. • No adverse impacts on historic resources. • Construction impacts would be minor and temporary.	• No adverse impacts.	• Develop Inadvertent Discovery Plan prior to ground-disturbing activities.	• None.
Parks and Recreational Resources	• Jackson Park Golf Course and a nearby trail affected by changed views for elevated alternatives, but no acquisition or change in use. • Ridgecrest Park affected by acquisition of a sliver of property, changed views, and partial removal of a berm and mature trees, but park and facility activities can continue. • Shoreline Park and Stadium affected by a sliver parcel acquisition under Alternative A1 only; reduced parking and removal of a small space adjacent to the track, but no change in use. • North City Park affected by partially changed views due to thinning of forested buffer adjacent to park, but no direct impacts. • Interurban Trail existing pedestrian bridge crossing I-5 at NE 195th Street would be replaced under the Segment B alternatives. The trail would be crossed overhead by elevated guideways (once with Alternatives C1 and C2; twice with Alternative C3) and short-distance light rail tracks adjacent under Alternatives C1 and C2, but no change in trail function. • Scriber Creek Park affected by elevated guideway columns in the park, track over parking lot, shade, and visual impacts under Alternative C1; alignment south of park under Alternative C2; only distant views from park changed under Alternative C3; and depending on alternative, some recreational activities may change with changed character of the park. • Scriber Creek Trail crossed overhead under all Segment C alternatives, with impacts similar to those described above for the Interurban Trail.	• All affected parks located in neighborhoods with minority and low-income populations, but all parks and recreational facilities would remain open and continue to provide recreational functions to the community.	• Sound Transit would work with the owning jurisdiction to provide appropriate mitigation. • For construction impacts on parks, Sound Transit would coordinate with appropriate jurisdictions, property owners, and facility operators to minimize impacts. • For temporary trail closures during construction, Sound Transit would coordinate with trail management agencies to provide public information and signed detour routes to allow for continued connections and user safety.	• Several of the parks would receive improvements as part of the mitigation programs developed to address impacts, which would benefit minority and low-income populations to the same degree as the general population.

Table C-2. Environmental Impacts, Potential Mitigation, and Benefits for Minority and Low-income Populations

Element of the Environment	Adverse Impacts	Impacts on Minority and Low-income Population(s)	Potential Design Measures, Mitigation and Enhancement	Benefit(s) to Minority and Low-income Population(s)
	• Temporary construction impacts would include visual, noise, dust, and traffic congestion impacts, including in areas adjacent to parklands; potential temporary use impacts at Shoreline Park and Stadium (Alternative A1) and North City Park (Segment B alternatives); and short-term closure or detours for sections of the trail from Veterans Memorial Park (Segment B alternatives) and the Interurban Trail, and Scriber Creek Trail (all Segment C alternatives).			

C.6.2 Transit Service Benefits

Overview

The Lynnwood Link Extension would improve transportation for people living, working, and shopping in the study area. The new light rail line would particularly provide transit benefits for people living and working within 0.5 mile of the proposed transit stations, which could be easily accessed by foot. For others, transit station connections would be provided by bicycle, bus service, taxi, and private vehicle.

As discussed in the *Lynnwood Link Extension Transportation Technical Report*, these transportation benefits would include the following:

- Increased person throughput within the project corridor, particularly transit users
- Increased reliability for travel by transit
- Increased transit services with increased frequency (5- to 10-minute headways) compared to bus transit services
- Increased transit services through extended hours of operation (19 hours daily)
- Increased transit access to regional employment opportunities, activity centers, and retail shopping districts

On average, transit travel time for trips between Lynnwood and Shoreline to downtown Seattle would provide an estimated 10- to 17-minute travel time savings. The different combinations of segment alternatives would have slight differences among them due to population and employment influences near transit stations, availability of station parking, connections with local bus services, and distances between stations.

The following two subsections quantify improved transit access and travel time savings for both minority and low-income populations, many of whom are dependent upon transit. Data show that residents in the Pinehurst, South Lynnwood, and Lynnwood City Center neighborhoods are nearly twice as likely to be transit-dependent as other residents in the study area or the region (Attachment C-7).

Improved Transit Access

Walking to the new transit stations would provide residents within 0.5 mile of the station the most reliable access to the new light rail service because they could control their departure and travel times, and would not be dependent on making connections with other modes of transportation.

Table C-3 lists the total population residing within 0.5 mile of the proposed light rail stations for the segment alternatives and the proportions of the population that are minority and low income. Based on this analysis, all of the alternatives would improve access to transit services to minority and low-income populations. In Segment B, Alternative B2A would provide access to greater numbers of minority populations than the other Segment B alternatives due to the additional station at 220th Street SW. The alternatives in Segment C would substantially improve access to transit services to minority and low-income populations due to the substantially higher concentration of these populations within 0.5 mile of any of the three transit station locations in Lynnwood.

Table C-3. Access to Light Rail Stations for Minority and Low-income Populations

Segment	Number of Stations	Total Census Block Population Within 0.5 Mile of Stations	Percent Minority	Percent Low Income
Segment A				
Alternative A1	2	12,300	36.1	10.1
Alternative A3	2	12,300	36.1	10.1
Alternative A5	3	18,900	35.8	10.3
Alternative A7	3	18,900	35.8	10.3
Alternative A10	3	17,300	36.6	10.3
Alternative A11	3	17,300	36.6	10.3
Segment B				
Alternative B1	1	4,800	31.1	9.7
Alternative B2	1	4,800	31.1	9.7
Alternative B2A	2	8,800	33.4	12.4
Alternative B4	1	5,000	28.3	10.0
Segment C				
Alternative C1	1	4,200	47.7	11.8
Alternative C2	1	4,200	48.6	11.8
Alternative C3	1	4,600	48.7	11.8
Two-County Region			32.7	9.7

Source: U.S. Bureau of the Census, 2010 Decennial Census and 2006-2011 American Community Survey.
Notes:

(1) Calculations of the total population residing within 0.5 mile of the stations for each alternative excludes overlapping areas where residents may be within 0.5 mile of more than one station. In addition, the 2010 census blocks have been aggregated to best fit the 0.5-mile buffer area surrounding the stations. Estimates of portions of the census block populations residing within 0.5 mile of the stations were not calculated.

Transit Travel Time Savings

Sound Transit also conducted an analysis of transit travel time savings benefitting minority and low-income populations. The measure of travel time savings is an output of the Sound Transit Ridership Model (2011) and is referred to as user benefits. It measures the total number of annual person-hours of travel time savings for the model forecast analysis zones (FAZs). For example, if the user benefit is 1,000, then transit users residing in the FAZ as a group benefitted by saving 1,000

hours of travel time over 1 year. Figure C-5 illustrates travel time savings in forecast year 2035 in the project corridor.

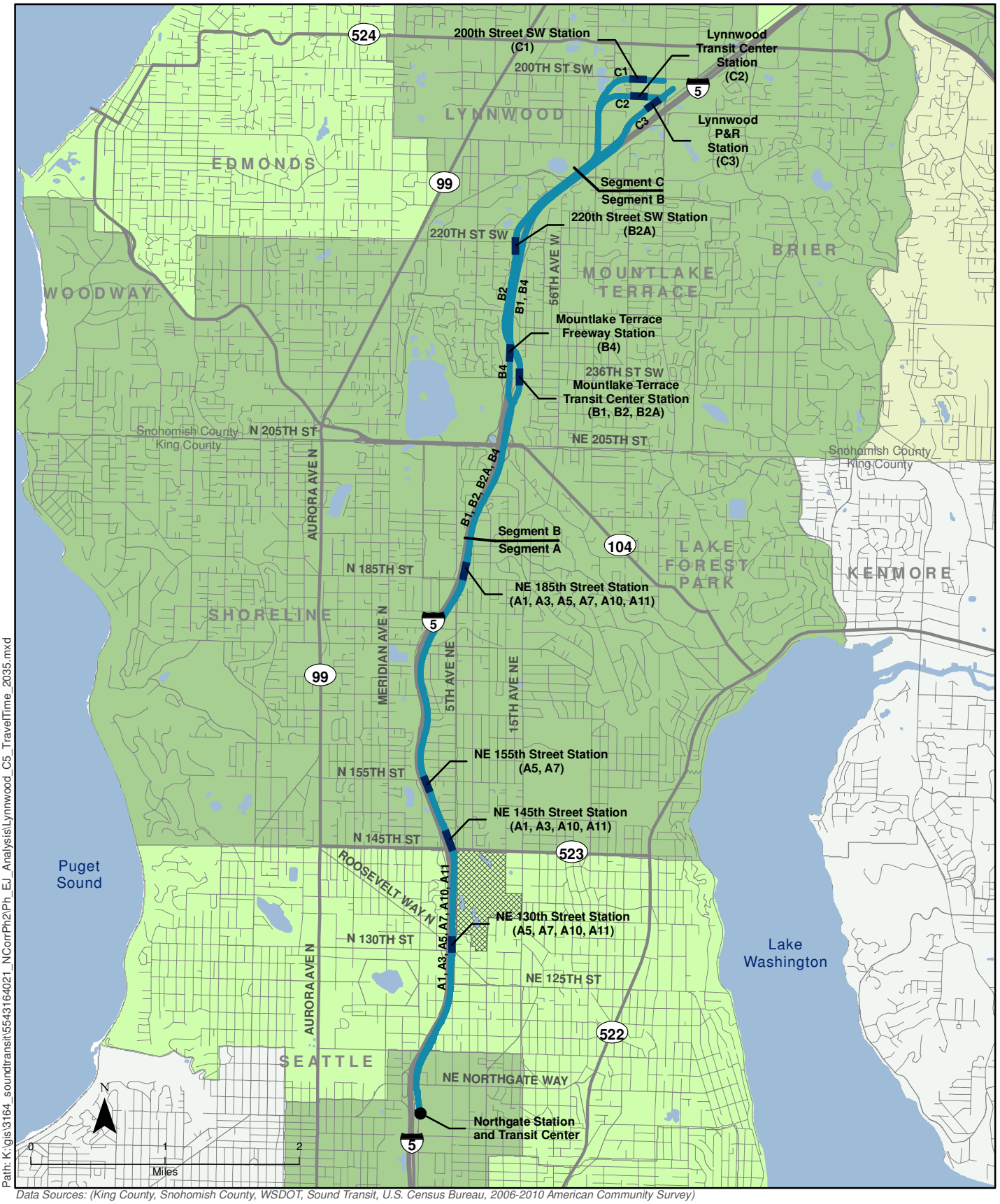
The travel time savings were divided into five categories. Values less than zero translate into a negative benefit or adverse impact. The FAZs with negative benefits would have increased travel time with the implementation of the Lynnwood Link Extension. Because the travel time savings are relative to the No Build Alternative, the FAZs with negative travel time benefits would have increased travel time over and above those under the No Build Alternative. The positive travel time savings were distributed into four categories of annual person-hours: 0 to 25,000; greater than 25,000 to 50,000; greater than 50,000 to 75,000; and greater than 75,000. The average for the 165 FAZs was approximately 21,000 annual person-hours for the travel demand forecast modeled study area. The FAZs with greater than 75,000 annual person-hours represent the highest benefits attributable to the light rail alternatives.

Transit Travel Time Savings for Minority Populations

To assess the potential effects on travel time savings, or user benefits, for minority populations, Figure C-2 was visually compared to the map of corridor 2035 travel time savings shown in Figure C-5. A review of the literature indicates that it is reasonable to assume the 2010 locations of minority populations represent the locations of these populations in the future. Figures C-2 and C-5 show that the minority populations are located in FAZs with the two highest categories of travel time savings. Together, this analysis confirms that transit travel time benefits for minority populations are positive throughout the project corridor and generally are among the highest category of user benefits.

Transit Travel Time Savings for Low-income Populations

A similar analysis was conducted to assess potential effects on transit travel time savings for low-income populations. Figure C-5, which shows travel time savings in 2035, was compared to Figures C-3 and C-4 showing distribution of low-income populations based on 2006–2010 American Community Survey census tract data. The mapping of low-income populations is also likely to represent substantial numbers of transit-dependent households because low-income households have lower levels of car ownership. The Pinehurst neighborhood and two Lynnwood neighborhoods appear to have the highest levels of transit dependency. Again, the comparison of the maps shows transit travel time benefits for low-income populations are positive throughout the corridor and generally are among the highest category of user benefits.



Path: K:\gis\3164_soundtransit\5543164021_NCorrPh2\Ph_EJ_Analysis\Lynnwood_C5_TravelTime_2035.mxd

Data Sources: (King County, Snohomish County, WSDOT, Sound Transit, U.S. Census Bureau, 2006-2010 American Community Survey)

2035 User Benefit (Annual Person-Hours)

- < 0
- 0 - 25,000
- >25,000 - 50,000
- >50,000 - 75,000
- > 75,000
- Non-Populated Park Area

- Light Rail Alternatives
- Station Location
- Roadway
- Local Street
- Waterbody

Figure C-5
Travel Time Savings in 2035

Lynnwood Link Extension

C.7. CONCLUSIONS

The Lynnwood Link Extension is not anticipated to have disproportionately high and adverse effects on minority and low-income populations under Executive Order 12898 and USDOT Order 5610.2. For the most part, project impacts would be limited in scope and, after mitigation would not alter the character, functions or interactions of neighborhoods. Design measures, BMPs, offsetting benefits, and mitigation commitments would be effective in reducing the severity of impacts on all populations, including minority and low-income populations, to levels that would not be high and adverse.

The 18 neighborhoods in the study area are diverse. Percentages of minority, low-income, and transit-dependent populations are highest in the south Lynnwood and Lynnwood City Center neighborhoods. Research did not indicate that minority or low-income populations may be concentrated in areas immediately adjacent to the project corridor.

In addition, Sound Transit has conducted targeted outreach to minority and low-income populations in the project corridor. Comments on the project from minority and low-income populations pertained to the final decision-making process, parking at the proposed stations, construction noise and traffic, and property acquisition. The comments have not been substantially unlike those received by the general public.

The primary areas where adverse impacts may remain after mitigation are visual effects, but the impacts would not be high and adverse. Property acquisitions and the resulting displacements would be unavoidable, but would be mitigated by the compensation and relocation program. For visual impacts, minority and low-income populations may be among those living in neighborhoods where the project could change views or add new visual features; mitigation measures would help to reduce the impacts to moderate levels. Construction impacts, including noise, traffic, vibration, dust, and visual impacts, could affect residents and businesses immediately adjacent to the construction areas; the EIS identifies best practices to reduce effects to levels that would be below those considered high and adverse.

Early planning efforts, design measures, BMPs, and mitigation commitments would avoid and minimize potential adverse environmental impacts. As shown in Table C-2, the project is not anticipated to result in adverse effects that could not be mitigated. These impacts are expected to be the same in kind and magnitude as those that would be experienced by the general population living or working along the corridor.

Moreover, the Lynnwood Link Extension would have offsetting benefits. The light rail alternatives would improve access and provide travel time savings. They would

reduce air quality criteria pollutants and mobile source air toxic pollutants compared to existing conditions as well as the No Build Alternative. Ambient noise levels may be reduced, particularly where no noise barriers currently exist or where replacement noise barriers would be constructed. Because of recent planned and proposed changes in municipal comprehensive and neighborhood plans, proposed stations in Mountlake Terrace, Shoreline, and especially Lynnwood could result in more intensive land uses, economic development, and mixed land uses to support neighborhood livability and sustainability.

Minority and low-income populations residing near the light rail alignment and proposed stations could most easily take advantage of the project benefits. For those residing within approximately 0.5 mile of the stations, they could walk a short distance and take advantage of the new transit option, improved access to light rail transit, improved transit reliability, reduced travel time, and increased access to regional activity and employment centers. Transit connections, park-and-rides, and effective bicycle routes would extend the benefit area beyond the 0.5-mile typical walk distance. Analysis also showed all of the proposed stations are adjacent to minority and/or low-income populations and are located in FAZs that travel demand forecast modeling identified as generally providing the highest category of transit travel time savings. As such, the project benefits would accrue to those most likely to be affected by the construction of the nearby facilities.

As such, FTA has preliminarily concluded that Sound Transit's Lynnwood Link Extension would not result in disproportionately high and adverse effects on minority and low-income populations.

C.8. REFERENCES

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APPENDIX C ATTACHMENTS

Attachment C-1. Neighborhood Descriptions

There are 18 neighborhoods adjacent to the Lynnwood Link Extension corridor. With the exception of one neighborhood, the names and boundaries of these neighborhoods are defined by local governments – the cities of Seattle, Shoreline, Mountlake Terrace, and Lynnwood. The boundaries of the Hazelwood neighborhood, which is located east of I-5 at the north terminus of the corridor, was defined by Sound Transit, and reflects the neighborhood's common name. General neighborhood land use is described in the paragraphs below and demographic characteristics are compared to statistics for the King-Snohomish County region. Overall, the study area defined by these neighborhoods has a higher proportion of minorities (37.3 percent) and low-income persons (11.3 percent) than characterizes the two-county region. This discussion addresses neighborhoods from south to north in the corridor.

Maple Leaf

The Maple Leaf neighborhood is located south of Northgate Way between I-5 and 15th Avenue NE, Lake City Way, and NE 85th Street. The northwestern corner of the neighborhood is dominated by the Northgate Mall and higher density residential development and offices. Single-family residential housing dominates the remainder of the neighborhood. The neighborhood population totals about 9,400, is less diverse racially and ethnically than most of the corridor neighborhoods, and the poverty level is slightly lower than the regional level of 9.7 percent (Census 2010a and 2010b).

North College Park

The North College Park neighborhood is located south of Northgate Way between I-5, Aurora Avenue, and NE 85th Street. The western edge of the neighborhood is highway-oriented commercial development along Aurora Avenue. Higher density townhouse development projects have been constructed as infill replacing older single family residential development. The eastern portion of the neighborhood is dominated by the North Seattle Community College; while the northeastern area encompasses medical office buildings and high density residential complexes surrounding Northwest Hospital. This neighborhood population is about 6,700. It is over 18 percent Asian, almost 6 percent Black, and the poverty level is substantially greater than regional level - 17.1 percent compared to 9.7 percent (Census 2010a and 2010b).

Haller Lake

The Haller Lake neighborhood is located between I-5 and Aurora Avenue and extends from Northgate Way to NE 145th Street. The private Lakeside School

campus is located in the very far northeast corner of the neighborhood. The southern portion is dominated by the Northwest Hospital and the Evergreen-Washelli Cemetery. The remainder of the neighborhood is largely single-family residential. The population is about 8,200, with approximately 15 percent Asian, almost 11 percent other races, over 7 percent Black; and a poverty level greater than the regional level at over 10 percent (Census 2010a and 2010b).

Pinehurst

The Pinehurst neighborhood is located east of I-5 between NE Northgate Way and NE 145th Street (the Seattle city limits). The Jackson Park Golf Course dominates the northern one third of the neighborhood, while the southern edges are commercial developments north of the Northgate Mall and several higher-density residential complexes. In addition, there are several higher density residential complexes on the south side of NE 125th Street west of the neighborhood commercial district. The neighborhood population totals over 7,800 with high many Asians (17 percent) and Blacks (9 percent) (Census 2010a). The poverty level is greater than the regional statistic at over 14 percent (Census 2010b).

Parkwood

To the west of I-5, the Parkwood neighborhood extends west to Aurora Avenue between NE 145th and NE 160th Streets. It is a small residential neighborhood. Twin Ponds Park and two elementary schools are key neighborhood community facilities. The Metro North Base bus maintenance yard is located in the northeast corner of the neighborhood adjacent to I-5. Highway-oriented commercial extends along Aurora Avenue south of the Aurora Square Shopping Center at NE 155th Street. The central portion of this neighborhood is single-family residential. This small neighborhood has a population of about 3,400 with over 17 percent Asian, 10 percent other races, and almost 10 percent Hispanic (Census 2010a). Though over 8 percent, the poverty level is less than the regional level of 9.7 percent (Census 2010b).

Meridian Park

The Meridian Park neighborhood west of I-5 extends from NE 165th Street north to NE 185th Street and west to Aurora Avenue. The neighborhood contains several neighborhood parks as well as highway-oriented commercial development along Aurora Avenue. The City of Shoreline has just completed a major streetscape project along this portion of Aurora Avenue. The Shoreline School District Room Nine Community School and the Meridian Elementary School are centrally located in the neighborhood. The population is about 5,400 with over 19 percent Asian and 7 percent Black (Census 2010a). Though over 7 percent, the poverty level is less than the regional poverty rate (Census 2010b).

Ridgecrest

The Ridgecrest neighborhood extends east of I-5 from NE 145th to NE 175th Streets and is largely single-family residential in character. The Shoreline Fire Station No. 65 is at NE 155th Street just east of I-5. The Ridgecrest Elementary School is located on NE 165th Street. The NE 175th Street corridor is a major arterial with several churches and a library. The neighborhood commercial district is at the intersection of NE 175th Street and 15th Avenue NE. The population is about 6,400, with 17 percent Asian (Census 2010a). At almost 15 percent, the neighborhood poverty level is greater than the regional statistic (Census 2010b).

North City

The North City neighborhood east of I-5 is bounded by NE 175th and NE 195th Streets. The neighborhood is primarily single-family residential. A neighborhood commercial district is located on 15th Avenue NE between NE 175th and NE 185th Streets. The North City Park and a closed elementary school are located in the northwesterly corner of the neighborhood, immediately east of I-5. The closed school is occupied by two preschools. The neighborhood is less diverse than other neighborhoods though Asians comprise about 15.5 percent of the approximately 6,400 residents (Census 2010a). The poverty rate is about 9 percent and is slightly less than the regional statistic (Census 2010b).

Echo Lake

The Echo Lake neighborhood west side of I-5 extends from NE 185th Street north to the county boundary at NE 205th Street. This major arterial is SR 104 and connects Lake Forest Park, Ballinger Way, I-5, and Edmonds. The western edge of the neighborhood is characterized by highway-oriented commercial development along Aurora Avenue. The southeast corner of the intersection of Aurora Avenue and SR 104 is the Aurora Village and Costco shopping center. The Shoreline Conference Center, Shoreline School District athletic fields, and the Shoreline Pool are located in the southeastern corner of the neighborhood off NE 185th Street. Most of the north central portion of the neighborhood is dominated by two large residential subdivision developments and the Holyrood Cemetery. The population is about 5,800 and has a large Asian population (over 20 percent) (Census 2010a). The poverty level is slightly less than the regional statistic (Census 2010b).

Ballinger

Located east of I-5 and straddling SR 104 (Ballinger Way) is the Ballinger neighborhood, extends from NE 195th to NE 205th Streets. This neighborhood encompasses the I-5/SR 104 interchange where there is considerable commercial and office development east of the interchange. Some multifamily residential

developments are north of this commercial district. Further east, Ballinger Way divides single-family residential development. With a population of just over 3,000, the Ballinger neighborhood is diverse with over 9 percent Black and over 13 percent Asian (Census 2010a). The poverty level is less than poverty in the region at about 9 percent (Census 2010b).

Lake Ballinger

The Lake Ballenger neighborhood encompasses the lake by this name located west of I-5. The Lake Ballinger Golf Course, Lake Ballinger Park, and Nile Temple Country Club and Golf Course are northeast of the lake shoreline. Highway-oriented commercial development characterizes the western edge of the neighborhood along Aurora Avenue. North of 220th Street SW, the neighborhood is mixed higher density housing with small pockets of single-family residences. This neighborhood is the least populous neighborhood in the corridor with a total population of about 2,100. It is not very diverse with more than 78 percent White and total minorities (race and ethnicity) comprising less than 26 percent of the population (Census 2010a). The greater than 15 percent poverty rate exceeds the regional rate (Census 2010b).

Gateway

The Gateway neighborhood east side of I-5 extends between 212th and 236th Streets SW. Except for the commercial and office development in the immediate proximity of the I-5/244th Street SW interchange, the neighborhood is characterized by single-family residential development with several small parks. With a population of about 3,000, the neighborhood is racially diverse with more than 12 percent Hispanic (Census 2010a). At less than 4 percent, the poverty rate is less than half of the regional statistic (Census 2010b).

Town Center

The Town Center neighborhood is bounded by 236th and 220th Streets SW east of I-5. Key community facilities in the neighborhood include the Terrace Creek Park and Mountlake Terrace Public Library. The City's civic center, fire and police stations, and library are adjacent to the Veteran's Memorial Park and northeast of the existing Mountlake Terrace Transit Center. There is considerable low-density commercial and office development close to the intersection of 232nd Street SW and 56th Avenue W where a new city center is planned. Centrally located are the Mountlake Terrace Recreation Pavilion and Evergreen Playfield Complex. The Terrace Park School and Jack Long Park are located in the northwest portion of the neighborhood immediately east of I-5 and surrounded by single-family residences. With a population of about 3,500, this neighborhood is less diverse than regional statistic with over 76 percent White, though more than 10 percent of the population

is Hispanic (Census 2010a). About 4 percent of the population livers below the poverty level, which is less than half of the regional rate (Census 2010b).

Melody Hills

The Melody Hills neighborhood is west of I-5 between 226th and 212th Streets SW. The western portion of the neighborhood is dominated by commercial and office development, particularly the very large Premera Blue Cross office complex. A small single-family residential area is located immediately south of Halls Lake. Another is located immediately west of I-5 between 226th and 220th Street SW, which is commercial. The Kings Temple Christian School and several preschools are located in the now closed Melody Hill Elementary School at 222nd Street SW adjacent to I-5. With a total population of about 2,300, the neighborhood is diverse with almost 18 percent of the population Hispanic (Census 2010a). Moreover, the poverty rate exceeds 15 percent, which is higher than the regional level (Census 2010b).

Cascade View

East of I-5, the Cascade View neighborhood extends from 220th to 212th Streets SW and largely medium-density multifamily residential in character. The southeast corner of the neighborhood is anchored by the Mountlake Terrace High School. Mountain View Villa in the eastern portion of the neighborhood is a manufacture home community. This neighborhood has a total population of almost 4,800 that is diverse with many Asian (more than 15 percent), and Hispanic populations (almost 10 percent) (Census 2010a). At less than 9 percent, the poverty level is lower than the regional statistic (Census 2010b).

Hazelwood

The Hazelwood neighborhood encompasses portions of incorporated Lynnwood and unincorporated Snohomish County west of I-5 between 212th and 196th Streets SW. The Hazelwood Elementary School is centrally located within the neighborhood. Highway-oriented commercial is in the southeast quadrant of the 44th Avenue W intersection and single family residences are west of the arterial. A shopping center is in the northeast quadrant of the neighborhood at the intersection of 44th Avenue W and 212th Street SW. The 28th Avenue W intersection is characterized by highway commercial (e.g., Lowes, Whole Foods, and two hotels). The population of this neighborhood is 3,700 and has a large Asian population (over 22 percent), but the Hispanic population is comparatively small (6.6 percent) (Census 2010a). The poverty level also is lower than the regional statistic at less than 7 percent (Census 2010b).

South Lynnwood

The South Lynnwood neighborhood extends from 212th Street SW at the Lynnwood city boundary north to 196th Street SW between Aurora Avenue and 52nd Avenue W. Scriber Lake and park are located in the northwest corner of the neighborhood. Substantial highway-oriented commercial development and offices are located along this portion of Aurora Avenue as well as the north side of 212th Street SW. In addition, light industrial and multifamily residential complexes are found in this area. There are a few sizable undeveloped parcels in the neighborhood and several mobile home or manufactured housing communities. The neighborhood has a large Group Health medical clinic. Non-residential development is located west of I-5. The neighborhood population is almost 5,500 with about 15 percent Asian, over 7 percent Black, and almost 24 percent Hispanic. The poverty level is almost double the regional rate at almost 19 percent (Census 2010a and 2010b).

Lynnwood City Center

The Lynnwood Transit Center is located in the very southern portion of the Lynnwood City Center neighborhood, which extends from I-5 north to 192nd Street SW and east of 52nd Avenue W. Except for a small area of higher density multifamily residential immediately north and west of the Lynnwood Transit Center, the remainder of the neighborhood is largely commercial. Uses include restaurants, big box retail stores, hotels, and banks. The Lynnwood Convention Center is located in the northwest corner of the neighborhood. Other major uses include several medical centers, the Lynnwood municipal court, the City's police department offices, and several churches. Alderwood Mall is located several blocks north of the neighborhood boundary. With many non-residential land uses, the population of this neighborhood is the smallest of any of the corridor neighborhoods at only 1,600, though it is very diverse with 22.6 percent mixed races and 30 percent Hispanic (Census 2010a). The poverty level is high at 18 percent and is equal to the rate in the South Lynnwood neighborhood (Census 2010b).

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Attachment C-2. Neighborhood Population and Demographic Characteristics

Neighborhoods	Total Population	White %	Black or African American %	Am Indian and Alaska Native %	Asian %	Hawaiian & Pacific Islander %	Other or Two or More Races %	Hispanic (any race) %	Total Minority %
Lynnwood City Center	1,600	52.2	8.8	1.3	14.7	0.4	22.6	29.8	58.3
South Lynnwood	5,500	57.7	7.5	1.2	15.4	0.8	17.3	23.9	51.5
Hazelwood	3,700	64.6	4.2	1.1	22.5	1.1	6.6	6.6	38.6
Melody Hill	2,300	64.8	7.0	0.7	8.9	0.8	17.9	18.4	41.8
Cascade View	4,800	66.0	5.0	1.1	15.6	0.9	11.4	9.8	37.9
Town Center	3,500	76.1	2.0	1.6	9.8	0.6	9.9	10.8	29.0
Lake Ballinger	2,100	78.3	3.5	0.7	10.1	0.2	7.2	7.7	25.5
Gateway	3,000	69.9	5.3	0.8	10.9	0.9	12.1	12.4	35.0
Echo Lake	5,800	66.5	4.5	0.8	20.6	0.4	7.2	6.1	36.9
Ballinger	3,000	67.3	9.2	0.9	13.4	0.1	9.1	8.2	37.7
North City	6,400	70.7	4.6	0.8	15.5	0.7	7.7	7.7	33.5
Meridian Park	5,400	65.1	7.0	1.0	19.3	0.3	7.2	6.1	38.4
Parkwood	3,400	64.8	5.2	1.1	17.5	1.0	10.4	9.7	38.8
Ridgecrest	6,400	67.9	6.0	0.9	17.0	0.2	8.0	7.7	36.3
Haller Lake	8,200	65.5	7.3	1.1	15.0	0.4	10.7	9.0	38.0
Pinehurst	7,800	63.0	9.2	0.9	16.9	0.8	9.2	8.9	41.3
North College Park	6,700	65.0	5.8	0.9	18.8	0.3	9.1	7.3	38.3
Maple Leaf	9,400	75.1	3.4	0.7	12.2	0.3	8.1	5.6	27.7
Study Area	**88,900**	**67.0**	**5.9**	**1.0**	**15.8**	**0.5**	**9.9**	**9.6**	**37.3**
Two-County Region	**--**	**71.3**	**5.2**	**1.0**	**13.1**	**0.7**	**8.8**	**8.9**	**32.7**

Source: U.S. Bureau of the Census, 2010 Decennial Census.

Notes: Neighborhoods are generally listed north to south and east to west to reflect location in the project corridor. Census blocks have been aggregated to best fit the boundaries of the neighborhoods using 2010 Census data. Sums may not total due to rounding. The regional benchmark is the King-Snohomish County region. For individual neighborhoods minority statistics, the following fonts have been used:

Attachment C-3. Elementary School Demographic Characteristics

School District	Elementary School	Total Pop.	White %	Black African Am %	Am Indian/ AK Native %	Asian %	Hawaiian and Pac Is %	Two or More %	Hispanic %	Free or Reduced-Price Lunch %	Transitional Bilingual %
Edmonds	Lynnwood	525	44	7	0	20	0	9	16	44.4	21.2
Edmonds	Hilltop	570	58	3	1	20	0	8	9	23.8	9.7
Edmonds	Hazelwood	426	53	4	1	14	0	12	17	38.6	17.1
Edmonds	Cedar Valley Community	430	25	5	0	13	0	12	52	83.1	42.9
Edmonds	Cedar Way	378	53	6	0	15	0	12	14	38.3	15.4
Edmonds	College Place	472	27	10	1	8	0	11	45	73.9	40.5
Edmonds	Chase Lake	359	49	10	1	6	0	13	21	57.8	19.9
Edmonds	Mountlake Terrace	439	54	5	0	8	0	11	22	56.3	16.8
Edmonds	Terrace Park	326	49	5	1	9	0	16	20	42.1	15.5
Edmonds	Westgate	461	51	8	0	9	0	10	19	35.6	12.7
Shoreline	Echo Lake	486	48	6	0	20	0	10	16	36.3	15.2
Shoreline	Meridian Park	553	46	10	0	20	0	9	13	30.4	12.6
Shoreline	Parkwood	427	43	10	2	18	0	12	11	48.7	19.6
Shoreline	Ridgecrest	533	50	7	0	17	0	9	11	23.5	1.2
Seattle	Olympic Hills	267	28	25	1	14	0	19	24	74.9	24.0
Seattle	Northgate	231	10	24	2	10	0	22	45	88.4	38.8
Seattle	Olympic View	469	57	11	1	13	0	11	9	29.9	2.3
Two-County Region		**-**	**71.3**	**5.2%**	**1.0**	**13.1**	**0.7**	**8.8**	**8.9**	**-**	**-**

Source: October Enrollment Report for Public Schools – School Level Data 12/20/11 http://www.k12.wa.us/dataAdmin/ and http://reportcard.ospi.k12.wa.us/summary.aspx?schoolId=2512&OrgType=4&reportLevel=School&year=2010-11. The free or reduced-price lunch and transitional bilingual program participation rates date from May 2010.

Note: The elementary schools are listed north to south and east to west to generally reflect location in the corridor. In addition, a total percent of minority population is not calculated as the school districts report race and ethnicity different than data reported by the U.S. Census Bureau.

Attachment C-4. Limited English Proficiency Characteristics

Census CT	City	Total Population	Speak Only English	Speak English Less Than Very Well	Percent of Those Who Speak a Foreign Language					
					Spanish	Chinese	Korean	Vietnamese	Tagalog	African
519.05	Lynnwood	8,000	71%	13%	14%	12%	16%	16%	10%	1%
517.01	Lynnwood	4,700	67%	19%	31%	9%	10%	7%	3%	8%
517.02	Lynnwood	5,600	62%	18%	31%	24%	7%	8%	0%	2%
514	Lynnwood	7,500	57%	24%	48%	9%	7%	1%	3%	6%
513	MLT	7,200	76%	12%	22%	2%	20%	12%	1%	0%
512	MLT	4,200	79%	9%	34%	6%	0%	9%	12%	9%
511	MLT	3,700	86%	5%	16%	8%	5%	12%	6%	15%
510	MLT	4,400	72%	16%	43%	19%	18%	1%	0%	7%
509	MLT	3,200	78%	7%	27%	3%	15%	0%	4%	12%
203	Shoreline	6,400	80%	11%	4%	21%	14%	2%	24%	8%
204.01	Shoreline	3,400	78%	8%	13%	10%	4%	0%	24%	11%
205	Shoreline	6,300	76%	8%	30%	12%	11%	4%	11%	15%
206	Shoreline	3,700	72%	9%	21%	15%	3%	3%	13%	23%
210	Shoreline	5,600	72%	16%	20%	18%	0%	3%	32%	9%
211	Shoreline	4,100	71%	10%	18%	14%	4%	2%	11%	17%
2	Seattle	7,600	77%	14%	30%	22%	2%	5%	6%	2%
3	Seattle	2,600	80%	11%	19%	44%	0%	0%	7%	0%
6	Seattle	7,600	67%	13%	14%	29%	4%	6%	6%	23%
7	Seattle	4,400	72%	17%	11%	15%	3%	7%	5%	22%
11	Seattle	2,500	79%	5%	11%	32%	0%	0%	5%	25%
12	Seattle	6,500	68%	16%	19%	19%	6%	2%	25%	7%
13	Seattle	4,300	69%	17%	31%	26%	3%	0%	10%	12%
18	Seattle	4,500	90%	3%	32%	4%	8%	12%	12%	0%
19	Seattle	4,200	83%	5%	31%	2%	9%	4%	3%	18%
20	Seattle	3,400	88%	5%	19%	7%	2%	11%	0%	0%
Study Area	**-**	**125,800**	**74%**	**13%**	**25%**	**16%**	**8%**	**5%**	**9%**	**10%**
Two-County Region	**-**	**2,644,600**	**78%**	**10%**	**28%**	**11%**	**6%**	**7%**	**6%**	**5%**

Source: U.S. Bureau of the Census, 2006-2010 American Community Survey.

Notes: The above 2006–2010 American Community Survey data have not been adjusted for margins of error; and at census tract (CT) geographies, the margins of error can exceed 35%, which is considered acceptable in social research. Based on 2006–2010 American Community Survey data for the place of birth for those not born in the United States, the two largest groups born in Africa were from Ethiopia and Eritrea. Sums may not total due to rounding.

Attachment C-5. Neighborhood Household Characteristics

		Age	Types of Households			
Neighborhoods	Total Population	Children/Elderly %	1-Person Households %	Husband-Wife Family Households %	Family Households with Children %	Non-Family Households %
Lynnwood City Center	1,600	26/7	39	13	29	9
South Lynnwood	5,500	13/9	38	17	27	10
Hazelwood	3,700	23/9	19	30	33	9
Melody Hill	2,300	26/7	26	20	36	10
Cascade View	4,800	23/7	35	17	29	11
Town Center	3,500	22/12	28	26	29	9
Lake Ballinger	2,100	17/17	36	25	21	10
Gateway	3,000	22/10	27	26	27	10
Echo Lake	5,800	18/14	39	22	21	11
Ballinger	3,000	20/9	34	21	26	12
North City	6,400	19/12	32	26	25	10
Meridian Park	5,400	21/13	25	27	29	10
Parkwood	3,400	19/17	32	25	23	11
Ridgecrest	6,400	20/12	25	27	29	9
Haller Lake	8,200	19/11	30	25	23	14
Pinehurst	7,800	14/17	47	17	16	13
North College Park	6,700	12/7	38	17	15	23
Maple Leaf	9,400	17/9	37	20	21	16
Study Area	**88,900**	**19/11**	**34**	**22**	**24**	**12**

Source: U.S. Bureau of the Census, 2010 Decennial Census.

Notes: Neighborhoods are generally listed north to south and east to west to reflect location in the corridor. Census blocks have been aggregated to best fit the boundaries of the neighborhoods using 2010 Census data. Other types of households are included in the census data, so percentages cannot be summed to get 100 percent of household types. Sums may not total due to rounding.

Attachment C-6. Neighborhood Housing Characteristics

Neighborhoods	Dwelling Units	Owner-Occupied Dwelling %	Renter-Occupied Dwelling %	Single Family/Mobile Home %
Lynnwood City Center	700	9	91	26/2
South Lynnwood	2,500	39	61	26/2
Hazelwood	1,400	61	39	71/1
Melody Hill	900	45	55	36/0
Cascade View	2,200	49	51	63/0
Town Center	1,400	72	28	85/5
Lake Ballinger	1,000	70	30	36/0
Gateway	1,200	77	23	85/5
Echo Lake	2,800	50	50	55/0
Ballinger	1,400	44	56	59/2
North City	2,800	67	33	67/0
Meridian Park	2,100	67	33	76/0
Parkwood	1,500	62	38	78/0
Ridgecrest	2,500	71	29	69/1
Haller Lake	3,700	63	37	60/3
Pinehurst	4,200	33	67	36/0
North College Park	3,500	39	61	33/1
Maple Leaf	4,900	57	43	69/0
Study Area	**41,000**	**54**	**46**	**55/1**

Source: U.S. Bureau of the Census, 2010 Decennial Census and 2006-2010 American Community Survey.

Notes: Neighborhoods are generally listed north to south and east to west to reflect location in the corridor. Census blocks have been aggregated to best fit the boundaries of the neighborhoods for dwelling unit, owner-occupied dwelling, and renter-occupied dwelling data from the 2010 Census. Census tracts have been aggregated to best fit the boundaries of the neighborhoods for single family and mobile home housing data from the 2006-2010 American Community Survey. Sums may not total due to rounding.

Attachment C-7. Neighborhood Income and Poverty Characteristics

Neighborhoods	Median Household Income (rounded)	Households with Public Assistance %	Population Below Poverty %	Other Means of Travel to Work due to No Personal Vehicle Available in Household %
Lynnwood City Center	$34,000	6	18.6	8
South Lynnwood	$34,000	6	18.6	8
Hazelwood	$75,000	6	6.6	2
Melody Hill	$56,000	4	15.8	1
Cascade View	$58,000	6	8.5	4
Town Center	$58,000	1	3.7	1
Lake Ballinger	$56,000	4	15.8	1
Gateway	$58,000	1	3.7	1
Echo Lake	$55,000	1	9.5	2
Ballinger	$63,000	2	9.3	3
North City	$62,000	6	9.1	3
Meridian Park	$67,000	6	7.2	2
Parkwood	$68,000	4	8.2	0
Ridgecrest	$58,000	4	14.8	0
Haller Lake	$58,000	3	10.4	4
Pinehurst	$46,000	3	14.6	7
North College Park	$57,000	2	17.1	2
Maple Leaf	$65,000	1	9.5	2
Study Area	**$58,000**	**4**	**11.3**	**3**
Two-County Region	**$68,000**	**0**	**9.7**	**4**

Source: U.S. Bureau of the Census, 2006-2010 American Community Survey.

Notes: Neighborhoods are generally listed north to south and east to west to reflect location in the corridor. Census tracts have been aggregated to best fit the boundaries of the neighborhoods using data from the 2006-2010 American Community Survey. Sums may not total due to rounding. The region is the King-Snohomish County region. For individual neighborhood poverty data, the following fonts have been used:

Attachment C-8. Racial and Ethnic Characteristics of the Alternatives (0.5-mile buffer area)

Segment & Stations	Pop.	White %	Black %	Am Ind or Ak Na %	Asian %	Na HI or Pac Is %	Other Races %	Hispanic (any race) %	Total Minority %
Segment A									
Alignment A – all alternatives	35,200	65.4	6.3	0.9	18.5	0.5	8.4	7.4	38.4
Stations A1	12,300	67.7	6.0	0.8	16.9	0.5	8.0	7.1	36.1
Stations A3	12,300	67.7	6.0	0.8	16.9	0.5	8.0	7.1	36.1
Stations A5	18,900	68.0	5.0	0.9	17.6	0.5	8.1	6.9	35.8
Stations A7	18,900	68.0	5.0	0.9	17.6	0.5	8.1	6.9	35.8
Stations A10	17,300	67.3	5.9	0.8	17.5	0.5	8.1	7.0	36.6
Stations A11	17,300	67.3	5.9	0.8	17.5	0.5	8.1	7.0	36.6
Segment B									
Alignment B1	23,200	67.9	5.3	1.0	14.2	0.6	11.1	11.4	37.2
Alignment B2	25,100	67.3	5.4	0.9	14.4	0.7	11.3	11.7	37.9
Alignment B2A	25,100	67.3	5.4	0.9	14.4	0.7	11.3	11.7	37.9
Alignment B4	26,700	67.0	5.4	1.0	14.5	0.7	11.5	12.2	38.4
Stations B1	4,800	73.3	5.1	1.1	10.5	0.5	9.5	9.5	31.1
Stations B2	4,800	73.3	5.1	1.1	10.5	0.5	9.5	9.5	31.1
Stations B2A	8,800	71.6	4.9	1.1	10.2	0.5	11.7	12.1	33.4
Stations B4	5,000	75.9	3.5	1.1	10.0	0.6	9.0	9.4	28.3
Segment C									
Alignment C1	13,100	60.9	6.0	1.3	16.1	0.9	14.7	17.3	45.4
Alignment C2	12,800	60.8	6.1	1.2	16.2	1.0	14.8	17.5	45.6
Alignment C3	12,400	60.3	6.2	1.3	16.6	0.9	14.7	16.5	45.6
Stations C1	4,200	58.6	6.4	1.2	18.9	0.5	14.5	17.5	47.7
Stations C2	4,200	58.1	6.5	1.1	19.8	0.6	14.0	17.9	48.6
Stations C3	4,600	57.7	7.0	1.4	19.3	0.7	13.8	17.2	48.7
Two-County Region	**-**	**71.3**	**5.2**	**1.0**	**13.1**	**0.7**	**8.8**	**8.9**	**32.7**

Source: U.S. Bureau of the Census, 2010 Decennial Census.

Notes: Segment alternative alignments and stations are listed south to north. Census blocks have been aggregated to best fit the 0.5-mile buffer area surrounding the alignments and stations using 2010 Census data. Sums may not total due to rounding. The region is the King-Snohomish County region. For minority data for alternative alignments and stations, the following fonts have been used:

Attachment C-9. Household Characteristics of the Alternatives (0.5-mile buffer area)

		Age	Types of Households			
Segment & Stations	Total Population	Children/Elderly %	1-Person Households %	Husband-Wife Family Households %	Family Households with Children %	Non-Family Households %
Segment A						
Alignment A – all alternatives	35,200	18/13	34	23	22	13
Stations A1	12,300	20/13	29	27	26	10
Stations A3	12,300	20/13	29	27	26	10
Stations A5	18,900	19/13	28	27	25	11
Stations A7	18,900	19/13	28	27	25	11
Stations A10	17,300	18/13	30	26	25	11
Stations A11	17,300	18/13	30	26	25	11
Segment B						
Alignment B1	23,200	21/10	31	23	27	11
Alignment B2	25,100	21/10	30	23	28	11
Alignment B2A	25,100	21/10	30	23	28	11
Alignment B4	26,700	21/10	31	22	27	11
Stations B1	4,800	19/14	33	23	25	10
Stations B2	4,800	19/14	33	23	25	11
Stations B2A	8,800	21/11	31	22	28	11
Stations B4	5,000	19/15	33	23	25	10
Segment C						
Alignment C1	13,100	23/9	34	19	28	10
Alignment C2	12,800	23/8	33	19	28	10
Alignment C3	12,400	23/9	32	19	29	10
Stations C1	4,200	22/13	36	20	27	9
Stations C2	4,200	23/9	32	21	29	10
Stations C3	4,600	23/9	30	22	29	9

Source: U.S. Bureau of the Census, 2010 Decennial Census.

Notes: Segment alternative alignments and stations are listed south to north. Census blocks have been aggregated to best fit the 0.5-mile buffer area surrounding the alignments and stations using 2010 Census data. Other types of households are included in the census data, so percentages cannot be summed to get 100 percent of household types. Sums may not total due to rounding.

Attachment C-10. Housing Characteristics of the Alternatives (0.5-mile buffer area)

Segment & Stations	Dwelling Units	Owner-Occupied Dwelling %	Renter-Occupied Dwelling %	Single Family/Mobile Home %
Segment A				
Alignment A – all alternatives	16,400	55	45	56/1
Stations A1	5,100	66	34	66/0
Stations A3	5,100	66	34	66/0
Stations A5	8,000	68	32	64/1
Stations A7	8,000	68	32	64/1
Stations A10	7,400	65	35	64/1
Stations A11	7,400	65	35	64/1
Segment B				
Alignment B1	10,100	58	42	55/1
Alignment B2	10,800	58	42	55/1
Alignment B2A	10,800	58	42	55/1
Alignment B4	11,600	57	43	57/1
Stations B1	2,100	68	32	59/2
Stations B2	2,100	68	32	59/2
Stations B2A	3,800	62	38	48/2
Stations B4	2,200	69	31	59/2
Segment C				
Alignment C1	5,900	42	58	49/2
Alignment C2	5,700	42	58	49/2
Alignment C3	5,400	40	60	49/2
Stations C1	1,900	36	64	47/3
Stations C2	1,800	36	64	47/3
Stations C3	2,000	37	63	47/3

Source: U.S. Bureau of the Census, 2010 Decennial Census and 2006-2010 American Community Survey.

Notes: Segment alternative alignments and stations are listed south to north. Census blocks have been aggregated to best fit the 0.5-mile buffer area surrounding the alignments and stations for dwelling unit, owner-occupied dwelling, and renter-occupied dwelling data from the 2010 Census. Census tracts have been aggregated to best fit the 0.5-mile buffer area surrounding the alternative alignments and stations for single family and mobile home data from the 2006-2010 American Community Survey. Sums may not total due to rounding.

Attachment C-11. Income and Poverty Characteristics of the Alternatives (0.5-mile buffer area)

Segments and Stations	Median Household Income (rounded)	Households with Public Assistance %	Population Below Poverty %	Other Means of Travel to Work due to No Personal Vehicle Available in Household %
Segment A				
Alignment A – all alternatives	$57,000	3	11.3	3
Stations A1	$62,000	3	10.1	2
Stations A3	$62,000	3	10.1	2
Stations A5	$61,000	3	10.3	2
Stations A7	$61,000	3	10.3	2
Stations A10	$61,000	3	10.3	2
Stations A11	$61,000	3	10.3	2
Segment B				
Alignment B1	$55,000	4	11.1	3
Alignment B2	$55,000	4	11.1	3
Alignment B2A	$55,000	4	11.1	3
Alignment B4	$57,000	4	10.5	3
Stations B1	$59,000	3	9.7	2
Stations B2	$59,000	3	9.7	2
Stations B2A	$51,000	4	12.4	4
Stations B4	$57,000	4	10.0	2
Segment C				
Alignment C1	$54,000	5	12.3	3
Alignment C2	$54,000	5	12.3	3
Alignment C3	$54,000	5	12.3	3
Stations C1	$54,000	5	11.8	4
Stations C2	$44,000	5	11.8	4
Stations C3	$44,000	5	11.8	4
Two-County Region	**$68,000**	**0**	**9.7**	**4**

Source: U.S. Bureau of the Census, 2006-2010 American Community Survey..

Notes: Segment alternative alignments and stations are listed south to north. Census tracts have been aggregated to best fit the 0.5-mile buffer area surrounding the alignments and stations using data from the 2006-2010 American Community Survey. Sums may not total due to rounding. The region is the King-Snohomish County region. For poverty data for individual alternative alignments and stations, the following fonts have been used:

Attachment C-12. Most Common Languages Spoken by Students in Transitional Bilingual Programs at Study Area Elementary Schools

Schools	Addresses	Telephone	Languages	Contact	Date
Cedar Valley Community School	19200 56th Ave W, Lynnwood	425.431.7390		No response	05/04/12
Cedar Way Elementary School	22222 39th Ave W, Mountlake Terrace	425.431.7864	Spanish, Vietnamese, Ukrainian, Korean	Cheryl Schultz, Office Assistant	05/04/12
Chase Lake Elementary School	21603 84th Ave W, Edmonds	425.431.7495	Spanish, Korean, Russian	Connie Mo, Registrar	05/04/12
College Place Elementary	20401 76th Ave W, Lynnwood	425.431.7620	Spanish	Laura, Office Assistant	05/04/12
Echo Lake Elementary School	19345 Wallingford N, Shoreline	206.393.4338	Korean, Spanish, Vietnamese	Linda Boykon, Registrar	05/04/12
Hazelwood Elementary School	3300 204th SW, Lynnwood	425.431.7884	Spanish, Vietnamese	Dr. K. Parnell, Principal	05/11/12
Hilltop Elementary	20425 Damson Rd, Lynnwood	425.431.7604	Spanish, Vietnamese, Korean	Ruth, Registrar	05/11/12
Lynnwood Elementary School	18638 44th Ave W, Lynnwood	425.431.7615	Spanish, Vietnamese Russian	Dawn, Office Manager	05/11/12
Meridian Park Elementary School	17077 Meridian Ave N, Shoreline	206.393.4251	Spanish, Korean Vietnamese, Cantonese, Russian, Tagalog, Amharic	Chris Geginger, Communications Manager	05/11/12
Mountlake Terrace Elementary School	22001 52nd Ave W, Mountlake Terrace	425.431.7894		No response	05/11/12
Northgate Elementary School	11725 1st Ave NE, Seattle	206.252.4180	Spanish, Somali, Tagalog	Janice Brown, Office Manager	05/11/12
Olympic View Elementary School	504th NE 95th St, Seattle	206.252.5500		No response	05/11/12
Parkwood Elementary	1815 N 155th, Shoreline	206.393.4150	Spanish, Vietnamese, Korean, Cantonese	Rosanne, Registrar	05/11/12
Ridgecrest Elementary	16516 10th NE, Shoreline	206.393.4272	Cantonese, Vietnamese	Vickie, Registrar	05/11/12
Terrace Park School	5409 228th St SW, Mountlake Terrace	425.431.7482	Spanish, Vietnamese Tagalog	Debbie, Office Manager	05/11/12
Westgate Elementary	9601 220th St SW, Edmonds	425.431.7470		No response	05/11/12

Source: Telephone survey conducted by Parsons Brinckerhoff, May 2012.

Appendix D

Section 4(f) and Section 6(f) Correspondence

SOUNDTRANSIT

February 6, 2013

Dick Deal, Director
Parks, Recreation and Cultural Services Department
City of Shoreline
17500 Midvale Ave N
Shoreline, WA 98133

Dear Mr. Deal:

As part of the Lynnwood Link Extension Draft Environmental Impact Statement (DEIS) documentation process, Sound Transit and the Federal Transit Administration (FTA), as the lead federal agency, are evaluating the potential impacts of the project on public parks and recreational facilities. Sound Transit is working with the FTA to prepare a draft Section 4(f) Evaluation that describes the impacts of the project on these facilities. The draft Section 4(f) Evaluation will be included in the DEIS and is expected to be distributed to the public and agencies for comment in the spring of 2013.

The U.S. Department of Transportation Act of 1966 requires a Section 4(f) Evaluation. Under the Act, FTA cannot approve a transportation project such as Lynnwood Link Extension that requires the use of publicly-owned land from a significant public park, recreation area, or wildlife and waterfowl refuge, or any land from a significant historic site, unless a determination is made that:

- There is no feasible and prudent avoidance alternative, as defined in § 774.17, to the use of land from the property; and
- The action includes all possible planning, as defined in § 774.17, to minimize harm to the property resulting from such use; or
- The Administration determines that the use of the property, including any measure(s) to minimize harm (such as any avoidance, minimization, mitigation, or enhancement measures), will have a *de minimis* impact. A *de minimis* impact (23 CFR 774.17) is one that will not adversely affect the features, attributes, or activities qualifying the property for protection under Section 4(f).

Federal guidance encourages early coordination with officials with jurisdiction of the Section 4(f) resource to ascertain the position of the officials to obtain their preliminary views. The intent of our letter is to continue that early coordination and confirm previous discussions between Sound Transit and City of Shoreline staff regarding the project's potential impacts to parks and recreation resources. Throughout the EIS process and project design, Sound Transit and FTA will continue to consult with the school district to detail specific mitigation plans.

Federal regulations stipulate that "officials with jurisdiction over the Section 4(f) resource must concur in writing" with a *de minimis* finding (23 CFR 774.5(2)). The regulations also require that an opportunity for public review and comment concerning the effects of the project on the Section 4(f) resource be provided prior to such written concurrence. As per 23CFR 774.5, this requirement will be met with the distribution of the Draft EIS for review and comment by the public, agencies, and organizations. FTA will request final concurrence in

writing by the City of Shoreline on the *de minimis* finding following the comment period for the Draft EIS. At that time, it is anticipated that the City will provide final concurrence on *de minimis* determinations for Lynnwood Link Extension. Following the City's written concurrence, FTA will make final Section 4(f) and *de minimis* determinations, and the Final EIS will include documentation of the City's concurrence and FTA's determination.

The table below lists Ridgecrest Park as a City of Shoreline park facility that the Lynnwood Link Extension project would impact. Based on Sound Transit's review, this park resource is considered significant for purposes of Section 4(f). Given the potential project impacts and the proposed potential mitigation, Sound Transit believes that a preliminary *de minimis* determination can be made for Ridgecrest Park.

City of Shoreline Park Facility and Preliminary Determination of Section 4(f) Use

Resource	Purpose of Resource	Project Alternative	Impact on Resource	Potential Mitigation/Enhancement	Preliminary 4(f) Findings after Mitigation
Ridgecrest Park	Sporting events/active recreation	All Segment A Alternatives	Operational: Use of 0.3 acres at western edge, removing berm and trees. Property and visual impacts. Construction: potential temporary construction easement of area along proposed right of way.	Landscaping and restoration of affected area, barrier between light rail and park to maintain functionality of existing berm, replacement property in condition consistent with displaced park area as required by Forward Thrust.	*de minimis*

We ask that you provide your signature on this letter to confirm:

the City agrees Ridgecrest Park is a significant park and recreation resource; and

the City does not object to considering a potential Section 4(f) *de minimis* finding for Ridgecrest Park, and the City may provide a letter of concurrence with a *de minimis* finding after further public review and discussion of the Draft EIS and Draft Section 4(f) evaluation, and with general agreement upon appropriate mitigation measures.

This letter will assist Sound Transit as the project progresses toward a preferred alternative that would avoid a Section 4(f) use. Sound Transit acknowledges that a formal concurrence from the City of Shoreline will require further discussions with City staff and the Parks, Recreation and Cultural Services Board.

Sincerely,

Steve Kennedy
Senior Planner

Dick Deal, Director
City of Shoreline, Parks, Recreation and Cultural Services Department
Signature for Preliminary Concurrence

cc: Alicia McIntire, Senior Transportation Planner

SOUNDTRANSIT

February 22, 2013

Marla Miller, Deputy Superintendent
Shoreline Public Schools
18560 1st Ave NE
Shoreline, WA 98155

Dear Ms. Miller:

As part of the Lynnwood Link Extension Draft Environmental Impact Statement (DEIS) documentation process, Sound Transit and the Federal Transit Administration (FTA), as the lead federal agency, are evaluating the potential impacts of the project on public parks and recreational facilities. Sound Transit is working with the FTA to prepare a draft Section 4(f) Evaluation that describes the impacts of the project on these facilities. The draft Section 4(f) Evaluation will be included in the DEIS and is expected to be distributed to the public and agencies for comment in the spring of 2013.

The U.S. Department of Transportation Act of 1966 requires a Section 4(f) Evaluation. Under the Act, FTA cannot approve a transportation project such as Lynnwood Link Extension that requires the use of publicly-owned land from a significant public park, recreation area, or wildlife and waterfowl refuge, or any land from a significant historic site, unless a determination is made that:

- There is no feasible and prudent avoidance alternative, as defined in § 774.17, to the use of land from the property; and
- The action includes all possible planning, as defined in § 774.17, to minimize harm to the property resulting from such use; or
- The Administration determines that the use of the property, including any measure(s) to minimize harm (such as any avoidance, minimization, mitigation, or enhancement measures), will have a *de minimis* impact. A *de minimis* impact (23 CFR 774.17) is one that will not adversely affect the features, attributes, or activities qualifying the property for protection under Section 4(f).

Federal guidance encourages early coordination with officials with jurisdiction of the Section 4(f) resource to ascertain the position of the officials to obtain their preliminary views. The intent of our letter is to continue that early coordination and confirm previous discussions between Sound Transit and Shoreline Public Schools staff regarding the project's potential impacts to parks and recreation resources. Throughout the EIS process and project design, should Alternative A1 be identified as the preferred alternative, Sound Transit and FTA will continue to consult with the school district to detail specific mitigation plans.

Federal regulations stipulate that "officials with jurisdiction over the Section 4(f) resource must concur in writing" with a *de minimis* finding (23 CFR 774.5(2)). The regulations also require that an opportunity for public review and comment concerning the effects of the project on the Section 4(f) resource be provided prior to such written concurrence. As per 23

CFR 774.5, this requirement will be met with the distribution of the Draft EIS for review and comment by the public, agencies, and organizations. FTA will request final concurrence in writing by Shoreline Public Schools on the *de minimis* finding following the comment period for the Draft EIS. At that time, it is anticipated that Shoreline Public Schools will provide final concurrence on *de minimis* determinations for Lynnwood Link Extension. Following the Shoreline Public School's written concurrence, FTA will make final Section 4(f) and *de minimis* determinations, and the Final EIS will include documentation of the Shoreline Public School's concurrence and FTA's determination.

The table below lists Shoreline Park and Stadium as a Shoreline Public School park facility that the Lynnwood Link Extension project would impact. Based on Sound Transit's review, this park resource is considered significant for purposes of Section 4(f). Given the potential project impacts and the proposed potential mitigation, Sound Transit believes that a preliminary *de minimis* determination can be made for Shoreline Park and Stadium.

Shoreline Public Schools Facility and Preliminary Determination of Section 4(f) Use

Resource	Purpose of Resource	Project Alternative	Impact on Resource	Potential Mitigation	Preliminary 4(f) Findings after Mitigation
Shoreline Park and Stadium	Sporting events/active recreation	A1	Operations: Relocated local road would require use of 0.18 acre of stadium area and parking lot on east side of property. Reduced parking, no impact to use of stadium facility. Construction: Potential additional temporary parking reduction, visual and noise impacts.	Restoration of area after construction and facility access improvements to be defined.	*de minimis*

We ask that you provide your signature on this letter to confirm:

- Shoreline Public Schools agrees Shoreline Park and Stadium is a significant park and recreation resource; and
- Shoreline Public Schools does not object to considering a potential Section 4(f) *de minimis* finding for Shoreline Park and Stadium, and Shoreline Public Schools may provide a letter of concurrence with a *de minimis* finding after further public review and discussion of the Draft EIS and Draft Section 4(f) evaluation, and with general agreement upon appropriate mitigation measures.

This letter will assist Sound Transit as the project progresses toward a preferred alternative that would avoid a Section 4(f) use. Sound Transit acknowledges that a formal concurrence from the Shoreline Public Schools will require further discussions with Shoreline Public Schools staff.

Sincerely,

Steve Kennedy
Senior Planner

Marla Miller, Deputy Superintendent
Shoreline Public Schools
Signature for Preliminary Concurrence

Appendix E

List of Preparers

Appendix E – List of Preparers

Name/Affiliation	Project Role	Education	Years of Experience
Steve Kennedy/Sound Transit	Environmental Manager	BA, Urban Studies (1972) MUP, Urban Planning (1978)	26
Lauren Swift/Sound Transit	Environmental Planner	BA, Environmental Studies (1993) MA, Regional Planning (1995)	18
Daryl Wendle/Parametrix	Environmental Analysis Lead	BA, English (1986) MA, English (1988)	25
Maya Hunnewell/Parametrix	Environmental Planner; EIS Writer; Acquisitions, Displacements, and Relocations Lead	BA, Government and Legal Studies (2001) MA, Public Administration (2006)	8
Ginette Lalonde/Parsons Brinckerhoff	Air Quality and Greenhouse Gases Lead	BA, Applied Science and Civil Engineering (2000)	15
Alice Lovegrove/Parsons Brinckerhoff	Air Quality and Greenhouse Gases Lead QC	BE, Engineering Science (1987) MS, Environmental and Waste Management (1992)	25
Brent Hicks/Historical Research Associates, Inc.	Archaeological Resources	BA, Anthropology (1986) BA, Recreation and Parks Administration (1987) MA, Anthropology (1991)	28
Connie Walker Gray/Gray Lane Preservation and Planning	Archaeological and Historic Resources QC	BA, History and Spanish (1994) MA, Urban Design and Planning (2001) Certificate in Historic Preservation Planning) (2001)	13
Jenny Dellert/Historical Research Associates, Inc.	Archaeological Resources	BA, Anthropology–Archaeology (1996) MA, Anthropology (2001)	13
Tim Bailey/GeoEngineers	Geology and Soils	BS, Civil Engineering (2002) MS, Civil Engineering (2004)	10
Daniel Campbell/ GeoEngineers	Geology and Soils	BS, Civil Engineering (1988) MS, Engineering (1989)	24
Peter Geiger/Parsons Brinckerhoff	Economics Lead	BS, Physics (1984) M.Sc., Physics (1988)	25
Colin Worsley/Parametrix	Ecosystems Lead	BS, Botany (1998) Certificate, Wetland Science and Management (2001)	13
Matt Maynard/Parametrix	Ecosystems	BS, Environmental Policy (2002) Certificate, Wetland Science and Management (2005)	8
Mike Hall/Parametrix	Ecosystems	BA, Music History (1990)	22
Peter Chen/Parametrix	Energy	BA, Environmental Studies (2001) BS, Biology (2001) MS, Transportation Engineering (2006)	10
Jim Glassley/Parametrix	GIS	BA, Physical Geography and Cartograpy (1990)	23

Name/Affiliation	Project Role	Education	Years of Experience
Craig Hainey/Parametrix	GIS	BS, Political Science (1990)	12
Rick Wadsworth/Parametrix	Hazardous Materials Lead	BS, Environmental Engineering (1994) MS, Environmental Engineering (1995)	17
Jessica Roberts/Parametrix	Hazardous Materials	BS, Environmental Studies (1998) MS, Environmental Engineering (2005)	9
Mimi Sheridan/Sheridan Consulting Group	Historic Resources	BA, History and Political Science (1970) MUP, Urban Planning (1994)	20
Mark Stewart/Parsons Brinckerhoff	Land Use EIS Lead; Social/EJ, Air Quality/GHG and Economics QC	BA, Urban Planning (1977) BA, Landscape Architecture, (1982)	26
Hussein Rehmat/Parsons Brinckerhoff	Land Use	BA, Community, Environment, and Planning (2008)	5
Michael Minor/Michael Minor Associates	Noise Technical Report Lead	BA, Physics (1988) BA, Mathematics (1988)	25
Lawrence Spurgeon/Parsons Brinckerhoff	Noise and Vibration EIS Section Lead; Noise and Vibration Technical Report QC	MSE, Environmental Engineering (1993) BS, Industrial Engineering and Operations Research (1992)	18
Curt Warber/Parametrix	Parks and Recreation EIS Lead; Visual and Aesthetics QC	BA, Biology (1985) MLA, Landscape Architecture (1992)	24
Ardith Lanstra/Wakerobin LLC	Permits, Sustainability EIS Section, and BMPs	MBA, Business Administration (2008) Certificate, Wetland Science and Management (2000) MLA, Landscape Architecture (1996) BA, Design and Planning Studies (1993)	19
Mary Jo Porter/The Underhill Company	Transportation Planner, Public Services, Safety and Security	BA, Architecture (1972) MS, Transportation Engineering (1974) MBA, Business Administration (1985)	39
Betsy Minden/Parsons Brinckerhoff	Social Resources/EJ	BA, Biological Studies (1978) MUP, Urban Planning (1985)	27
Sybil Gooljar/Parametrix	Technical Editor	BA, English (1974) Scientific and Technical Communications Master's Program (1980)	25
Jill Irwin/ Irwin Writing/Editing	Technical Editor	B.A., Art History (1980) Certificate in Technical Writing (1994)	19
David Shelton/Parsons Brinckerhoff	Transportation	BA, Anthropology (1992) MCP, City and Regional Planning (1997)	16
Chris Wellander/Parsons Brinckerhoff	Transportation Planning and Analysis Task Lead and Technical Report Lead; Transportation EIS Section QC	BS, Civil Engineering (1980) MS, Civil Engineering – Urban Transportation Planning (1985)	33
Sandra Fann/Parametrix	Transportation EIS Section Lead	BS, Civil Engineering (1995) BA, Dance (1995)	18

Name/Affiliation	Project Role	Education	Years of Experience
Dan Mathias/Perteet	Utilities	BS, Civil Engineering (1979) MS, Civil Engineering (1997)	30
James Phillips/Wilson Ihrig	Vibration Analysis and Technical Report Lead	BS, Aerospace Engineering (1986) MS, Acoustics (1989)	24
David Sherrard/Parametrix	Environmental Planner Visual and Aesthetics	BA, Geography (1976)	36
Julie Brandt/Parametrix	Water Resources Lead	BS, Civil Engineering (1997)	16
Debbie Fetherston/Parametrix	Word Processing Specialist	Ballard High School (1983)	18
Ryan Scally/Parametrix	Word Processing Specialist	BS, Business Administration and Management Information Systems (2003)	8