3.5 Social Impacts, Community Facilities, and Neighborhoods

This section evaluates how the proposed project could affect communities and neighborhoods. Compatibility with the existing and planned character of neighborhoods, including location, development pattern, demographics, community resources, economic characteristics, safety and security, and accessibility are described.

3.5.1 Introduction to Resources and Regulatory Requirements

Consistent with guidance from the Federal Transit Administration (FTA) and Federal Highway Administration (FHWA), four key neighborhood and community issues are considered when addressing the affected environment and potential impacts of a transportation project: changes in neighborhood quality, barriers to social interaction, impacts on community resources, and impacts on safety and security. This analysis also considers demographics of potentially affected areas.

Generally, neighborhoods and community facilities adjacent to the build alternative sites are most likely to be affected by project construction and operation. Much of the analysis for this section overlaps with issues evaluated in other sections, which may be consulted where appropriate: Section 3.3, Land Use; Section 3.4, Economics; Section 3.7, Air Quality and Greenhouse Gases; Section 3.8, Noise and Vibration; Section 3.15, Public Services; Section 3.18, Parklands and Open Space; Appendix C, *Environmental Justice,* which is summarized in Section 3.5.7, Environmental Justice; and Appendix E.1, *Transportation Technical Report*.

3.5.2 Methods

The study area for social impacts, community facilities, and neighborhoods consists of a 0.5-mile radius from each of the build alternative sites. Neighborhoods located in the study area are identified in Figures 3.5-1 to 3.5-4. These figures also identify community facilities, including parks, schools, religious institutions, social services, and public service facilities.

The demographic makeup of populations (percentage of the total population that is minority, low-income, and considered senior citizens) in the study area is shown in Table 3.5-1. These estimates are based on 2010 Census and 2011 American Community Survey data for the census tracts and blocks within the study area. Population data for residents living in the study area were aggregated to create a demographic profile of the total population that would be affected by the proposed project.

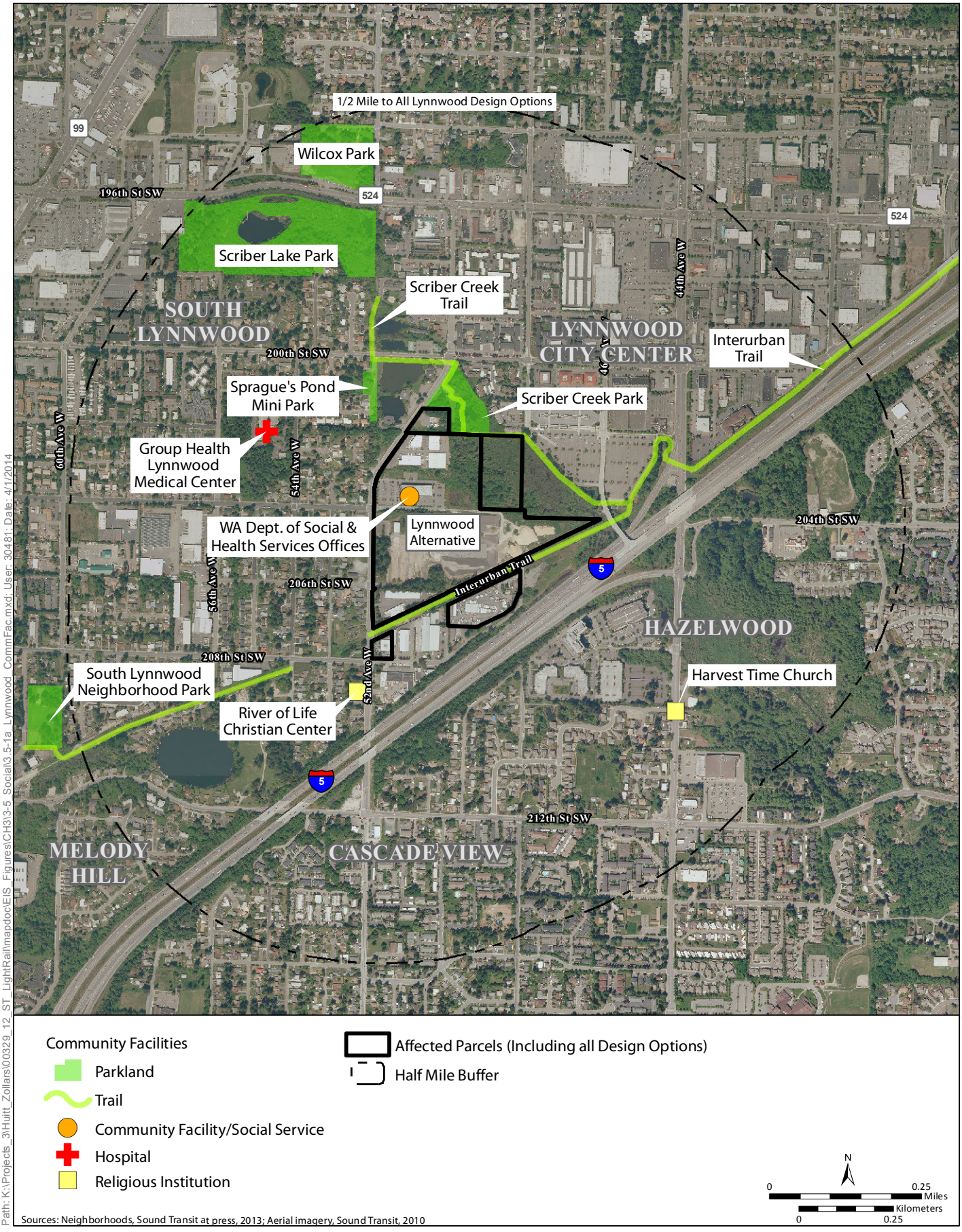

Figure 3.5-1a: Lynnwood Alternative—Community Facilities
Sound Transit Link Light Rail OMSF Draft EIS

Figure 3.5-1b: Lynnwood Alternative, BNSF Storage Tracks*—Community Facilities
Sound Transit Link Light Rail OMSF Draft EIS
*The BNSF Storage Tracks are located in Bellevue

Figure 3.5-2: BNSF Alternative—Community Facilities
Sound Transit Link Light Rail OMSF Draft EIS

Sources: Neighborhoods, Trails & Parks, King County, 2013; Site plans, Huitt Zolars, 2013; Aerial Imagery, City of Bellevue, 2013

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Figure 3.5-3: BNSF Modified Alternative—Community Facilities
Sound Transit Link Light Rail OMSF Draft EIS

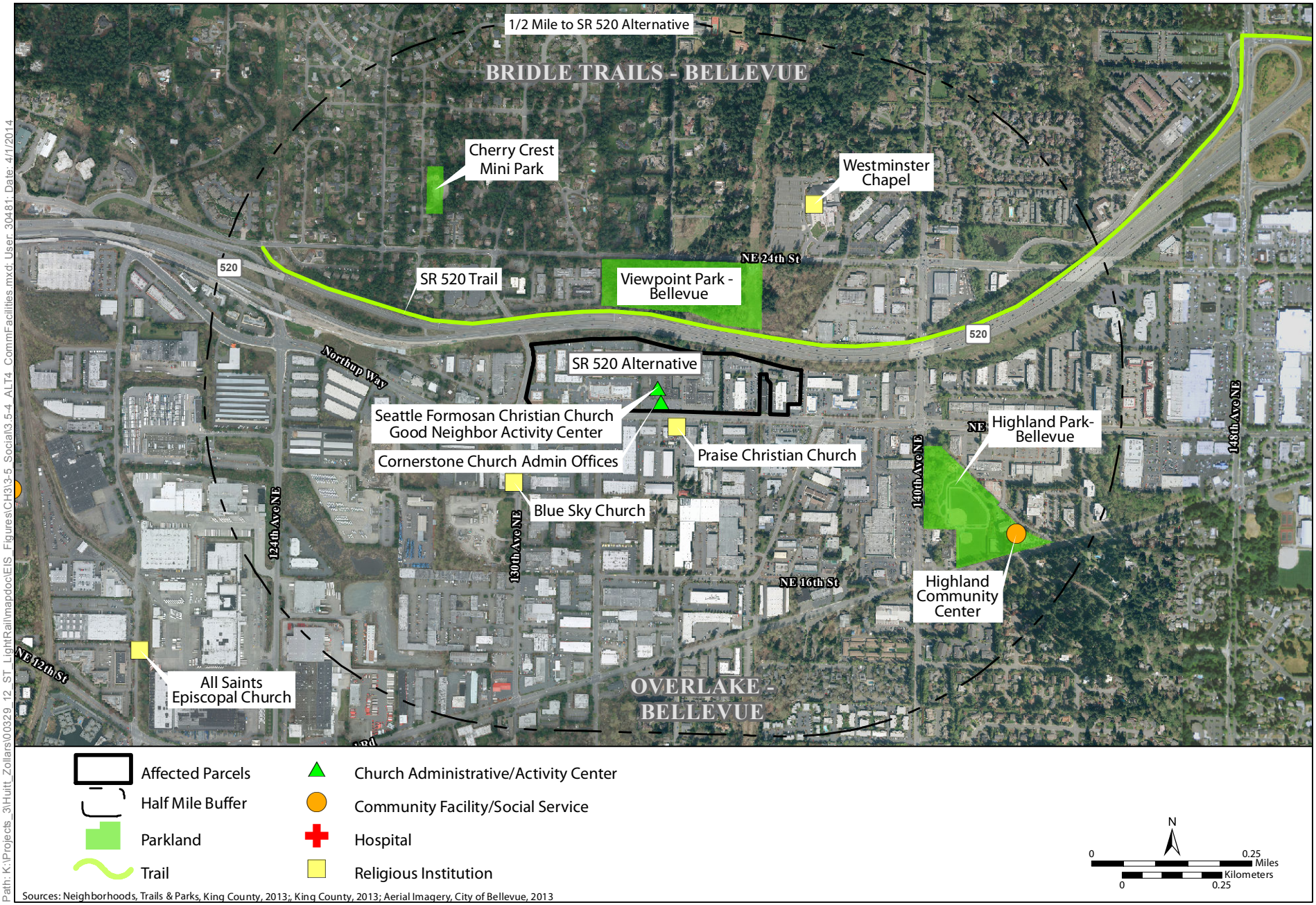

Figure 3.5-4: SR 520 Alternative—Community Facilities
Sound Transit Link Light Rail OMSF Draft EIS

3.5.3 Affected Environment

Each of the build alternative sites has similar proportions of senior citizen residents (Table 3.5-1). The Lynnwood Alternative site contains a relatively smaller minority population as compared to the other alternative sites, but has a higher percentage of low-income residents. The BNSF Alternative, BNSF Modified Alternative, and SR 520 Alternative sites are relatively similar to each other demographically, particularly in the areas north of State Route (SR) 520. Furthermore, while the BNSF Alternative, BNSF Modified Alternative, and SR 520 Alternative have study areas with minority populations above 50%, much of the populations in these study areas are located along the edges of the alternative sites where development is more oriented toward residential land uses and less toward commercial and industrial land uses. Accordingly, the environmental justice populations in the BNSF Alternative, BNSF Modified Alternative, and SR 520 Alternative sites are distant enough from these sites that no impacts would occur (Appendix C). The following is a discussion of the affected social, community, and neighborhood environment of each build alternative.

Table 3.5-1. Demographics within 0.5 Mile of the Build Alternative Sites

Alternative	2010 Study Area Population	2011 Low Income Population Estimates (%)[a]		2010 Minority Population (%)[b]	2010 Senior Citizen Population (%)[c]
Lynnwood Alternative	9,391	Average	12.9	44.9	9.1
		Median	11.9		
		Range	7.2–23.1		
BNSF Alternative BNSF Modified Alternative Lynnwood Alternative BNSF Storage Tracks	8,545	Average	4.6	63.9	11.8
		Median	4.5		
		Range	2.8–6.8		
SR 520 Alternative	8,831	Average	6.5	63.1	10.3
		Median	7.2		
		Range	3.4–8.4		

Source: U.S. Census Bureau 2013.

[a] Percentages represent estimates based on survey data. Survey data are not available at the Census Block level; this data represents the average, median, and range of percentages of all persons below the poverty line in the census tracts within 0.5 mile each build alternative site.

[b] Being of African, Hispanic, Asian-American, American Indian, or Alaskan decent, or Other Race.

[c] People ages 65 or older.

3.5.3.1 Lynnwood Alternative

The Lynnwood Alternative site is adjacent to the southernmost boundary of the City Center neighborhood of the City of Lynnwood. The primary thoroughfare in the area is 52nd Avenue W which runs along the western boundary of the Lynnwood Alternative site. In addition, the Interurban Trail, which runs parallel to Interstate 5 (I-5) in the study area, provides recreational pedestrian connections between the South Lynnwood and the City Center neighborhoods.

The Lynnwood Alternative site is characterized by undeveloped open space areas with office building commercial uses on the north end of the project site, north of 204th Street SW. Part of the undeveloped portion of the site is owned by the Edmonds School District. The Edmonds School District has plans to develop a district support center that would include administrative offices and bus maintenance and storage areas. The surroundings of the site include small-scale commercial businesses to the south and a large residential neighborhood to the west of the site; 52nd Avenue W, a three-lane road, acts as a barrier between this neighborhood and the Lynnwood Alternative site. The residences in this area generally consist of single-family homes that were developed in the 1950s and 1960s. Some small businesses and industrial uses line 52nd Avenue W to the south of the site, and larger, more dense, commercial and multifamily residential development characterize the areas to the northeast of the site in the City Center neighborhood. Community facilities in the Lynnwood portion of the study area include the Interurban Trail, Group Health Lynnwood Medical Center, Scriber Creek Park, Mini Park at Sprague's Pond, Scriber Lake Park, River of Life Christian Center, Harvest Time Church, and Washington Department of Social and Health Services (DSHS) social service offices, which includes the Children's Administration, Community Service Office, Division of Development Disabilities, Home and Community Service, and Vocational Rehabilitation (Figure 3.5-1a). The affected environment for the BNSF storage tracks is discussed below under the BNSF Alternative and BNSF Modified Alternative.

3.5.3.2 BNSF Alternative and BNSF Modified Alternative

The BNSF Alternative and BNSF Modified Alternative sites are located in the Bel-Red Corridor in the City of Bellevue which is planned for mixed-use employment and residential development characterized by a transit-oriented, nodal development pattern. The area is currently characterized mostly by commercial, industrial, and medical-related land uses around the Overlake Hospital Medical Center. The Seattle Children's Hospital: Bellevue Clinic and Surgery Center is the closest medical facility to the study area, approximately 800 feet to the southwest. This area also includes industrial land uses such as the King County Metro bus base and distribution facilities located directly east of the sites. There are a limited number of residents located to the west of the BNSF Alternative site and BNSF Modified Alternative site between 116th Avenue NE and Interstate 405 (I-405); otherwise, there are no residential communities in the immediate vicinity of the study area. Major roadways in the surrounding area include I-405 to the west, SR 520 to the north and Bel-Red Road to the south. The only community facilities in the study area are All Saints Episcopal Church and the Hidden Valley Sports Park located in the Hidden Valley neighborhood.

3.5.3.3 SR 520 Alternative

The SR 520 Alternative site is also located in the Bel-Red Corridor in the City of Bellevue. SR 520 acts as a barrier between the Bridle Trails neighborhood and the SR 520 Alternative site. Generally, land uses surrounding the site include industrial uses or commercial strip malls and office parks. Based on this mix of land uses and lack of a residential component within the immediate vicinity of the SR 520 Alternative site, there is little to no community character in the areas south of SR 520. However, some businesses within the study area do appear to cater to an Asian and Middle Eastern

community. While there is not a strong community or neighborhood character in the immediate surroundings of the SR 520 Alternative site, the Bridle Trails neighborhood located to the north of the site can be classified as a cohesive neighborhood with strong community character based on the availability of community facilities and residential character of the neighborhood. These community facilities include Viewpoint Park, Cherry Crest Mini Park, and Westminster Chapel, all of which are generally located along NE 24th Street. Other community facilities in the study area include the Cornerstone Church administrative offices, Seattle Formosan Christian Church (administrative/activity center), Blue Sky Church, and the Bellevue Highlands Park and Community Center.

3.5.4 Environmental Impacts

The analysis of potential impacts of the proposed build alternatives on neighborhoods considers the following key neighborhood and community issues: changes in neighborhood quality, barriers to social interaction, impacts on community resources, and impacts on public services, safety, and security. As previously stated, much of the impacts evaluation in this section is based on analyses conducted for other sections of this Draft EIS. Impacts from these resources do not automatically constitute an adverse social impact or impact on neighborhood cohesion[1]. Rather, these impacts are evaluated collectively with design and mitigation measures for their impacts on community facilities and neighborhoods.

3.5.4.1 No Build Alternative

The No Build Alternative would avoid property acquisitions and other related changes associated with construction and operation of the OMSF. The Edmonds School District anticipates developing a district support center that would include administrative offices and bus maintenance and storage on a portion of the Lynnwood site. Therefore, neighborhood quality at the Lynnwood Alternative site may change under the No Build Alternative.

3.5.4.2 Impacts Common to All Build Alternatives

Construction Impacts

Construction of any of the build alternatives would temporarily affect neighborhood quality; it would result in the presence and movement of equipment and materials, clearing and exposure of soils, and storage of construction materials. Temporary increases in noise, dust, and traffic (from construction vehicles and haul routes) would occur in the vicinity of each of the build alternative sites, which would be noticeable in neighborhoods and community facilities within the study area. A construction transportation management plan addressing site access, traffic control, hauling routes, construction employee parking, and pedestrian and bicycle control in the area would be prepared.

[1] *Cohesion* is defined as the extent to which residents have a sense of belonging to their neighborhood and considers the interactions between the residents and the resources located in that neighborhood.

Operational Impacts

Once operational, the proposed project would reduce total trips generated from the build alternative sites, resulting in an overall reduction in traffic on surrounding streets. In addition, all of the build alternatives would facilitate extending Sound Transit service in the study area, which would reduce traffic.

Sound Transit would incorporate measures to help minimize impacts of the proposed project on social interaction, community facilities, and neighborhood quality.

- Sound Transit would coordinate with public service providers prior to construction on detour routes and lane closures to ensure access for emergency response vehicles is maintained.
- Sound Transit would compensate the affected property owners and provide relocation assistance.
- Sound Transit would coordinate with the Cities of Lynnwood and Bellevue to ensure that impacts on circulation are minimized and emergency access is maintained.

3.5.4.3 Lynnwood Alternative

Construction Impacts

Construction of the Lynnwood Alternative would temporarily alter access to the Interurban Trail. In addition to being a major recreational resource for the neighborhoods in the study area and throughout Snohomish County, the Interurban Trail also represents a major nonmotorized connection between the study area neighborhoods to the south of the Lynnwood Alternative site and the Lynnwood City Center area, as well as Alderwood Mall, the main commercial center in the city. The trail would be detoured around the construction site with minor effects on accessibility during construction, and connections between communities would be maintained.

There are no residents in the immediate vicinity of the BNSF Storage Tracks. The only community facility in the vicinity is the All Saints Episcopal Church. The church is more than 1,000 feet from where construction would occur and separated by intervening development. No impacts on neighborhoods, residents, or community facilities, would result from construction of the BNSF Storage Tracks.

Operational Impacts

The Lynnwood Alternative would displace the office building located at 20311 52nd Avenue W, which houses Washington State DSHS offices. The DSHS offices would be displaced by the Lynnwood Alternative, but these offices could be relocated. Accordingly, operation of the proposed project would not result in a permanent reduction in the availability of social services. A permanent aerial easement would be required over the Interurban Trail; however, long-term usability of the trail would remain unaffected. Access to surrounding community facilities would not be affected and access for emergency vehicles would remain unchanged. This alternative would also not adversely alter transportation conditions, including neighborhood accessibility or traffic levels.

While no residential displacements would occur, the OMSF would replace the existing commercial and vacant land/open space uses. Noise could increase for residents located closest to the OMSF along 52nd Avenue W. As described in Section 3.8, Noise and Vibration, noise impacts would be mitigated and would not affect the quality of the neighborhood or alter the neighborhood character. Changes to existing settings of recreational resources adjacent to the Lynnwood Alternative site (Scriber Creek Park, Scriber Creek Trail, and the Interurban Trail) would not affect the long-term usability of these resources, and they would continue to function with little effect on the overall character of the surrounding neighborhood.

Operation of the BNSF Storage Tracks would have no impacts on neighborhoods, residents, or community facilities.

3.5.4.4 BNSF Alternative and BNSF Modified Alternative

Construction Impacts

No construction impacts other than those identified as common to all build alternatives have been identified. There are no residences in the vicinity of the BNSF Alternative and BNSF Modified Alternative sites and construction activities in the vicinity of All Saints Episcopal Church would not affect the church because of intervening distance (over 700 feet) and development.

Operational Impacts

Upon completion of construction, the BNSF Alternative or the BNSF Modified Alternative would have little to no impact on neighborhoods due to the distance between the alternative sites and the nearest residences and community facilities. The separation of the OMSF and the Hidden Valley neighborhood near I-405 would make the OMSF not visible or otherwise noticeable to the Hidden Valley neighborhood. No access changes to the Hidden Valley Sports Park would occur and community interaction would remain unaffected. Access and circulation in and around the Overlake Hospital Medical Center would also remain unaffected by OMSF operations under both alternatives, and no impacts on emergency response times would occur. Planned development in the area envisions a mixed use, transit-oriented nodal development area. The OMSF would introduce a land use that would be inconsistent with the planned transit-oriented nodal development. However, the OMSF would replace existing industrial uses with a transportation use, which is compatible with existing surrounding uses, including the King County Metro bus base. Existing community quality and character would not be altered; however, the OMSF would not be consistent with the planned land use for the area.

3.5.4.5 SR 520 Alternative

Construction Impacts

No residences are located close to the SR 520 Alternative site, construction impacts on neighborhoods and communities would be minor.

Operational Impacts

No acquisition of residential property would occur as a result of the SR 520 Alternative. The SR 520 Alternative would result in displacement of two Asian church facilities (Cornerstone Church administrative offices and Seattle Formosan Christian Church, Ministry at Eastside Facility); however, these spaces house administrative offices or weekend youth activities and are not primary places of worship. Several businesses that cater to an Asian and Middle Eastern population (Chinese acupuncturists, Cathay Bank, and Persepolis Specialties Café, a Persian grocer and deli) would also be displaced. While approximately 101 commercial businesses would be displaced under the SR 520 Alternative, the surrounding neighborhoods do not depend on these businesses for employment or community identity, and these businesses and facilities would be relocated or otherwise compensated under the Sound Transit acquisition and relocation policies. The OMSF would replace the existing commercial uses with a transportation use, which is compatible with surrounding uses. Therefore, operation of the SR 520 Alternative would have little impact on the existing neighborhood quality and character of the SR 520 Alternative site, and access to community facilities would be unaffected.

3.5.5 Indirect and Cumulative Effects

Indirect impacts to social, community facilities, and neighborhood resources often relate to changes in land use or other changes that result in effects on the rate or pattern of development in an area. Because the project would result in a change in land use, converting vacant and/or commercial/industrial land to a transportation use there is potential for indirect effects to neighborhood character from changes in development patterns. Please see Section 3-3, Land Use for discussion of these changes and the compatibility of the project with established plans and policies that govern development in the area.

Cumulative impacts could occur if several projects nearby were constructed at the same time, such as in the Bel-Red area where the City of Bellevue has adopted land use plan changes and private development could occur at the same time as the proposed project, as well as the East Link project. The *East Link Project Final EIS* noted that East Link, in conjunction with other projects related to transit-oriented development, would result in primarily beneficial cumulative impacts on neighborhoods (Sound Transit 2011). Areas surrounding the BNSF Alternative, BNSF Modified Alternative, and SR 520 Alternative sites do not have strong neighborhood presence and there are few community facilities that could be affected by future development.

The *Lynnwood Link Extension Draft EIS* (Sound Transit 2013) notes that social and neighborhood character adjacent to the project corridor would change only somewhat with the construction and operation of the Lynnwood Link Extension (Sound Transit 2013). The proposed project, as well as the Lynnwood Link Extension, would occur along the I-5 corridor where neighborhoods and community resources are less prevalent. Changes to the neighborhood character would occur from the operation of the proposed project and other foreseeable projects because new transportation/transit networks and their associated support facilities would be introduced to the

area replacing vacant land and commercial office land uses which may result in visual and noise impacts on the neighborhood to the west of the Lynnwood Alternative site.

3.5.6 Potential Mitigation Measures

Specific design features, best management practices (BMPs), project commitments, and mitigation measures for construction and operation of the proposed project are described in detail in other sections of this Draft EIS, including Section 3.3, Land Use; Section 3.4, Economics; Section 3.7, Air Quality and Greenhouse Gases, Section 3.8, Noise and Vibration, Section 3.15, Public Services; Section 3.18, Parklands and Open Space; and Appendix E.1. No additional mitigation measures related to social impacts, community, and neighborhoods would be required.

3.5.7 Environmental Justice

The assessment of environmental justice impacts is required by 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 (April 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. These orders, along with FTA guidance (FTA Circular 4703.1), requires agencies 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 project planning; and (3) prevent the denial of, reduction in, or significant delay in the receipt of benefits by minority and low-income populations.

The discussion below summarizes the environmental justice analysis provided in Appendix C. The purpose of the analysis was to determine whether the OMSF project would result in any disproportionately high and adverse impacts on minority and/or low-income populations. The analysis concludes that, after proposed mitigation and design elements are implemented, the OMSF is not expected to result in any disproportionately high and adverse impacts on minority and low-income populations.

U.S. census data was used to determine the demographic characteristics of each alternative and the surrounding area within a 0.5-mile radius. None of the alternative sites contain residential properties. The BNSF Alternative and BNSF Modified Alternative study areas are industrial or commercial in nature. The Lynnwood Alternative study area has the largest presence of low-income populations, and a small pocket with a high minority population. Construction and operational impacts associated with the Lynnwood Alternative, such as noise, ecosystems, and water resources, would be similar in intensity and scope for all populations. Impacts would be mitigated such that they would not be considered high and adverse for minority and low-income populations. The Lynnwood Alternative would displace a Washington DSHS office that typically serves low-income and other disadvantaged populations throughout the County and State. As described in Section 3.2, Acquisitions, Displacements, and Relocations, Sound Transit would provide relocation assistance,

and current vacancy rates indicate that there is available space in Lynnwood where these offices could be relocated.

The SR 520 Alternative would displace several businesses and two church facilities that serve the Asian population. The church facilities include administrative offices and weekend youth activities and are not primary places of worship. The displaced businesses and church facilities would be compensated and relocation assistance would be provided. Section 3.2 Acquisitions, Displacements and Relocations, discusses these impacts and identifies mitigation measures that would address these property-related impacts. Based on current market vacancy rates, relocation within the City of Bellevue would likely be possible. All other construction and operational impacts identified in the Draft EIS would be mitigated such that they would not be considered high and adverse.

As part of the proposed project public outreach, Sound Transit has engaged diverse minority and low-income populations throughout the planning and development process. Sound Transit has held numerous events and implemented tools to engage and communicate with the public, including scoping meetings, workshops, fact sheets and handouts, posters and display advertisements, stakeholder briefings, and a project website that is regularly updated. Sound Transit has contacted service providers and community groups to help connect with minority and low-income groups, and will continue to engage these groups throughout the project process. Language translations for notices and literature have been offered in Chinese, Mandarin, Hindi, Japanese, Korean, Russian, Spanish, and Vietnamese. Fact sheets, articles for newsletters, websites, or other communication tools used by service providers and community groups can be translated upon request and interpretation services have also been offered on public notices. Public outreach and other tools to identify and engage minority and low-income populations will continue throughout the project during key project milestones. Public involvement in the proposed project is described in Appendix B, *Public Involvement and Agency Coordination*.

The proposed project (under any build alternative) would not result in any effects that would be considered high and adverse under Executive Order 12898 and the DOT Order. Project impacts would be mostly limited in scope and others would be mitigated through implementation of mitigation measures. Indirect benefits of the proposed project would include improving regional connectivity and mobility by a reliable, efficient, and affordable means of transportation for populations reliant on public transit.

3.6 Visual and Aesthetic Resources

This section discusses the potential visual effects of the proposed project. Natural and constructed structures encompass the visual environment and affect the experience of the viewer. The extent to which the viewer's experience and visual environment may be affected by the proposed project is assessed.

3.6.1 Introduction to Resources and Regulatory Requirements

3.6.1.1 Existing Viewer Groups

Viewer groups at the build alternative sites may include bordering residential viewers; recreational viewers using the park, trails, and local roadways; motorists on local roadways; and workers and patrons of businesses adjacent to the build alternative sites. Residential viewers consist of those in one- or two-story single-family homes and in multifamily dwellings such as apartments or condominiums.

Residents are likely to have moderately high sensitivity to visual changes to the build alternative sites because of extended viewing times, a higher sense of ownership of views, and familiarity with the developed landscape.

Recreationists include users of local parks, cyclists, pedestrians, runners, and joggers. Recreationists using local parks, roadways, and sidewalks are more likely to regard the natural and built surroundings as a holistic visual experience. However, they are likely to have moderate visual sensitivity due to the developed nature of the project vicinity and the focus on passing traffic, other recreationists, and other nearby activities.

Motorists use roadways at varying speeds; normal highway and roadway speeds differ based on the traveler's familiarity with the route and roadway conditions (e.g., presence or absence of rain). Viewer sensitivity is moderately low among most motorists in these viewsheds, which become familiar to frequent viewers. Furthermore, at standard roadway speeds, views are of short duration and roadway users are primarily focusing on surrounding traffic, road signs, and their immediate surroundings, with generally fleeting views of visual features.

Businesses are often oriented toward local roadways, surrounded by parking lots that separate the building from the roadways. Few businesses have direct views of the build alternative sites. Local businesses are accustomed to traffic on roadways and activity in the parking lots and on local streets. Workers and patrons are more focused on their daily operations associated with the businesses, as opposed to the surrounding landscape. Because of this, workers and patrons would have low sensitivity to visual impacts from the proposed project.

3.6.1.2 Visual Quality

An evaluative appraisal of the existing visual quality is based on the following three criteria:

- **Vividness.** The memorability of the visual impression received from contrasting landscape elements as they combine to form a striking and distinctive visual pattern.
- **Intactness.** The integrity of visual order in the natural and constructed landscape, and the extent to which the landscape is free from visual encroachment.
- **Unity.** The degree to which the visual resources of the landscape join to form a coherent, harmonious visual pattern. Unity refers to the compositional harmony or compatibility of landscape elements.

Once each landscape unit is evaluated for its vividness, intactness, and unity, it is categorized as having low, moderate, or high visual quality.

- **Low visual quality.** Areas may be visually disjointed, degraded, or jumbled, with no cohesion.
- **Moderate visual quality.** Areas may be pleasing to the eye, but lack dramatic or memorable features. Visual conditions in the region are commonly of moderate quality.
- **High visual quality.** Areas must clearly or dramatically exhibit the character of the region, and be distinct, unique, or memorable. Dramatic terrain or exceptionally memorable urban areas may fall into this category.

3.6.2 Methods

The study area for visual and aesthetic resources consists of the landscape units that encompass each build alternative site. All of the build alternative sites are within an urbanized setting, made up largely of warehouses and commercial and industrial land uses that are bordered by residential land uses and intermixed with small areas of open space. These locations can be characterized as landscape units, which are defined by their similar visual feature and homogeneous character. The landscape units were determined by identifying ridgelines and high points in the immediate area around the build alternative sites.

This assessment of visual impacts was conducted in accordance with the *Visual Impact Assessment for Highway Projects* by the Federal Highway Administration (1988). Impacts were evaluated using computer-generated visual simulations that depict before and after images for the build alternatives, based on the conceptual design plans and profiles provided in Chapter 2, Alternatives Considered (Figures 2-4 through 2-7) and in Appendix G, *Conceptual Plans*. Landscape units were assessed using key observation points (KOPs), which provide representative examples of available views of the build alternative sites and their associated viewsheds (Figures 3.6-1 through 3.6-3).

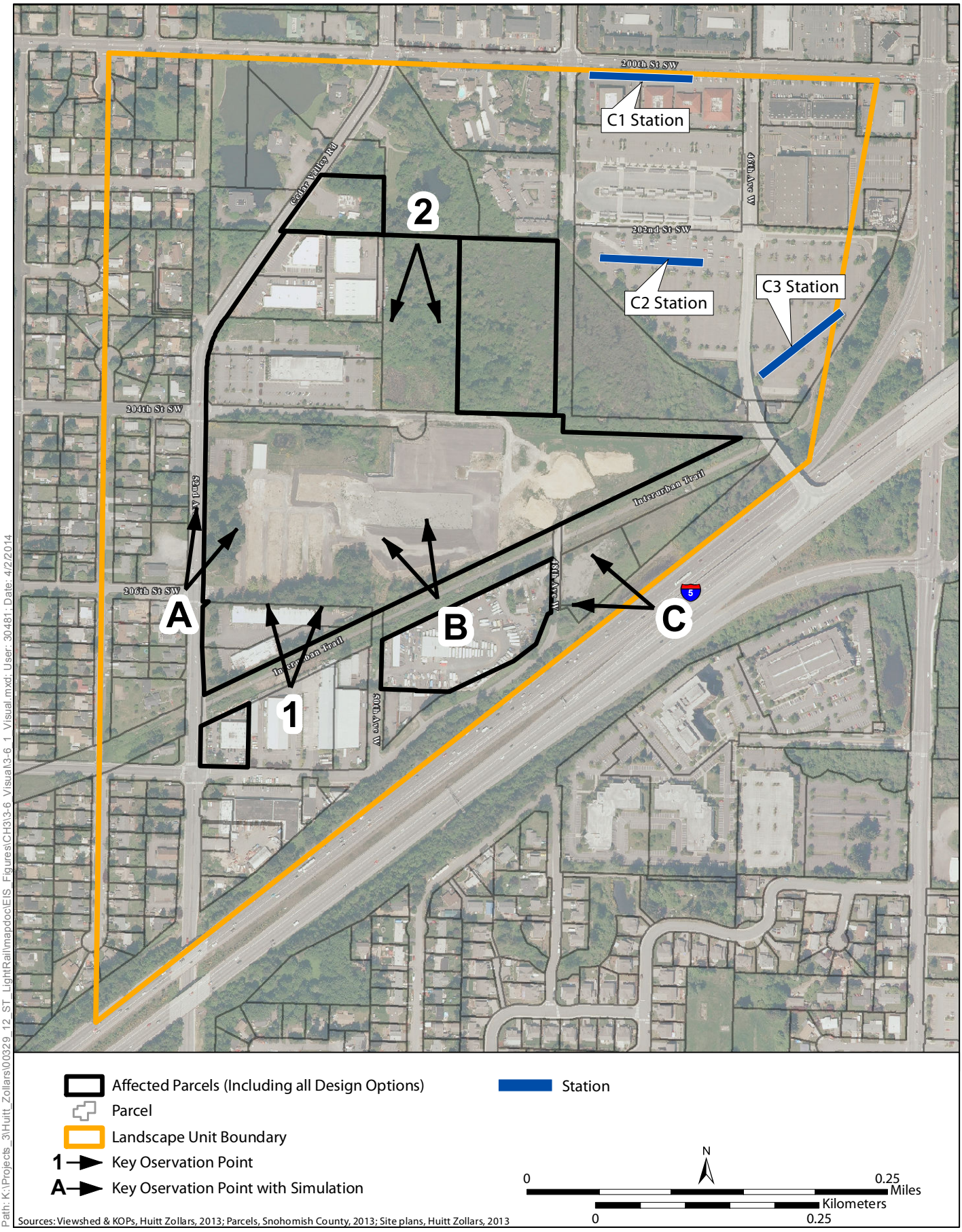

Figure 3.6-1: Lynnwood Alternative—Viewshed and KOPs
Sound Transit Link Light Rail OMSF Draft EIS

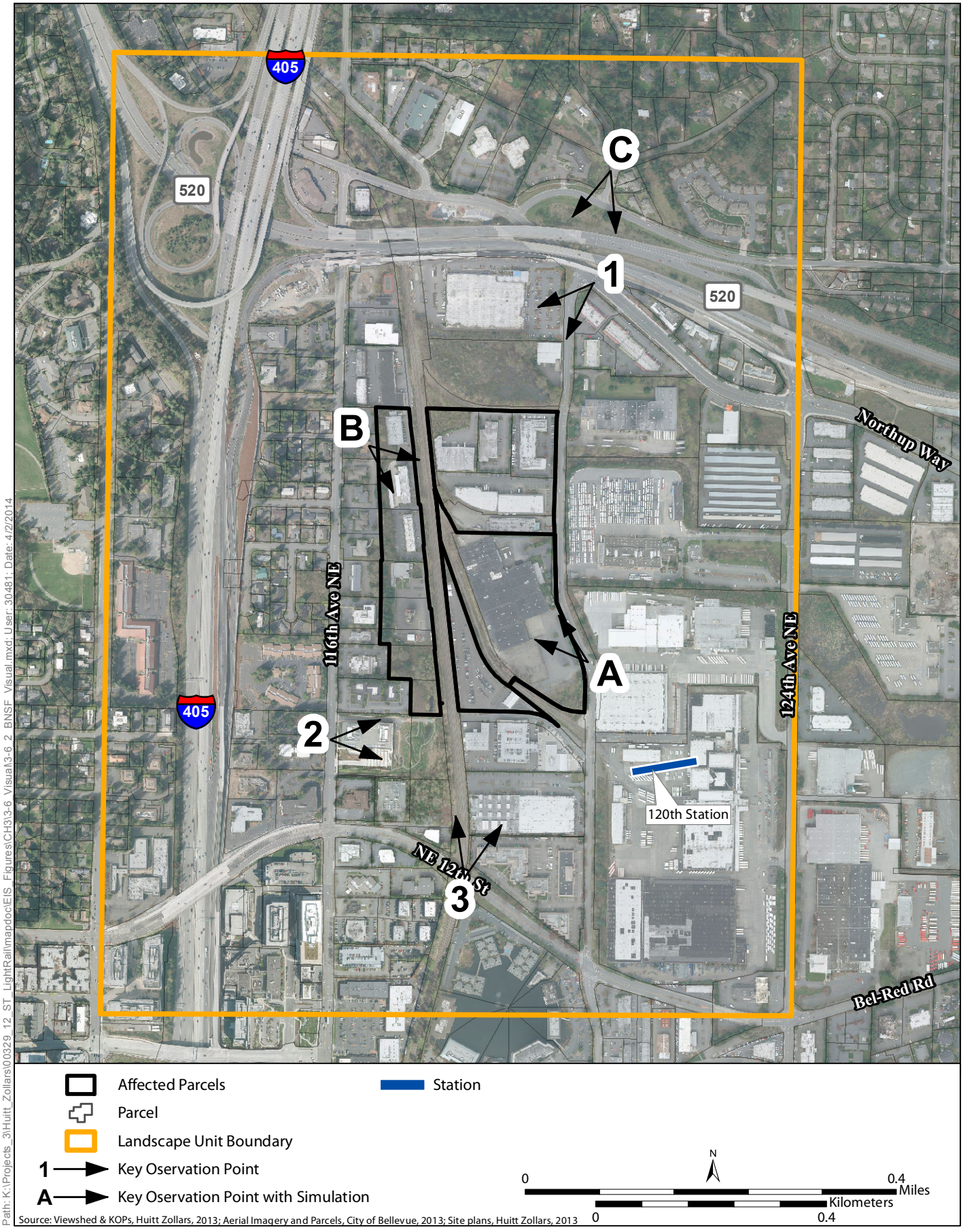

Figure 3.6-2: BNSF Alternative, BNSF Modified Alternative, and BNSF Storage Tracks—Viewsheds and KOPs
Sound Transit Link Light Rail OMSF Draft EIS

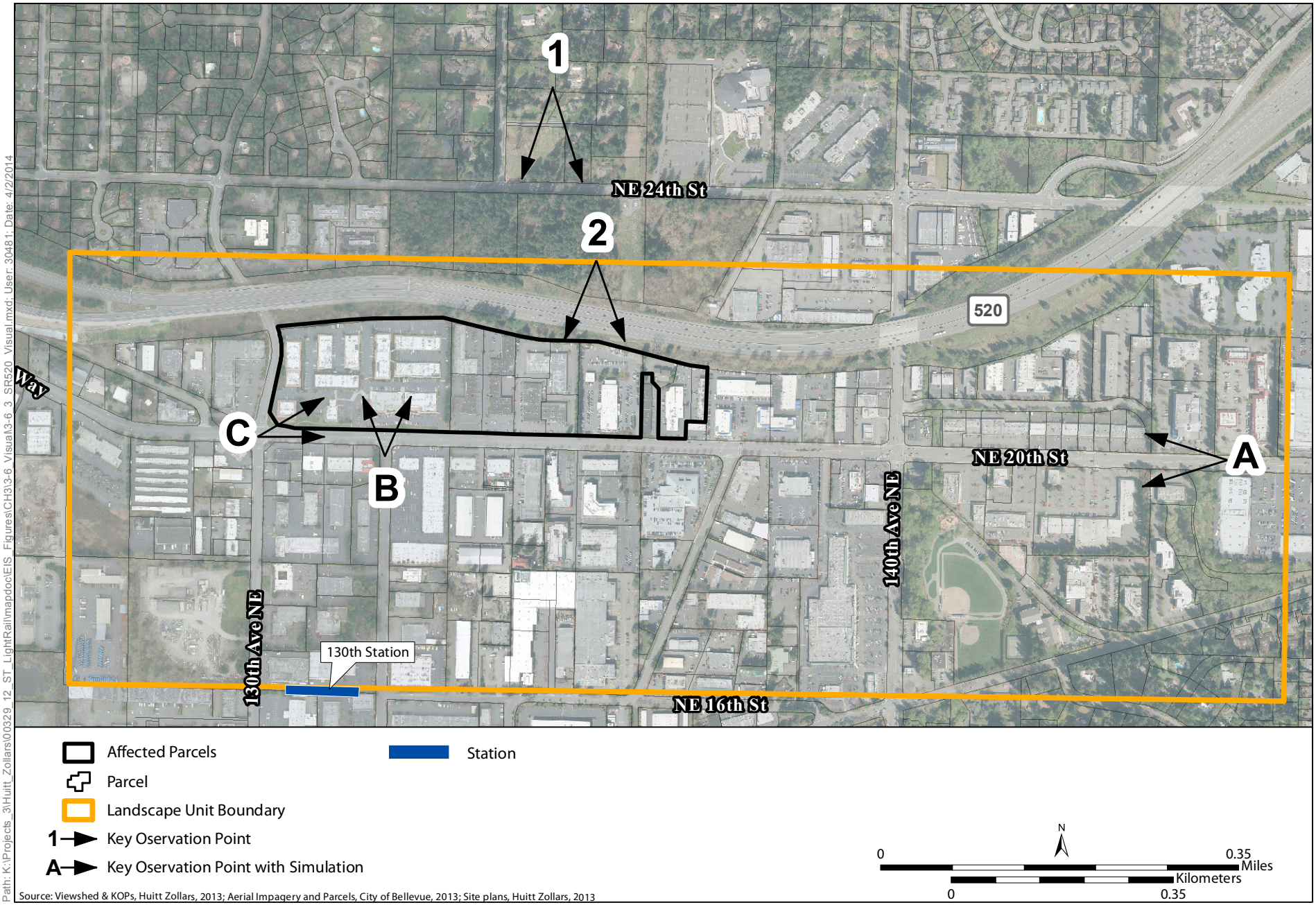

Figure 3.6-3: SR 520 Alternative—Viewshed and KOPs
Sound Transit Link Light Rail OMSF Draft EIS

The KOPs were established considering number of viewers, length of time a typical observer would see the view, and proximity of viewers to the build alternative sites. The presence of vegetation was not considered when identifying the larger landscape unit boundaries because screening provided by vegetation may be altered by human actions such as clearing for development and natural phenomena such as fire. Vegetation was considered in the KOP analysis because of the impact vegetation may have on the viewer's perspective.

Simulated KOPs were chosen to represent the most sensitive views based on number of viewers, length of time a typical observer would see the view, and proximity of viewers to the build alternative site and their locations (Figures 3.6-1 through 3.6-3). Simulated KOPs include conceptual future landscaping because landscape plans have not been developed. The future conditions also represent other proposed light rail alignments such as the Lynnwood Link Extension.

3.6.3 Affected Environment

Viewer sensitivity or concern is based on the visibility of resources in the landscape, the proximity of viewers to the visual resource, the relative elevation of viewers to the visual resource, the frequency and duration of views, the number of viewers, and the types and expectations of individuals and viewer groups. The criteria for identifying the importance of views are related in part to the position of the viewer relative to the resource. Generally, the closer a resource is to the viewer, the more dominant it is and the greater is its importance to the viewer. Also, visual sensitivity is higher for views seen by people who are driving for pleasure and people engaging in recreational activities such as hiking, biking, or camping; and homeowners. Sensitivity tends to be lower for views seen by people driving to and from work or as part of their work (Jones et al. 1975; U.S. Forest Service 1995; Federal Highway Administration 1988; U.S. Soil Conservation Service 1978). Views from recreation trails and areas, scenic highways, and scenic overlooks are generally assessed as having high visual sensitivity.

In general, most views of the build alternative sites are foreground views available from vantages within 400 to 500 feet of, and immediately adjacent to, the sites. Environmental elements such as buildings, vegetation, infrastructure, and terrain act to block views of the sites from foreground vantages beyond 500 feet, and from middle-ground and background vantages. However, the sites are visible from a few higher locations where topography, lack of tall vegetation, or multistory buildings at an elevated vantage allows for such views. Similarly, a small number of views are available from vantages at lower elevations, looking upward.

Three landscape units encompass the four build alternative sites—Lynnwood, BNSF, and SR 520—and are discussed under their respective alternative. Table 3.6-1 lists the landscape units and associated build alternatives, along with their respective visual quality rating and viewer groups.

Table 3.6-1. Landscape Units, Existing Visual Quality Rating, and Existing Viewer Groups

Landscape Unit (Alternatives)	Vividness	Intactness	Unity	Visual Quality Rating	Predominant Viewer Groups
Lynnwood (Lynnwood Alternative)	Low to Moderate	Moderate	Moderate	Moderate	Residents, recreationists, motorists, and workers/patrons
BNSF (BNSF Storage Tracks BNSF Alternative BNSF Modified Alternative)	Low	Low	Low	Low	Workers/patrons
SR 520 (SR 520 Alternative)	Moderate	Moderate	Low to Moderate	Moderate	Workers/patrons

3.6.3.1 Lynnwood Alternative

The Lynnwood landscape unit, which would encompass the Lynnwood Alternative site, is bounded to the north by Cedar Valley Road, Scriber Creek Park, and Scriber Creek Trail; to the east by vacant parcels that are vegetated wetland areas; to the south by the Interurban Trail, warehouse development, and Interstate 5 (I-5); and to the west by residential development. The site is mostly vacant with commercial development located north of 204th Street SW and warehouse development north of the Interurban Trail. Nearby viewers include residents west of 52nd Avenue W; recreationists using the park, trails, and local roadways; motorists on local roadways; and workers and patrons of businesses on and adjacent to the Lynnwood Alternative site.

The landscape unit is partially vegetated with mature trees and shrubs. Portions of the Lynnwood Alternative site and the area surrounding it are gently rolling. Wooden utility poles, overhead streetlights, signage, and various types of fencing are visible in the landscape. Existing lighting within the landscape unit consists of exterior safety and landscape lighting, interior lighting associated with residential and commercial buildings, and lighting associated with parking lots and street and traffic lights. The gently rolling terrain, combined with mature trees and shrubs on the site and lining local roadways, limits views toward the site. However, intermittent views are available from vantages where breaks in vegetation allow for views. Views of the site would be available to viewers traveling south on I-5 (Figure 3.6-1, KOP C). From the existing Lynnwood Transit Center/Park and Ride facility, views of the site are blocked by vegetation, buildings, and the ramp. Viewers may see parts of the site from above as they travel south on the ramp leaving the Park and Ride facility. Views from Scriber Creek Park are also limited and screened by vegetation (Figure 3.6-1, KOP 2). The site is visible to Interurban Trail users as they travel on the portion adjacent to the site (Figure 3.6-1, KOP B). The site is not visible from lower vantage points. See Photographs 1, 3, and 5 in Appendix F.3, *Visual Simulations and Key Observation Point Analysis*, for views of the site from the surrounding area.

This urbanized landscape unit is a mix of residential, industrial (distribution and manufacturing), or commercial (automobile-dependent businesses with parking areas) uses with gently rolling terrain and areas of mature vegetation that is common to the region. These areas are not very distinct within the regional context and are moderately low in memorability or vividness. Scriber Creek Park is a recreational area that has moderate vividness because it offers a valued natural recreational area within an urban setting. Mature trees and shrubs are an attractive element in the landscape unit that helps to soften the appearance of the built environment. However, disjointed land uses and wooden utility poles, overhead streetlights, signage, and various types of fencing detract from the views in the landscape unit and contribute to a moderate intactness and unity. The overall visual quality of the Lynnwood landscape unit is moderate. Table 3.6-1 summarizes the visual quality rating for the Lynnwood landscape unit.

The landscape unit for the BNSF Storage Tracks is discussed under the BNSF Alternative and BNSF Modified Alternative section.

3.6.3.2 BNSF Alternative and BNSF Modified Alternative

The BNSF landscape unit, which would encompass the BNSF Alternative, BNSF Modified Alternative, and BNSF Storage Tracks associated with the Lynnwood Alternative, is bounded on the north by a vacant wooded parcel, on the east by industrial and warehouse uses along 120th Ave NE, to the south by office and industrial uses, and to the west by office uses. Viewers in the area would include workers and patrons at the industrial, warehouse, and office facilities. The site is visible in the background for some viewers traveling out of the Bridle Trails neighborhood at 120th Ave NE and NE 26th Place, which is at higher elevation and north of State Route (SR) 520 compared to the landscape unit (Figure 3.6-2, KOP C). See Photographs 19, 23, and 25 in Appendix F.3 for views of the site from the surrounding area.

This area is characterized by a mix of industrial (distribution and manufacturing) and commercial (numerous automobile-dependent businesses with large parking areas) uses. Office/medical office space is located along 116th Avenue NE, including Children's Hospital southwest of the site. The surrounding topography is hilly. Mature street trees and parking lot landscaping are the primary vegetation. There are tracts of mature vegetation to the north and south of the site. The industrial nature and lack of natural features in the area lead to a generally utilitarian appearance and low memorability or vividness. The disjointed uses and lack of unifying elements such as landscaping and streetscape design lead to a lack of visual cohesiveness and low visual intactness. The overall visual quality of this landscape unit is low. Table 3.6-1 summarizes the visual quality rating for the BNSF landscape unit.

3.6.3.3 SR 520 Alternative

The SR 520 landscape unit, which would encompass the SR 520 Alternative site, is bound on the north by SR 520, and on the east, west, and south by commercial developments. Viewers in the area include workers and patrons of the surrounding commercial developments. The site is in the foreground for viewers traveling along Northup Way and 130th Avenue NE (Figure 3.6-3, KOP C), as well as for employees and patrons of the businesses across the street from the site (KOP B, Figure 3.6-3). Views from areas north of SR 520 are blocked by vegetation and landforms (Figure 3.6-3, KOP 1 and KOP 2). See Appendix F.3, Photographs 33, 35, and 37 for views of the site from the surrounding area.

This area is characterized by industrial (distribution and manufacturing) and retail commercial (strip mall) uses. The surrounding topography is hilly. Vegetation primarily consists of street trees and parking lot landscaping. These areas are utilitarian in appearance and have a moderate degree of memorability or vividness. The mix of land uses and their generally homogeneous appearance creates an area that is moderate in visual intactness. SR 520 is a major visual encroachment along the site. The area surrounding the site is low to moderately unified in terms of having a retail character. The overall visual quality of this unit is considered moderate. Table 3.6-1 summarizes the visual quality rating for the SR 520 landscape unit.

3.6.4 Environmental Impacts

The degree of change to the visual environment resulting from the proposed project may be high, moderate, or low. A high degree of change would be the inclusion of a feature that is prominent or incompatible with the surrounding landscape that would substantially lower the overall visual quality. These changes would be visually jarring or intrusive. This may include substantial reduction of a prominent or visually pleasing feature or mature vegetation. A moderate degree of change would be the inclusion of a feature that is noticeable but still compatible with the surrounding area that would lower the overall visual quality. A low degree of change would include additions or revisions to features of the site that are not substantially different from the current visual quality. Low degrees of change would blend in with the current visual quality, would not be intrusive, and would not lower the overall visual quality.

3.6.4.1 No Build Alternative

Under the No Build Alternative, the proposed project would not be built. Future population and employment growth are assumed as described in adopted plans, but without the proposed project. Visual quality within the region may incrementally change as a result.

3.6.4.2 Impacts Common to All Build Alternatives

Construction Impacts

Natural and Constructed Viewscape

Construction impacts would be temporary in nature but would be visible to most viewer groups. Construction is anticipated to last 35 to 45 months, depending on the site and final design. Demolition of existing structures may affect the visual form of the site, including removal of

buildings, trees, and roads. Mature trees or large areas of vegetation may be removed. Staging areas may contain stockpiles of materials, lighting, signage, fences, and presence of large equipment such as cranes, scaffolding, and earth-moving equipment. Additional trucks and equipment may be travelling to and from the site. The construction site would represent a visual nuisance for the surrounding viewers; however, it would be typical of building projects in urban areas.

Measures to reduce construction impacts on the visual environment may include installing visual barriers around construction zones and staging areas to obstruct undesirable views. The visual barrier may be chain-link fencing with privacy slats, fencing with windscreen material, wood or concrete barrier, or another similar barrier like a perimeter wall.

Lighting

Additional lighting may be required to support construction activities. Nighttime construction would be avoided if possible. If nighttime work does occur, the construction contractor would minimize project-related light and glare, given safety considerations. Portable lights may be operated at the lowest allowable wattage and height would be minimized. Lights would be screened and directed downward toward work activities and away from the night sky and nearby residents. The number of nighttime lights used would be minimized.

Operational Impacts

Natural and Constructed Viewscape

Operational impacts would include the visual impacts of the built facilities (maintenance building, office spaces, shops, and covered storage areas) and infrastructure (parking and paved areas, tracks, switches, catenary power lines, a traction power substation, and signals). The following impacts would be common to all build alternatives.

- Changes to landforms through grading and addition of retaining walls.
- Changes to building mass, such as removal of existing buildings and construction of new structures.
- Changes to vegetation, such as removal of existing vegetation and planting of new vegetation.
- Changes to the skyline.

Each site's context with the surrounding community would vary with the comprehensive plans, overlay zones, and development standards that would govern building setbacks, heights and massing, landscaping, facade treatment, urban design character, etc. As described in Chapter 2, Alternatives Considered, landscaping treatments may be used to enhance the visual character of the build alternative site. Such treatments may include incorporating small trees, shrubs, and lower-profile herbaceous vegetation into perimeter fence line and parking lot landscaping, as appropriate, to diversify the visual landscape. Other elements may include treatment of blank walls, incorporation of a variety of architectural finishes and lighting treatments, and using articulation of the building in plan and elevation to break up visual massing of the building elements. These

measures would help to maintain the local character, improve aesthetics, and reduce the visual scale of proposed project. The project designers and contractors would adhere to the landscape guidelines proposed in Sound Transit's *Design Criteria Manual,* and would meet code requirements of each local jurisdiction. Context-sensitive design elements could include the following items.

- Landscaping at the perimeter of the build alternative site.
- Streetscape elements along adjacent frontage streets, such as sidewalks, street trees, and other aesthetic features.
- Architectural features on the buildings, including varying materials and articulation of the plan and elevation to minimize visual massing.
- Screening of parking and storage areas.
- Lighting aimed to reduce spillage onto neighboring properties.

Lighting

Additional lighting would be installed to support traffic, safety, and operations at the site. A lighting plan has not yet been prepared, but it is assumed that minimum lighting standards will be applied. Exterior lighting would be similar to the existing Forest Street Operations and Maintenance Facility (Forest Street OMF), which has light poles up to 80 feet high and exterior lighting on the buildings.

Design measures used to reduce light pollution should employ the technologies available at the time of project design to allow for the highest potential reduction in light pollution.

3.6.4.3 Lynnwood Alternative

Construction Impacts

Construction impacts of the Lynnwood Alternative would be the same as those discussed in Section 3.6.4.2, Impacts Common to All Build Alternatives.

Operational Impacts

The Lynnwood Alternative site is currently partially developed. The Lynnwood Link Extension would dominate the visual landscape from most viewpoints once constructed. Therefore, the OMSF Lynnwood Alternative would not result in a substantial change to the visual environment in most areas, depending on the Lynnwood Link Extension alternative chosen. Most viewers near the site, except for users of the Interurban Trail, have low to moderate sensitivity to change in visual landscape. For the trail users, the visual change that would occur as a result of the proposed project would not be substantial (Appendix F.3, Photographs 4, 10, and 16). Views from Scriber Creek Park are limited, and residential viewers would have moderate sensitivity to change.

Under all design options, the elevated lead tracks would be visible to Interurban Trail users because the tracks cross over the trail. Viewers along I-5 would have limited views of the building under all design options because of landforms and existing structures (Appendix F.3, Photographs 6, 12, and

18). Under Design Option C3, the Lynnwood Link Extension alignment would be in the foreground and would dominate the view from I-5 (Appendix F.3, Photograph 18).

The elevated lead tracks for Design Option C3 would be in the distance and screened by mature vegetation from Scriber Creek Park and the existing residential area along 52nd Avenue W. Along 52nd Avenue W, the Lynnwood Link Extension guideway would travel along I-5 and would not dominate the view under Design Option C3 as it would under the other two design options (Appendix F.3, Photograph 14). Residents on 52nd Avenue W would see tops of the OMSF, trains, and lead tracks. A 6-foot sight-obscuring fence would surround the site and partially obscure the view.

Under Design Options C1 and C2, the elevated lead track would be visible from portions of the Scriber Creek Trail in Scriber Creek Park. Design Option C1's lead track would be partly screened by mature trees and vegetation in the southwest corner of the park. Design Option C2's lead track would be visible, but would be located on the far side of the Lynnwood Link Extension Alternative C2 alignment, which is adjacent to the trail but outside of the park. The surface of the Lynnwood Link Extension guideway traveling along 52nd Avenue W would be approximately 388 feet to 400 feet long for Design Option C1, and 396 feet to 400 feet long for Design Option C2. The guideway would be in the foreground and above the OMSF, dominating the view. The relationship between the buildings and the proposed Lynnwood Link Extension guideway is shown in the simulations along 52nd Avenue W in Appendix F.3, Photographs 2 and 8.

Landscaping would be required per the Lynnwood Municipal Code to screen the site and enhance the visual quality of the perimeter of the proposed project. A sight-obscuring fence is required per the Lynnwood Municipal Code. The proposed maximum building height of the OMSF would be approximately 32 feet, consistent with the low profile of the buildings in the surrounding area (Appendix F.3, Photographs 2, 4, 8, and 10). The top of the building would be at an approximate elevation of 381.5 feet.

The BNSF Storage Tracks would be located in an industrial area. Change in visual impact would be low because the proposed project's appearance would be consistent with existing uses (Appendix F.3, Photograph 20). Future development in this area, such as the Spring District development, may occur under the *Bel-Red Subarea Plan* (City of Bellevue 2009) that would allow higher densities and building heights, making the site visible to a larger group. An expansion of the Children's Hospital facility is also proposed. A chain-link fence would surround the site but not completely obscure visibility. Appendix F.3, Tables 1 and 2, summarize the operational impacts of the Lynnwood Alternative and BNSF Storage Tracks.

3.6.4.4 BNSF Alternative and BNSF Modified Alternative

Construction Impacts

Construction impacts of the BNSF Alternative and the BNSF Modified Alternative would be the same as those discussed in Section 3.6.4.2, Impacts Common to All Build Alternatives. The viewers near BNSF Modified Alternative site may incur additional visual impacts, because construction activity

would be adjacent to and below the rear-facing offices along 116th Avenue NE and the Children's Hospital.

Operational Impacts

Most viewers near the sites have low to moderate sensitivity to change in visual landscape. Additionally, the proposed project would not result in a substantial visual change because the building mass, size, and use are typical of the surrounding area. Therefore, these alternatives would not result in a substantial change to the visual environment. Future development in this area, including the Spring District development, which started construction in fall of 2013, may occur under the *Bel-Red Subarea Plan* (City of Bellevue 2009) that would allow higher densities and building heights, making the site visible to a larger group. An expansion of the Children's Hospital facility is also proposed and may increase visibility from that location. A chain-link fence would surround the sites on most sides; however, chain-link fencing is not allowed on street frontage per Bellevue City Code requirements. Landscaping would be required per Bellevue City Code and the provisions of the Bel-Red subarea plan that would screen the perimeter and enhance the visual quality of the proposed project. Appendix F.3, Table 3, summarizes the operational impacts of the BNSF Alternative and BNSF Modified Alternative. The simulations shown in Appendix F.3, Photographs 22, 24, 26, 28, 30, and 32, indicate that the building mass, size, and use are typical of the surrounding area.

3.6.4.5 SR 520 Alternative

Construction Impacts

Construction impacts of the SR 520 Alternative would be the same as those discussed in Section 3.6.4.2, Impacts Common to All Build Alternatives.

Operational Impacts

Most viewers in the area have a low to moderate visual sensitivity. The simulations shown in Appendix F.3, Photographs 34, 36, and 38, indicate that the building mass, size, and use are typical of the surrounding area. Viewers in the foreground would see the tops of the buildings, whose maximum height would be approximately 32 feet, and the fence surrounding the site. Light poles (approximately 80 feet high) may also be visible. Views from the Bridle Trails neighborhood north of the site are blocked by existing vegetation and landforms. Therefore, the SR 520 Alternative would not result in a substantial change to the visual environment. Landscaping would be required per the Bellevue City Code and the Bel-Red subarea plan that would screen the perimeter and enhance the visual quality of the project. A chain-link fence would surround the sites on some sides.; however chain-link fencing is not allowed on street frontage per Bellevue City Code requirements. Appendix F.3, Table 4, summarizes the operational impacts of the SR 520 Alternative.

3.6.5 Indirect and Cumulative Impacts

No indirect impacts related to visual or aesthetic resources would result from construction and operation of the proposed project.

Under Lynnwood Link Extension Alternatives C1 and C2, the light rail guideway would be elevated along 52nd Avenue W and would have a high visual impact on residents along 52nd Avenue. Alternative C3 would have no visual impact on these residents per the *Lynnwood Link Extension Draft EIS* (Sound Transit 2013). The Lynnwood Link Extension alternatives would dominate the visual change in the Lynnwood landscape unit, and the proposed OMSF project's contribution to this cumulative impact would not be substantial.

The *East Link Project Final EIS* (Sound Transit 2011) notes this project would be compatible with the areas near the storage track location in the Eastside Rail Corridor and would not change the visual quality of these areas. The guideway would be at-grade or in a retained-cut profile in this section. If construction were to overlap between the proposed OMSF project and East Link, there is potential for cumulative construction impacts. However, these impacts would be temporary and not substantial due to the lack of highly sensitive viewer groups in the immediate vicinity of the BNSF Alternative and BNSF Modified Alternative sites for the proposed OMSF project.

As stated in Section 3.6.4, Environmental Impacts, the Spring District development, which started construction in fall 2013, will allow higher densities and building heights, making the OMSF site visible to a larger group. The viewers in the upper floors of the Spring District development would have views of the BNSF Storage Tracks, BNSF Alternative site and BNSF Modified Alternative site. The OMSF would be a small part of the viewshed for these viewers. The proposed OMSF project and the Spring District development would not cumulatively result in any degradation of the existing visual environment. Other mixed-use developments or expansion of office/industrial facilities may occur on surplus lands at the OMSF build alternative sites. Future development would be in accordance with applicable land use and zoning codes that govern height and massing.

3.6.6 Potential Mitigation Measures

The proposed project would not result in visual impacts; therefore, no mitigation would be required.

3.7 Air Quality and Greenhouse Gases

This section includes background information on air quality and greenhouse gases (GHGs), impacts, and potential design and mitigation measures of the proposed project.

3.7.1 Introduction to Resources and Regulatory Requirements

3.7.1.1 Air Quality and Criteria Pollutants

Air quality regulations are developed and implemented at the federal, state, and local levels. At the federal level, the U.S. Environmental Protection Agency (EPA) is responsible for implementation of the Clean Air Act (CAA). State and local air quality regulations are implemented by the Washington State Department of Ecology (Ecology) and the Puget Sound Clean Air Agency (PSCAA), respectively.

The following federal, state, and local air quality and climate change regulations are applicable to the proposed project. Please refer to Appendix F.4, *Air Quality Analysis Details*, for additional information.

- **Clean Air Act and Ambient Air Quality Standards**: The CAA establishes the framework for modern air pollution control. The act directs EPA to establish national ambient air quality standards (NAAQS) for the following six criteria pollutants: ozone (O_3), carbon monoxide (CO), lead, nitrogen dioxide (NO_2), sulfur dioxide (SO_2), and particulate matter (PM), which consists of particulate matter 10 microns in diameter or less (PM10) and particulate matter 2.5 microns in diameter or less (PM2.5).
- **Transportation Conformity (40 Code of Federal Regulations [CFR] 51, 93; Washington Administrative Code [WAC]-173-420)**: The transportation conformity regulations ensure that transportation projects, plans, and programs affecting regional and local air quality conform to existing state implementation plans and timetables for attaining and maintaining federal health-based air quality standards.
- **PSCAA Regulation 1, Section 9.15, Fugitive Dust Control Measures**: All construction sites in the Puget Sound region are required to implement rigorous emissions controls to minimize fugitive dust and odors during construction.
- **PSCAA Air Quality Permits**: Facilities with substantial emissions are required to obtain a Notice of Construction air quality permit before construction is allowed to begin.

3.7.1.2 Greenhouse Gas Emissions

While GHG emissions are not regulated pollutants, the following initiatives provide guidance on GHG emissions and their contribution to climate change.

- **Washington State Greenhouse Gas Initiatives.** Washington State has adopted a number of policies and programs to reduce GHG emissions, including Executive Order 07-02 and Senate Bill

6001, which aims to achieve 1990 statewide GHG levels by 2020, a 50% reduction below 1990 levels by 2030, and additional reductions after 2050.

- **Ecology Implementation Working Group.** Ecology initiated a stakeholder process to develop recommendations for ensuring that climate change is considered in the Washington State Environmental Policy Act (SEPA) processes and documents. The Implementation Working Group was established to help clarify the SEPA rules and prepare important guidance information. On June 3, 2011, Ecology issued the paper *Guidance for Ecology Including Greenhouse Gas Emissions in SEPA Reviews* to assist Ecology staff in determining which projects should be evaluated for GHG emissions.

3.7.2 Methods

The study area for air quality and GHG analysis is the metropolitan Puget Sound region. Methods used to analyze the proposed project's effects on air quality are described separately for construction emissions and operational emissions.

3.7.2.1 Construction Emissions

Construction of the proposed project would generate short-term emissions of criteria pollutants (reactive organic gases [ROGs], nitrogen oxides [NO_X], CO, PM10, and PM2.5) and GHGs (carbon dioxide [CO_2], methane [CH_4], and nitrous oxide [N_2O]). Emissions would originate from on-road hauling trips, construction site fugitive dust, off-road construction equipment, and worker commute trips. Actual construction-related emissions would vary substantially depending on the level of activity, specific equipment operations, and meteorological conditions.

Because specific construction data are not yet available, construction criteria pollutant and GHG emissions are estimated separately, using the methods used in the *East Link Project Final EIS* (Sound Transit 2011). GHG emissions from construction were estimated from the diesel use in material transport and construction equipment. The estimate includes the following factors.

- Transportation of construction materials, waste, and fill material.
- Equipment used during construction site preparation.
- Construction of the OMSF facility, including buildings and rail storage and lead track.

3.7.2.2 Operational Emissions

The operational emissions from the proposed project were estimated based on two sources.

- The 2012 operational emissions at the existing Forest Street Operations and Maintenance Facility (Forest Street OMF).
- Daily vehicle trips cited in Appendix E.1, *Transportation Technical Report.*

The California Emissions Estimator Model (CalEEMod Version 2011.1.1), developed by Environ International Corporation and the South Coast Air Quality Management District (2011), was used to quantify emissions from vehicle trips. Operational emissions resulting from natural gas

and electricity were estimated using project-specific consumption data and utility-specific emission factors for the Snohomish County Public Utilities District (SnoPUD) and Puget Sound Energy (PSE), and the Washington State Department of Commerce (Burrell pers. comm.). Emissions from evaporative loss from chemicals used on site were not calculated as part of this assessment.[1] It is assumed that existing land uses at the OMSF build alternative sites would be relocated to other off-site locations within the region. Since there would be a net decrease in the number of vehicle trips (existing land uses at the build alternative sites generate more trips than OMSF operations) from the build alternative sites, it is assumed that there would be a reduction in local levels of criteria pollutants in the vicinity of the build alternative sites. Consequently, this analysis does not quantitatively evaluate criteria pollutant emissions associated with motor vehicle operations. However, GHG emissions from motor vehicles associated with the OMSF are quantified because they contribute at a global and cumulative climate change level.

There are no established state or local thresholds for the evaluation of criteria pollutant or GHG emissions from construction or operational activities. Accordingly, the context and intensity of net emissions associated with implementation of the build alternatives, relative to the No Build Alternative, were evaluated to determine the project's air quality impacts.

3.7.3 Affected Environment

The proposed project would be located between the cities of Lynnwood and Bellevue. Existing air quality conditions in the study area provide a baseline for evaluating impacts of the proposed project.

3.7.3.1 Air Quality and Criteria Pollutants

Climate in the Puget Sound region is typically temperate marine with wet, mild winters and warm, dry summers. The prevailing winds during the winter are typically from the south or southwest; in the summer months, the winds originate from the north or northeast. Wind speeds are generally sufficient to disperse air pollutants released into the atmosphere. Air pollution is most noticeable in the late fall and winter under conditions of clear skies and light winds.

Typical air pollution sources near the study area include vehicular traffic, commercial and retail businesses, light industry, and residential wood-burning devices. While many types of pollutant sources are present, the largest contributors of criteria pollutant emissions are on-road vehicles, which contribute the majority of the CO and ozone precursors (ROG and NO_X). Secondary sources of emissions are commercial and industrial land uses. Additionally, space heating and wood-burning

[1] On-site chemicals and solvents exposed to the atmosphere have the potential to indirectly release volatile organic compounds and toxic air contaminants. Quantification of emissions from evaporative loss would require a detailed inventory of on-site chemicals, as well as daily and annual usage rates for each chemical. Because this information is currently not available, a quantitative analysis to provide an accurate estimate of evaluative loss emissions is not possible and would be speculative. Given the facility size and emissions rates for evaporative loss, emissions from evaporative loss are expected to be minor in relation to emissions from vehicle and equipment use.

appliance emissions contribute to background air quality emissions, including PM. Please refer to Appendix F.4 for additional information on ROG, NO_X, CO, and PM.

Areas that meet the NAAQS for pollutants of concern are deemed *attainment areas;* areas not in compliance with the NAAQS are deemed *nonattainment areas*; areas that were formerly classified as nonattainment areas but have since demonstrated attainment with the NAAQS are classified as *maintenance areas*. Because the Puget Sound region is a maintenance area for CO, the proposed project must conform to the NAAQS for CO. The region is in an attainment area for all of the other criteria pollutants; therefore, further conformity analysis of criteria pollutants (SO_2, NO_2, O_3, particulates, and lead [Pb]) is not required.

The federal Clean Air Act requires states to develop a State Implementation Plan for protecting and maintaining air quality in all areas of the state. Proposed transportation projects requiring federal funding or approval must comply with EPA's Transportation Conformity Rule.

3.7.3.2 Greenhouse Gas Emissions

Global climate change is caused in large part by anthropogenic emissions of GHGs released into the atmosphere through the combustion of fossil fuels and by other activities such as deforestation and changes in land use. Unlike criteria air pollutants, GHGs can persist in the atmosphere for hundreds of years, where they can trap infrared radiation emitted from the Earth's surface. This phenomenon, known as the greenhouse effect, is necessary to keep the Earth's temperature warm enough for successful habitation by humans. Emissions of GHGs in excess of natural ambient concentrations; however, are responsible for the enhancement of the greenhouse effect. This trend of warming of the Earth's natural climate is termed *global warming*. The principal GHGs contributing to global warming are CO_2, CH_4), N_2O, and fluoridated compounds (e.g., sulfur hexafluoride).

3.7.4 Environmental Impacts

This section discusses impacts caused by air pollutant emissions from stationary sources and motor vehicle tailpipes. In addition, the cumulative impacts of the alternatives' contribution to regional growth, travel, and GHG emissions are addressed.

3.7.4.1 No Build Alternative

Under the No Build Alternative, stationary sources and vehicles serving the existing and proposed[2] buildings and facilities at each of the four build alternative sites would continue to emit criteria pollutants and GHGs. Projected emissions from the existing land uses at the sites are estimated from two approaches: modeling the daily trips by land-use type provided in Appendix E.1 with CalEEMod, and modeling electricity and natural gas consumption emissions with CalEEMod based on the land-use type and square footage of the existing buildings. These emissions estimates are based on the design operational year (2035). The CalEEMod model assumes that emissions will tend to decrease over time due to the implementation of improved engine emissions control technology and

[2] Proposed buildings and facilities that are unrelated to the proposed project consist of the Edmonds School District Service Center, which has been proposed to be built at the same location as the Lynnwood Alternative.

increased fuel economy, as well as turnover of older, more highly polluting vehicles for newer, cleaner vehicles. The No Build Alternative would have less light rail passenger capacity, which could result in fewer commuters using transit. These commuters may continue using automobiles instead, which would result in greater vehicular and GHG emissions.

3.7.4.2 Impacts Common to All Build Alternatives

Construction Impacts

Fugitive Dust

During construction, dust from excavation and grading could cause temporary, localized increases in the ambient concentrations of fugitive dust and suspended particulate matter. Sources of fugitive dust would include disturbed soils at the construction site and trucks carrying uncovered loads of soils. Unless properly controlled, vehicles leaving the site would deposit mud on local streets, which could be an additional source of airborne dust after it dries. PM10 and PM2.5 emissions would depend on soil moisture, silt content of soil, wind speed, and the amount of equipment operation. Larger dust particles would settle near the source, while fine particles would be dispersed over greater distances from the construction site. Regardless, construction activity could cause localized fugitive dust impacts at homes and businesses near the construction site. The magnitude of potential dust impacts would vary by build alternative depending on location and acres graded.

PSCAA and the Washington State Department of Transportation (WSDOT) require the implementation of best management practices to minimize impacts of fugitive dust resulting from construction activities. Standard practices to control emissions of PM10, PM2.5, CO, and NO_x would be used during construction. These practices may also reduce GHG emissions.

Criteria Pollutants and Greenhouse Gas Emissions

Construction activities would require the use of diesel-powered, heavy trucks and equipment. These engines would emit CO, PM, NO_X, CO_2, CH_4, N_2O, and volatile organic compounds (VOCs) that could degrade local air quality in the immediate vicinity of the activity and contribute to climate change. The criteria pollutant and GHG emissions generated from construction would vary according to each build alternative's total building square footage, layout, and total project footprint.

Emissions of CO, NO_X, and VOCs are best controlled through use of new construction equipment and proper maintenance of this equipment. Use of low-sulfur diesel fuel controls emissions of SO_2. SO_2 and NO_X emissions are considered precursor to PM2.5 emissions; therefore, reductions in SO_2 and NO_X will also help reduce PM2.5 emissions. All design measures and best management practices must comply with local regulations governing air quality, including those for controlling fugitive dust during construction. Although temporary construction impacts on criteria pollutants and GHG emissions may occur, the improved operation of the expanded light rail system, which the OMSF supports, would reduce regional vehicle miles of travel and associated criteria pollutants in the region. The build alternatives would support improvements in air quality that would offset the

temporary impacts of construction. Therefore, no adverse impacts on air quality would result under any of the build alternatives.

Table 3.7-1 summarizes the maximum daily criteria pollutants and GHG emissions that would result from the construction of the build alternatives. Emissions are presented for each year of construction.

Odors

Some construction activities could cause odors detectible to some people near the activity, especially during paving operations using tar and asphalt. Such odors would be temporary and localized, and would be quickly dispersed below detectable thresholds as distance from the sites increases. Stationary equipment used for the construction activities must comply with PSCAA regulations requiring the best available measures to control the emissions of odor-bearing air contaminants (Regulation I, Section 9.11). In addition, no slash burning would be permitted in association with construction activities.

Table 3.7-1. Projected Maximum Daily Construction Emissions for Build Alternatives

	Pounds per Day					MT per year
Alternative/Year	**ROG**	**NO_X**	**CO**	**PM10**	**PM2.5**	**CO_2e**
Lynnwood Alternative						
2016	28.69	203.43	117.73	10.56	8.24	--[a]
2017	40.77	287.93	177.96	14.06	11.75	1,463
2018	53.06	365.34	250.37	17.11	14.76	385
2019	2.87	17.37	11.67	0.67	0.66	--[a]
BNSF Alternative						
2016	16.67	121.34	68.33	12.02	5.76	--[a]
2017	39.64	282.60	181.70	18.34	12.06	1,090
2018	34.23	237.47	160.78	16.46	10.18	378
2019	0.00	0.00	0.00	0.00	0.00	--[a]
BNSF Modified Alternative						
2016	16.67	121.34	71.96	5.02	5.01	--[a]
2017	27.11	184.75	114.57	16.12	8.16	1,655
2018	37.90	260.48	180.05	10.39	10.34	367
2019	21.29	138.60	104.26	14.48	6.51	382
SR 520 Alternative						
2016	16.67	121.34	71.96	5.02	5.01	--[a]
2017	27.68	189.20	116.66	15.27	8.22	1,218
2018	45.50	265.23	219.46	20.31	13.24	394
2019	14.40	88.84	68.49	11.45	4.39	--[a]

[a] GHG emissions were calculated using the same method and modeling tool used in the *East Link Project Final EIS* (Sound Transit 2011). Some auxiliary phases associated with OMSF construction are anticipated to occur in 2016 and 2019. Since they are ancillary, they would likely be below the maximum annual emissions reported for each alternative.

ROG = reactive organic gas; NO_X = nitrogen oxides; CO = carbon monoxide; PM10 = particulate matter more than 10 microns; PM2.5 = particulate matter more than 2.5 microns; CO_2e = carbon dioxide equivalent; MT = metric tons.

Operational Impacts

Operation of the new facility would consume natural gas and electricity. Natural gas consumption would generate criteria pollutant and GHG emissions that could result in air quality impacts. Three of the build alternatives were assumed to have the same annual electricity and natural gas demand, while the Lynnwood Alternative would require an additional 716,257 kilowatt hours (kWh) of electricity and 516 million metric British thermal units (MMBtu) of natural gas to account for the BNSF Storage Tracks. The Lynnwood Alternative would receive power from SnoPUD for the main facility and from PSE for the BNSF Storage Tracks. The BNSF Alternative, BNSF Modified Alternative, and SR 520 Alternative would receive power from PSE. Emission factors for SnoPUD and PSE differ based on their generation portfolios, resulting in slightly different emissions estimates.

Tailpipe emissions from vehicles traveling on public roads would be another source of air pollutant emissions associated with employee travel to and from the proposed project site. However, every build alternative would displace some existing commercial or industrial buildings and result in a net decrease in vehicle trips at that particular location (Appendix E.1). Because displaced uses are assumed to be relocated elsewhere, the net decrease in vehicle trips at each build alternative site would not eliminate emissions associated with those trips at a regional scale.

Because the differences in build alternatives would be mainly associated with project siting, and because the Forest Street OMF is used as a proxy for all alternatives,[3] operational impacts are not expected to vary widely between build alternatives. Operation of the OMSF would displace emissions emitted directly or indirectly by the existing commercial and industrial land uses on the build alternative sites, although displaced uses are assumed to be relocated elsewhere. Table 3.7-2 shows the estimated emissions associated with operation of each build alternative. The minor differences in emissions between the build alternatives are discussed below.

Conformity Determination

Conformity to the State Implementation Plan and the Transportation Conformity Rule is required both on a regional and project level. A project demonstrates regional conformity if it is included in a conforming regional transportation plan (RTP) and a regional transportation improvement program (RTIP). If the proposed project is included in PSRC's RTIP in the future, regional conformity would be demonstrated through PSRC's regional air quality conformity analysis at that time. The proposed project would not affect degraded intersections with additional traffic volumes, or worsen congestion or delay (Appendix E.1). Consequently, no evaluation of CO concentrations at intersections (i.e., CO hot-spot analysis) or other quantitative analysis consistent with project-level transportation conformity requirements is required. The traffic associated with the proposed project would not cause or contribute to any new violation of the CO standard, increase the frequency or severity of any existing CO violation, or delay timely attainment of the CO standard.

[3] Operational activities at all of the build alternative sites are assumed to be similar to those at the Forest Street OMF. No vehicle painting would occur at the proposed OMSF.

3.7.4.3 Lynnwood Alternative

Construction Impacts

Because of the various locations and configurations, each build alternative would have unique construction emissions. As shown in Table 3.7-1, construction of the Lynnwood Alternative would generate minor amounts of construction-related criteria pollutant and GHG emissions. These emissions would be short term and cease once construction is complete. There would be no adverse impact on air quality.

Table 3.7-2. Comparison of Projected Maximum Daily Criteria Pollutant Emissions and Annual Greenhouse Gas Emissions from Net Operations by Alternative[a]

	Pounds per Day			MT per year		
Alternative	**VOC**	**NOx**	**CO**	**PM_{10}**	**$PM_{2.5}$[b]**	**CO_2e[c]**
Lynnwood Alternative	0.10	1.75	1.52	0.14	0	1,457
BNSF Alternative, BNSF Modified Alternative, SR 520 Alternative	0.09	1.61	1.40	0.13	0	4,230

[a] GHG emissions include indirect emissions from electricity use. Criteria pollutant emissions do not include the indirect criteria pollutant emissions from electricity use.

[b] EPA reports PM emissions as a combination of all PM to PM10. No emission factors were provided for PM2.5 emissions from natural gas combustion, although PM2.5 is included in the EPA PM emission factor for natural gas.

[c] CO_2 emissions are calculated using the utility-specific emission factors provided by the Washington State Department of Commerce (Burrell pers. comm.) Snohomish County Public Utilities District was assumed to provide electricity for the Lynnwood Alternative and Puget Sound Energy was assumed to provide electricity for the BNSF, BNSF Modified, and SR 520 Alternatives. Emission factor data for CH_4 and N_2O were not available for SnoPUD or PSE. Accordingly, EPA's eGrid2012 emission factors for Washington State were used to calculate CH_4 and N_2O emissions for all alternatives. Note that emission factor data are based on 2011 operating conditions and may not reflect the emission factors for the electric utilities in the build year, 2020. Emission factors will likely reflect a greater amount of renewable resources in future years, suggesting that the GHG emissions may be lower than estimated.

VOC = volatile organic gas; NO_X = nitrogen oxides; CO = carbon monoxide; PM10 = particulate matter greater than 10 microns in size; PM2.5 = particulate matter greater than 2.5 microns in size; CO_2e = carbon dioxide equivalent; MT = metric tons; CH_4 = methane; N_2O = nitrous oxide.

Operational Impacts

The OMSF would consume 8.7 gigawatt hours of electricity and 65,830 therms of natural gas per year, whereas the current and the proposed school district facilities are estimated to consume 3.4 gigawatt hours of electricity and 55,322 therms of natural gas per year. As shown in Table 3.7-2, OMSF operation emissions under the Lynnwood Alternative would generate criteria pollutants, which are primarily associated with on-site natural gas consumption from space and water heaters[4], as well as GHG emissions associated with electricity and natural gas consumption and motor vehicle emissions.

[4] As previously described in Section 3.7.2.2, Operational Emissions, project-related criteria pollutant motor vehicle emissions are not characterized for the proposed project since there would be a reduction in local levels of criteria pollutants in the vicinity of the build alternative sites. Because GHG emissions are more of a global concern, project-related GHG motor vehicle emissions are characterized for the proposed project.

The results presented in Table 3.7-2 indicate the proposed project would result in criteria pollutant emissions equivalent to adding one typical passenger vehicle per year to the road (U.S. Environmental Protection Agency 2008). Given the context and intensity of the emissions presented in Table 3.7-2, they are not anticipated to exceed the NAAQS, which are presented in Appendix F.4. Operation of the Lynnwood Alternative would result in GHG emissions of 1,457 metric tons of carbon dioxide equivalent (CO_2e) per year, which is equivalent to adding 286 typical passenger vehicles per year to the road (U.S. Environmental Protection Agency 2011). These GHG emissions would be less than 0.00144% of the statewide 2008 inventory and less than 0.00002% of the 2011 national GHG inventory (Washington State Department of Ecology 2010; U.S. Environmental Protection Agency 2012).

3.7.4.4 BNSF Alternative, BNSF Modified Alternative, and SR 520 Alternative

Construction Impacts

As shown in Table 3.7-1, construction of the BNSF Alternative, BNSF Modified Alternative, and SR 520 Alternative would generate slightly fewer construction-related criteria pollutants and GHG emissions than the Lynnwood Alternative. However, there would be no adverse impacts on air quality.

Operational Impacts

As shown in Table 3.7-2, total OMSF operation emissions under these build alternatives would generate criteria pollutants primarily associated with on-site natural gas consumption from space and water heaters[5], as well as GHG emissions associated with electricity and natural gas consumption and motor vehicle emissions. These emissions would be equivalent to adding one typical passenger vehicle per year to the road (U.S. Environmental Protection Agency 2008). Given the context and intensity of the emissions presented in Table 3.7-2, they are not anticipated to exceed the NAAQS, which are presented in Appendix F.4.

Operation of these build alternatives would result in GHG emissions of 4,230 metric tons of CO_2e per year. This is equivalent to adding 829 typical passenger vehicles per year to the road (U.S. Environmental Protection Agency 2011). These GHG emissions would be less than 0.00418% of the statewide 2008 inventory and less than 0.00006% of the 2011 national GHG inventory (Washington State Department of Ecology 2010; U.S. Environmental Protection Agency 2012).

3.7.5 Indirect and Cumulative Impacts

3.7.5.1 Indirect Impacts

The OMSF would use electricity during construction and operations. Electricity usage would not produce any on-site emissions; however, indirect emissions from electricity generation would result

[5] As previously described, project-related criteria pollutant motor vehicle emissions are not characterized for the proposed project since there would be a reduction in local levels of criteria pollutants in the vicinity of the build alternative sites. Because GHG emissions are more of a global concern, project-related GHG motor vehicle emissions are characterized for the proposed project.

in off-site pollutants and GHG emissions. However, these emissions would not be substantial when compared to the No Build Alternative conditions.

3.7.5.2 Air Quality and Criteria Pollutants

Air quality conditions are expected to change because of past, present, and reasonably foreseeable future projects related to population growth and changes in economic activity in the study area. Cumulative impacts on air quality could occur if any of the build alternatives, when combined with emissions generated by nearby projects, contribute to existing or new violations of the NAAQS, or otherwise contribute to worsening air quality.

Implementation of the build alternatives would result in minor long-term criteria pollutant emissions. Operation of the expanded light rail system, which the OMSF supports, would reduce regional vehicle miles of travel and associated criteria pollutants within the region. Therefore, the build alternatives would support improvements in air quality that would offset regional emissions directly generated by the OMSF and other projects in the study area. Accordingly, there would be no adverse cumulative impacts on air quality.

3.7.5.3 Greenhouse Gas Emissions

Unlike criteria air pollutants (e.g., ozone precursors), which are primarily pollutants of regional and local concern, GHGs are global pollutants. Given their long atmospheric lifetimes (Appendix F.4, Table 3), GHGs emitted by countless sources worldwide accumulate in the atmosphere. No single emitter of GHGs is large enough to trigger global climate change on its own. Rather, climate change is the result of the individual contributions of countless past, present, and future sources. Therefore, GHG emissions generated by the proposed project are inherently cumulative.

Operation of these build alternatives would result in GHG emissions. These emissions would be minor in comparison to state and national emissions and would not result in a cumulative impact. In addition, the proposed OMSF project serves as an element of and facilitates efficient operation of the ST2 program. Implementation of the ST2 program of light rail expansion, including the OMSF, would result in a cumulative decrease in regional GHG emissions.

3.7.6 Potential Mitigation Measures

All build alternatives would provide a net benefit in reducing criteria air pollutants and improving air quality. Additionally, all build alternatives would implement best management practices (BMPs); therefore, no mitigation would be required.