3.0 ELEMENTS OF THE ENVIRONMENT

3.1 Transportation

This section presents information on the existing transportation network near and adjacent to the Project site and identifies potential impacts resulting from the proposed development alternatives. Potential long-term transportation impacts are estimated using the year 2010 as the relevant time frame. The No Action Alternative serves as the baseline for determining potential impacts of the two action alternatives. The section also addresses potential methods to mitigate significant adverse impacts and identifies potential adverse impacts that cannot be avoided.

3.1.1 Affected Environment

This section describes the existing transportation conditions within the vicinity of the site. This includes the study area, roadway network, traffic volumes, traffic operations, traffic safety, transit service, and non-motorized facilities in the study area.

3.1.1.1 Applicable Regulations

A number of regulations were used to identify the potential transportation impacts of the three alternatives under consideration in this EIS. Transportation regulations serve a health and safety function and, as such, are not vested. Therefore, the current Burien transportation policies and regulations (except for concurrency-related regulations) apply to the Project. Applicable policies, standards, and regulations include (for additional information on applicable regulations, see Appendix A):

- Current BMC 18.70 - Development Standards – Adequacy of Public Facilities and Services (except that concurrency requirements do not apply);
- Current Burien Comprehensive Plan Transportation Element (2003 as amended);
- Current Burien Transportation Improvement Program (2003); and
- Current Burien Pedestrian and Bicycle Facilities Plan (2004).

The City uses Level of Service (LOS) as the foundation of adequate transportation system functioning. LOS represents a tool to qualitatively measure the operational conditions of the system. LOS values range from A to F. LOS A represents free-flow traffic with little or no delay while LOS F indicates extreme congestion with lengthy delays. At signalized intersections, LOS is defined in terms of average delay per vehicle. At unsignalized intersections, LOS is measured in terms of the reserve (or unused) capacity available for critical turning movements.

In the Burien Comprehensive Plan and BMC 18.70, the City has adopted the following LOS standards:

- LOS E for First Avenue South;
- LOS D within the urban center boundary and for the intersection of SW 128th Street and Ambaum Boulevard SW; and
- LOS C for all other roadways and facilities (except state facilities).

3.1.1.2 Study Area

The proposed development site is located in the City of Burien west of Ambaum Boulevard SW just north of SW 136th Street (see Figure 1.4-1). The study area for this analysis was determined through coordination with City of Burien staff based on the area that would most likely be impacted by the proposed development alternatives. The study area focuses on three primary intersections along the Ambaum Boulevard SW corridor. The three study intersections are listed below and shown in Figure 3.1-1.

1. SW 128th Street/Ambaum Boulevard SW
2. SW 136th Street/Ambaum Boulevard SW
3. SW 148th Street/Ambaum Boulevard SW

The analysis evaluates the impacts during the weekday PM peak hour (busiest hour between 4:00 and 6:00 p.m.), as this is the timeframe when the combination of adjacent street traffic and Project traffic would be the greatest.

3.1.1.3 Roadway Network

This section summarizes the existing roadway network in the study area. The site is located in a suburban area south of the city of Seattle. In general, the street network serving the proposed Project site is made up of local streets, collectors, and arterials providing local access and feeding into regional highways to the east.

Ambaum Boulevard SW is classified as a principal arterial in the vicinity of the site. This roadway is one of the main north-south arterials through the city of Burien. The roadway here is primarily five lanes with two through-lanes in each direction and a two-way left-turn lane. Sidewalks currently exist along both sides of the roadway and there are four mid-block pedestrian crossings in the study area. The posted speed limit is 35 mph and the three study area intersections, located at SW 128th Street, SW 136th Street, and SW 148th Street, are all signalized.

SW 128th Street is classified as a local arterial west of Ambaum Boulevard SW and a principal roadway east of Ambaum Boulevard SW. It is two lanes west of Ambaum Boulevard SW and four lanes east of Ambaum Boulevard SW. There are limited sidewalks along this roadway. The posted speed limit is 25 mph west of Ambaum Boulevard SW and 35 mph east of Ambaum Boulevard SW.

SW 136th Street is classified as a local arterial west of Ambaum Boulevard SW and a principal roadway east of Ambaum Boulevard SW. SW 136th Street contains two traffic lanes and the posted speed limits are 25 mph and 35 mph west and east of Ambaum Boulevard SW, respectively. There are limited sidewalks along this roadway.

SW 148th Street is classified as a local arterial west of Ambaum Boulevard SW and a principal roadway east of Ambaum Boulevard SW. As with SW 128th Street, this roadway contains two lanes west of Ambaum Boulevard SW and four lanes east of Ambaum

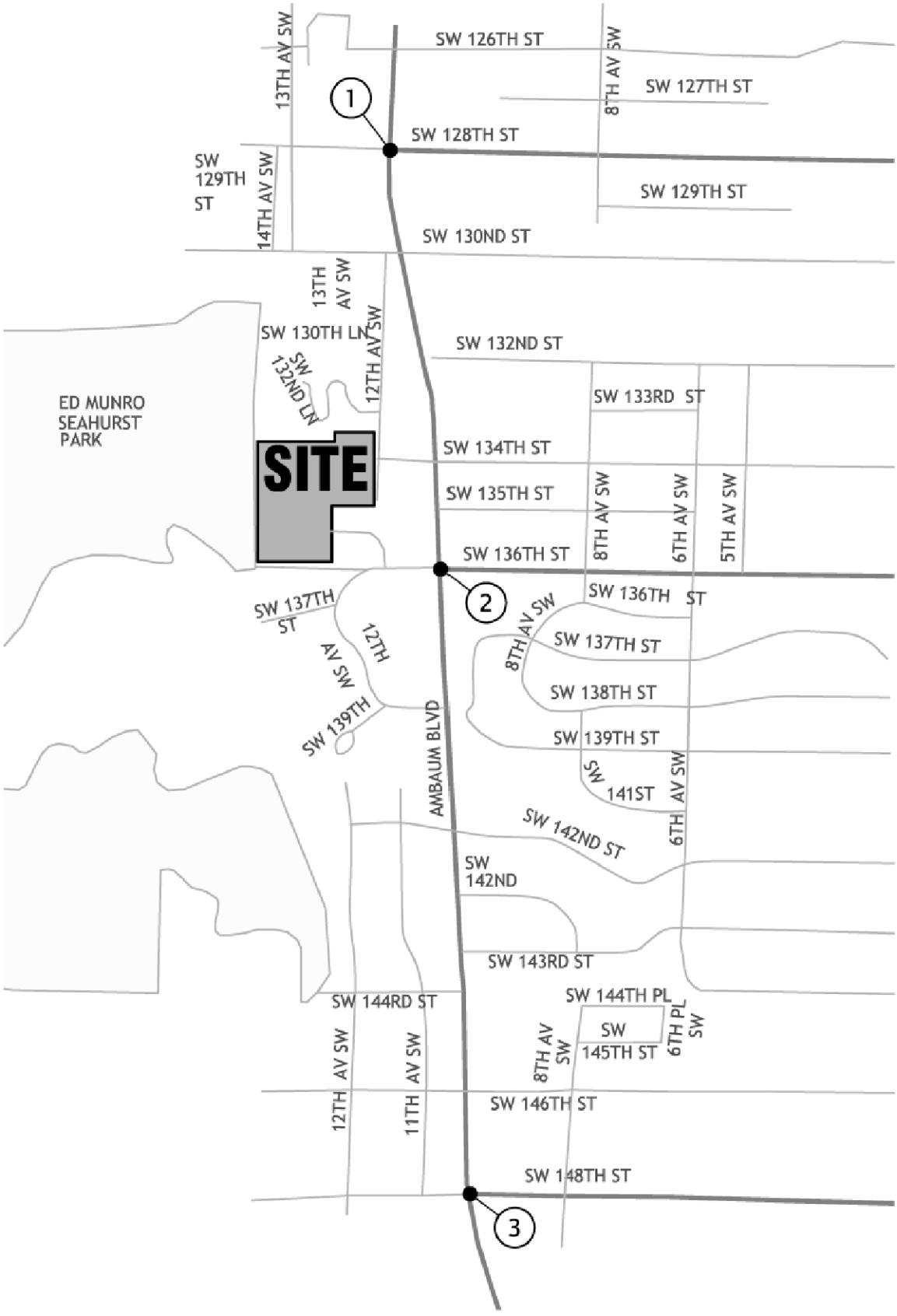

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Figure 3.1-1 Study Area Intersections

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Source: The Transpo Group, 05/03/07

[BACK OF FIGURE 3.1-1]

Boulevard SW. Sidewalks are established along both sides of the roadway east of Ambaum Boulevard SW. The posted speed limits are 25 mph and 35 mph west and east of Ambaum Boulevard SW, respectively.

3.1.1.4 Traffic Volumes

Existing intersection turning movement volumes were collected during the weekday PM peak hour at the three study intersections in November 2006 and are shown in Figure 3.1-2. The PM peak hour occurs from 5:00 to 6:00 p.m. at the intersection of SW 128th Street/Ambaum Boulevard SW and from 4:30 to 5:30 p.m. at the intersections of SW 136th Street/Ambaum Boulevard SW and SW 148th Street/Ambaum Boulevard SW[1]. The main north-south corridor of Ambaum Boulevard SW carries approximately 1,600 vehicles per hour in both directions (approximately 38,400 trips per day). The other three east-west corridors carry between 300 and 900 vehicles during the PM peak hours. The raw count traffic data are included in Appendix B.

3.1.1.5 Traffic Operations

An operations analysis was conducted in the study area to evaluate the current traffic conditions of the study intersections. Individual intersection LOS is calculated at the study area intersections based on methodologies and procedures identified in the *Highway Capacity Manual* (2000). Specifically, the capacity analysis software, *Synchro* (version 6.0) was used.

At signalized intersections, LOS is measured in stopped-delay per vehicle and is typically reported using the intersection delay and volume-to-capacity (v/c) ratio. Traffic operations for an intersection can be described alphabetically with a range of LOS (LOS A through F), with LOS A indicating free-flowing traffic and LOS F indicating extreme congestion and long vehicle delays. Appendix C includes the LOS criteria and definitions.

Table 3.1-1 summarizes the results of the LOS calculations. Intersection LOS worksheets for existing traffic conditions are provided in Appendix D.

Table 3.1-1: Existing Level of Service

Intersection	PM Peak hour		
	LOS[1]	Delay[2]	V/C[3]
SW 128th Street/Ambaum Boulevard SW	B	19.1	0.49
SW 136th Street/Ambaum Boulevard SW	A	9.5	0.32
SW 148th Street/Ambaum Boulevard SW	C	25.4	0.62

Notes: 1. Level of Service. 2. Average delay in seconds per vehicle. 3. Volume to capacity ratio.
Source: The Transpo Group 2007.

[1] *The PM peak hour represents the conditions during the hours of highest traffic volume and congestion in the site vicinity.*

As shown in Table 3.1-1, all of the study area intersections currently operate at LOS ratings of C or better, with average delays of approximately 25 seconds or less. The City has identified an operational standard of LOS D for the intersections of SW 128th Street/Ambaum Boulevard SW and SW 148th Street/Ambaum Boulevard SW and LOS C for the intersection of SW 136th Street/Ambaum Boulevard SW. As a result, all three study intersections currently operate within their respective LOS standards.

3.1.1.6 Traffic Safety

The purpose of this section is to identify any existing safety concerns in order to evaluate potential Project impacts at these locations. Accident data for all three of the study intersections were provided by the City of Burien for the most recent three years of available data (2004-2006). Table 3.1-2 summarizes the accident data, which includes the annual average number of accidents at each location, as well as the number of accidents per million entering vehicles (MEV).

Table 3.1-2: Summary of Accident Data at Study Intersections

Intersection	Accidents				
	2004	2005	2006	Annual Average	Accidents per MEV[1]
SW 128th Street/Ambaum Blvd. SW	5	9	4	6.0	0.78
SW 136th Street/Ambaum Blvd. SW	6	3	7	5.3	0.77
SW 148th Street/Ambaum Blvd. SW	3	2	6	3.7	0.44

Notes: 1. MEV = Million Entering Vehicles.
Source: City of Burien 2007.

Signalized locations with an average of ten accidents or more per year and 1.0 or more accidents per MEV are often considered to be high-accident locations. As shown in Table 3.1-2, the study area intersections have an annual average of 6 accidents or less and an accident rate of less than 0.80 accidents or less per MEV. Therefore, the study area locations do not meet the criteria for high-accident locations. The majority of the accidents at these intersections were rear-end collisions, which is typical at signalized arterial intersections. No other significant patterns were identified in the accident data that would indicate a traffic safety concern.

3.1.1.7 Transit Service

King County Metro and Sound Transit provide transit service to the city of Burien. Three bus routes currently provide service along Ambaum Boulevard SW and SW 148th Street. The nearest bus stop to the site is located along Ambaum Boulevard SW, at the intersection of SW 136th Street (approximately 600 feet from the site access point), and it serves three routes:

Route 120 provides weekday and weekend service to and from downtown Seattle. This route provides 15-minute peak-hour service headways on weekdays;

Route 133 provides weekday service to and from the University of Washington. This route provides 60-minute peak-hour service headways on weekdays; and

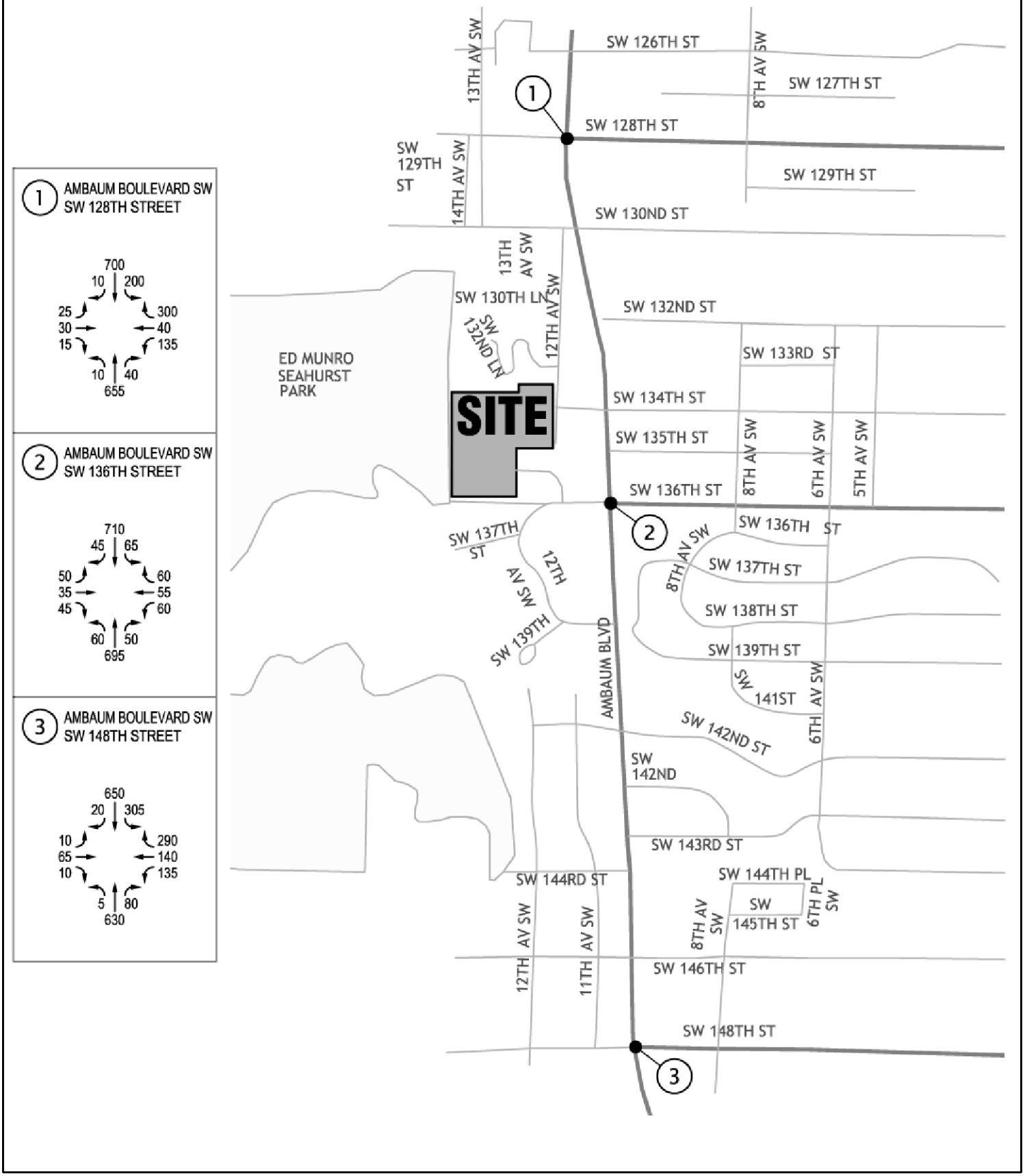

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Figure 3.1-2 Existing Weekday PM Peak Hour Traffic Volumes

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Source: The Transpo Group, 05/03/07

[BACK OF FIGURE 3.1-2.]

Route 560 provides weekday and weekend service to and from Bellevue, Renton, the Seattle-Tacoma International Airport, and West Seattle. This route provides 30-minute service headways on weekdays and one-hour headways during weekends.

Collectively, these three routes provide service to the major employment centers in the Seattle metropolitan area, as well as Sea-Tac Airport and the University of Washington main campus.

3.1.1.8 Non-Motorized Facilities

Ambaum Boulevard SW currently has sidewalks along both sides of the roadway and has four mid-block pedestrian crossings between SW 128th Street and SW 148th Street. In addition, all three signalized intersections have crosswalks with push-button controls. Sidewalks also exist along SW 148th Street east of Ambaum Boulevard SW. All other roadways within the study have limited pedestrian facilities, including some sidewalks or wide, paved shoulders, where sidewalks are not present. No separate bicycle facilities currently exist in the study area.

3.1.1.9 Planned Transportation Improvements

According to the City of Burien *2006-2011 Adopted Capital Improvement Program*, no transportation improvements are currently planned within the study area that would impact the capacity and operations of the study intersections. As such, the existing lane geometry and traffic controls were used in the 2010 analyses.

3.1.2 Impacts

This section discusses potential short-term and long-term traffic impacts for the two development alternatives for the proposed Project. Action alternative traffic conditions were compared to No Action Alternative traffic conditions to determine Project impacts. Details of expected trip generation, trip distribution, and future traffic operations of the three alternatives are provided in this section.

3.1.2.1 Alternative 1

Short Term Impacts

Transportation impacts associated with construction activity would be generated for both of the two proposed Action Alternatives. Although specific impacts would depend on the final alternative chosen, design details and construction schedules, the following short-term construction impacts would be expected.

Trip Generation
Vehicle trips generated by the construction activity would include the following:

- Arrival and departure of construction workers.
- Delivery of construction materials.
- Delivery of construction vehicles and equipment.
- Delivery and removal of material associated with fill or excavation activity.

The first category of construction trips listed above, construction worker trips, generally occur before or right at the beginning of the morning and evening peak commute times. They generally do not have a noticeable impact on peak hour traffic operations at adjacent streets and intersections.

The remaining categories of construction-related trips are primarily truck trips. A large proportion of these would be associated with grading activities. Based on preliminary estimates, the site will generate approximately 24,000 cubic yards of cut material and require approximately 24,700 cubic yards of fill material. As a result, only 700 cubic yards of material would be brought into the site during construction. Based on a 22-yard capacity for a tandem truck, the amount of material to be removed would be equivalent to approximately 32 truckloads. Each load would generate two truck trips (one trip for the full truck entering the site and one trip for the empty truck leaving the site), resulting in a total of 64 truck trips.

The number of truck trips on any given day would vary depending on the level of construction activity. However, assuming a one week period for the fill material delivery, there would be an average of 13 trips per day. These trips would typically be restricted to occur outside of the peak hour commuter times.

Long Term Impacts

Long-term transportation impacts expected to result from Alternative 1 are discussed below and are separated into the three categories identified above. Final trip number may vary as construction plans become more completely developed.

Trip Generation

Weekday PM peak hour trip generation for the proposed Project was estimated using rates identified in *Trip Generation*, 7th Edition, published by the Institute of Transportation Engineers (ITE) in 2003. Specifically, rates from the land use Residential Condominium/Townhouse (LU 230) were used as they most closely represent the proposed Project. Table 3.1-3 summarizes the PM peak-hour trip generation for the Alternative 1. Alternative 1 is anticipated to generate a total of 1,178 daily trips and 105 weekday PM peak-hour trips (70 entering trips and 35 exiting trips). This represents a substantial increase in trips generated from the Project site, where no trips are currently generated.

Table 3.1-3: Alternative 1 Trip Generation Summary

Land Use	Dwelling Units	Daily Trips		PM Peak Hour Trips			
		Rate[1]	Total	Rate[1]	Total	In	Out
Residential Condominium / Townhouse	201	5.86	1,178	0.52	105	70	35

Notes: 1. Average rate taken from Trip Generation, 7th Edition, 2003, published by ITE.
Source: The Transpo Group 2007.

These additional 1,178 trips generated in Alternative 1 represent 3 percent of the current daily automobile trips on Ambaum Boulevard SW (38,400 trips).

Trip Distribution and Assignment
Potential Alternative 1 trips were distributed to the surrounding roadway network based on existing travel patterns in the area, the location of the proposed site, and the major roadways in the study area.

In 2010, approximately 52 percent of Alternative 1-related traffic would be oriented to the east along SW 128th Street, SW 136th Street, and SW 148th Street. An additional 21 percent would orient to the north along Ambaum Boulevard SW and 15 percent would orient to the south along Ambaum Boulevard SW. The remaining 11 percent would orient to the west along SW 128th Street, SW 136th Street, and SW 148th Street. Trip distributions for Alternative 1 (also applies to Alternative 2) are summarized in Figure 3.1-3.

Trips were assigned to the study area roadways based on this trip distribution and the trip generation forecasts. Figure 3.1-4 shows the resulting weekday PM peak hour trip assignments at the study area intersections for Alternative 1.

Traffic Volume Impacts
Alternative 1-generated traffic was added to the No Action Alternative traffic volumes (see Section 3.1.2.3) to obtain the with-Project volumes for the study intersections shown in Figure 3.1-5. Future weekday PM peak hour traffic volume estimates for Alternative 1 are summarized in Table 3.1-4.

Table 3.1-4: Alternative 1 Future Traffic Volume Impacts

Intersection	2010 PM Peak Hour		
	Project-Generated Trips	With-Project Trips	Project Trip Impact
SW 128th Street/Ambaum Boulevard SW	46	2,331	2.0%
SW 136th Street/Ambaum Boulevard SW	99	2,164	4.6%
SW 148th Street/Ambaum Boulevard SW	48	2,538	1.9%

Source: The Transpo Group 2007.

As shown in Table 3.1-4, Alternative 1 would create the largest percent increase in traffic volume (4.8 percent) at the SW 136th Street/Ambaum Boulevard SW intersection. This is due to the proximity of this intersection to the Project and the fact that it would serve as the Project's primary access to Ambaum Boulevard SW. At the other study area intersections, the Project would create a maximum of a 2 percent increase in future traffic volumes. These expected increases would be within the daily fluctuations typically observed in background traffic volumes. Therefore, it is unlikely that the average motorist would perceive any increase in traffic volumes.

Traffic Operations Impacts
A LOS analysis was also conducted for with-Project conditions in order to quantify traffic operations in the study area with each of the proposed alternatives. The 2000 *Highway Capacity Manual* (TRB 2000) methodologies were applied and all intersection parameters, such as channelization, intersection control, and signal timings, were consistent with those used in the evaluation of the No Action Alternative conditions. Table 3.1-5 summarizes the 2010 with-Project intersection LOS at the study intersections during the weekday PM peak

hour for Alternative 1. In the table, Alternative 1 LOS impacts are compared to the No Action Alternative LOS performance levels. The intersection LOS worksheets detailing the results are contained in Appendix D.

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Table 3.1-5: Alternative 1 Level of Service

Intersection	Action PM Peak Hour			No Action PM Peak Hour		
	LOS[1]	Delay[2]	V/C[3]	LOS	Delay	V/C
SW 128th Street/Ambaum Boulevard SW	B	17.8	0.53	B	17.4	0.52
SW 136th Street/Ambaum Boulevard SW	A	7.6	0.37	A	6.8	0.34
SW 148th Street/Ambaum Boulevard SW	C	25.9	0.67	C	25.1	0.66

Notes: 1. Level of Service
2. Average delay in seconds per vehicle.
3. Volume to capacity ratio.
Source: The Transpo Group 2007.

As shown in Table 3.1-5, Alternative 1 would not change the LOS at any of the three study area intersections. The additional traffic would increase the overall delay at each intersection by less than 1 second per vehicle.

Site Access
The proposed site plan identifies a single access point along SW 136th Street, west of Ambaum Boulevard SW, in Alternative 1. The access drive would be two lanes, one lane inbound and one lane outbound, and would accommodate full turning movements into and out of the site.

The site access driveway was evaluated using the same methodologies described in the previous traffic operations sections of this report. Based on this evaluation, all movements at the driveway would operate at LOS B or better for Alternative 1. The intersection LOS worksheets detailing the results are contained in Appendix D.

Non-Motorized Impacts
In Alternative 1, new sidewalks would be constructed along the new entry access road and along the extension of SW 136th Street (southeast of the Project). Once completed, sidewalks would connect the Project with Ambaum Boulevard. These would provide easy pedestrian access to the Project.

Traffic Safety Impacts
As indicated by the existing traffic accident history, none of the study intersections currently exhibit an unusually high rate of traffic accidents. This suggests that the facilities are operating within average safety parameters. The Project would increase traffic through these intersections by varying degrees and therefore cause a proportional increase in the probability of traffic accidents. However, the facilities would continue operating within the existing safety parameters. As such, it is unlikely that these increases would create a safety concern or significantly increase the number of reported accidents at the study intersections.

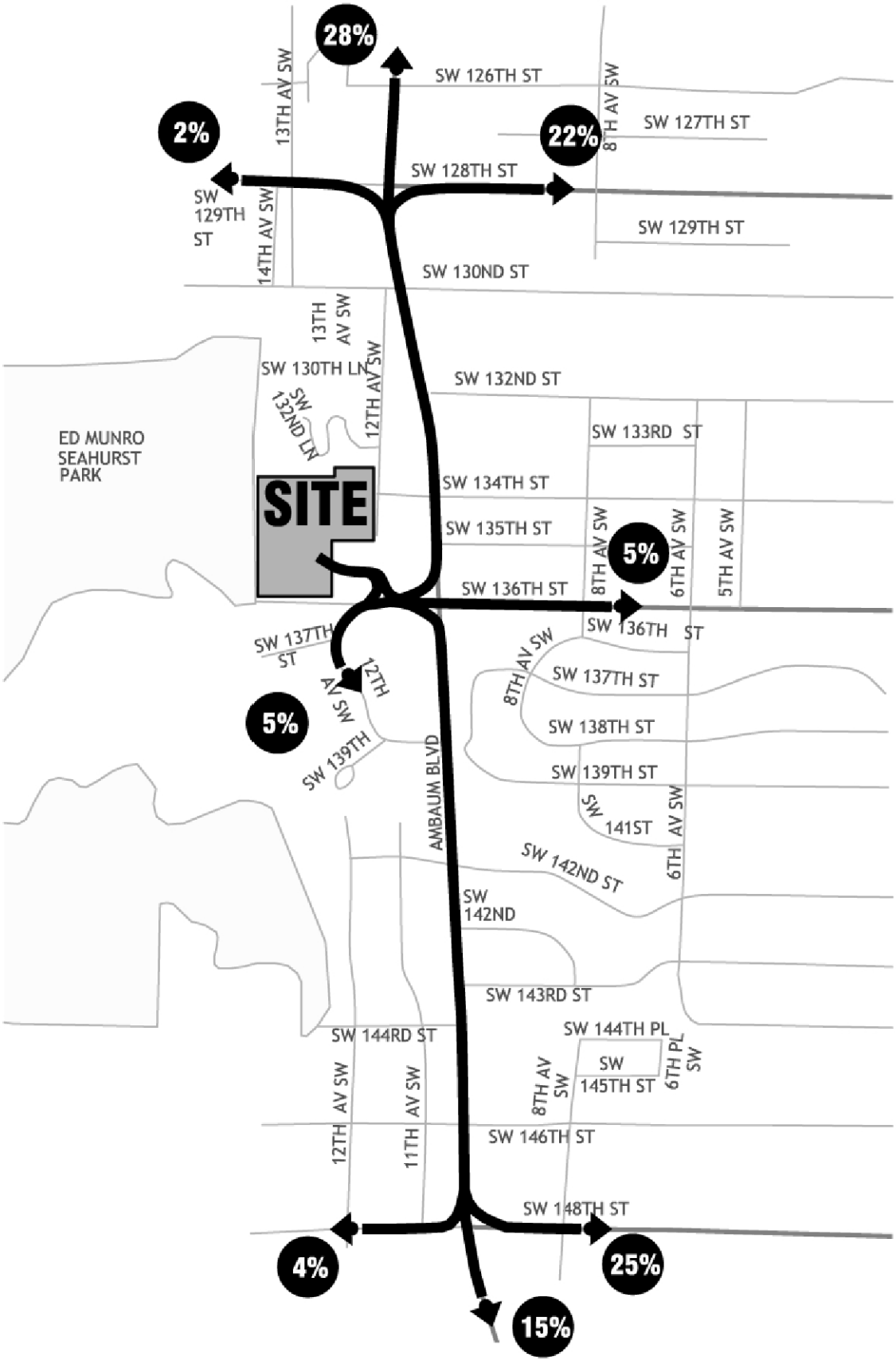

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Figure 3.1-3 Project Trip Distribution (Alternative 1 and Alternative 2)

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Source: The Transpo Group, 05/03/07

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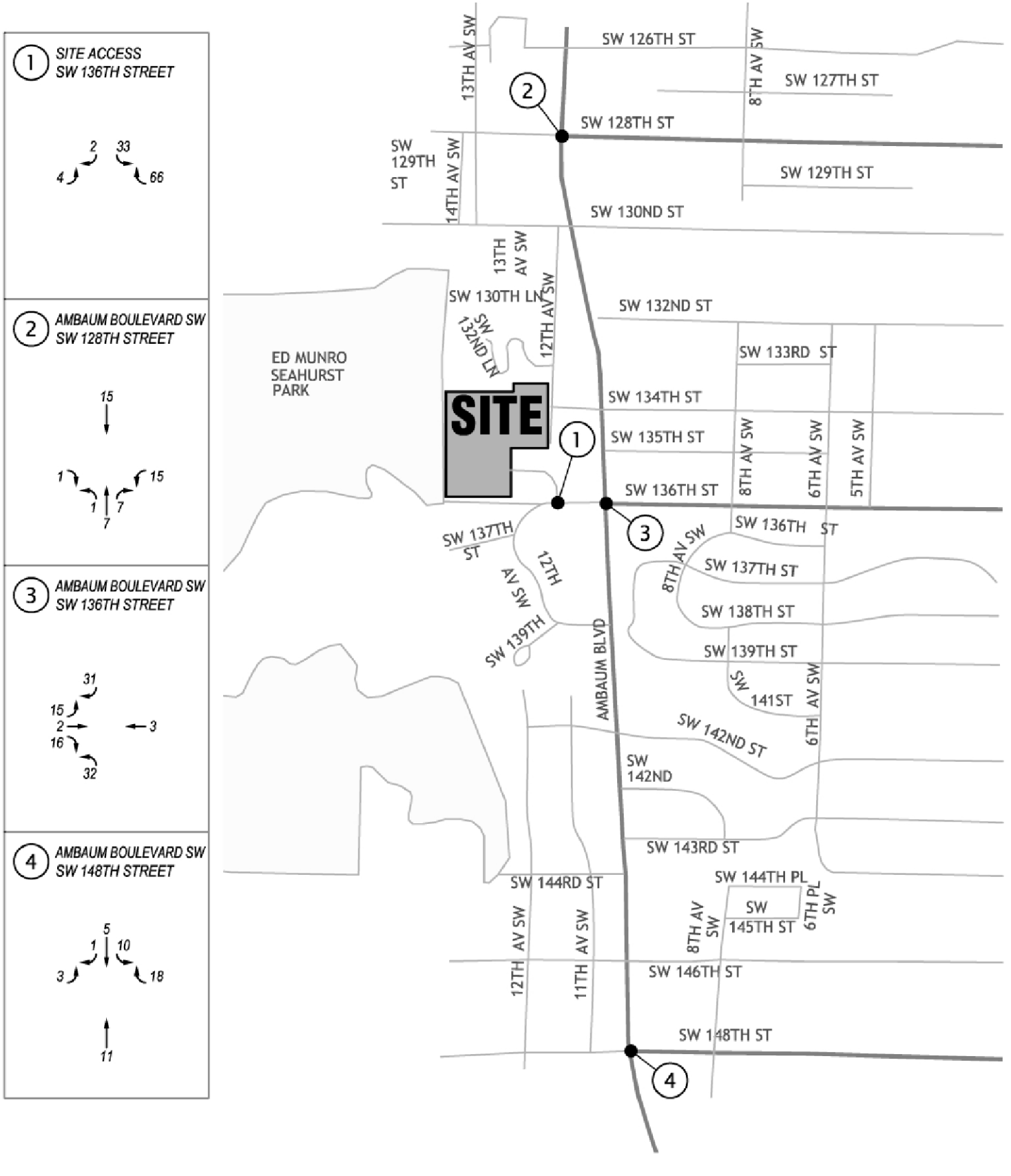

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Figure 3.1-4 Alternative 1 Project-Generated Weekday PM Peak Hour Traffic Volumes

Source: The Transpo Group, 05/03/07

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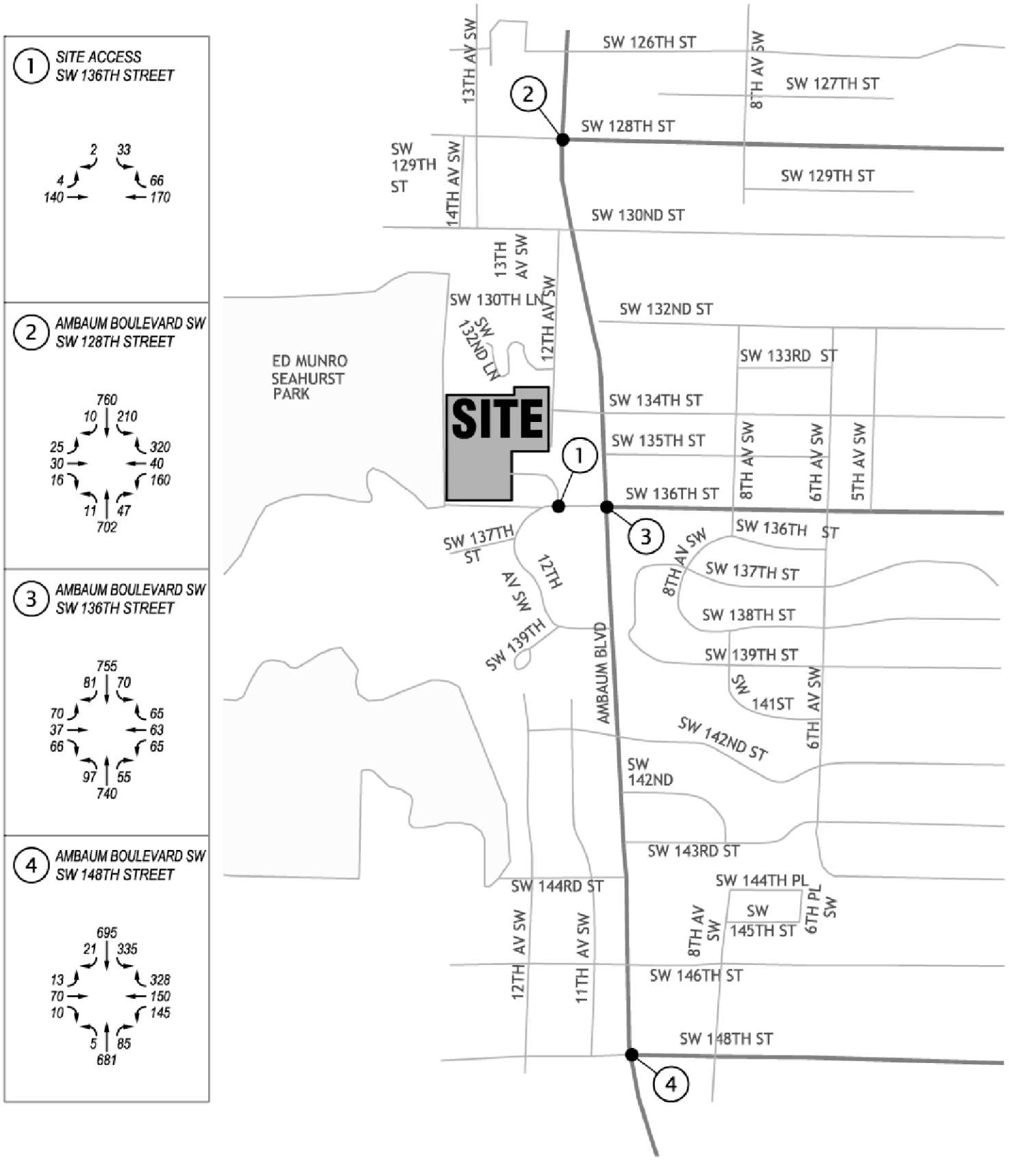

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Figure 3.1-5 Alternative 1 2010 With-Project Weekday PM Peak Hour Traffic Volumes

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Source: The Transpo Group, 05/03/07

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Cumulative Impacts

No cumulative impacts have been identified from the implementation of Alternative 1. Eventual redevelopment of the Highline School District property adjacent the Project site to the east will contribute additional traffic to the site vicinity of unknown distribution and quantity.

3.1.2.2 Alternative 2

Short Term Impacts

Short-term impacts in Alternative 2 would be similar to those identified for Alternative 1.

Long Term Impacts

Long-term transportation impacts in each of the three categories that would result from Alternative 2 are discussed below.

Trip Generation

Table 3.1-6 summarize the PM peak hour trip generation for Alternative 2, using rates identified in *Trip Generation*, 7th Edition, published by the ITE in 2003 (ITE 2003). Alternative 2 is anticipated to generate a total of 1,049 daily trips and 93 weekday PM peak hour trips (62 entering trips and 31 exiting trips).

Table 3.1-6: Alternative 2 Trip Generation Summary

Land Use	Dwelling Units	Daily Trips		PM Peak Hour Trips			
		Rate[1]	Total	Rate[1]	Total	In	Out
Residential Condominium / Townhouse	179	5.86	1,049	0.52	93	62	31

Notes: 1. Average rate taken from Trip Generation, 7th Edition, 2003, published by ITE.
Source: The Transpo Group 2007.

Trip generation in Alternative 2 would be similar to that of Alternative 1, but the total number of trips would be slightly less due to the construction of fewer dwelling units in Alternative 2. The 1,049 daily trips generated in Alternative 2 represent approximately 2.7 percent of the current daily trips on Ambaum Boulevard SW (38,400 trips). Comparing the two, Alternative 2 would generate 129 fewer daily trips and 11 fewer weekday PM peak-hour trips (8 fewer entering trips and 3 fewer exiting trips) than Alternative 1. This equates to a reduction in daily trips of approximately 11 percent, when compared to Alternative 1.

Trip Distribution and Assignment

Alternative 2 trips were distributed to the surrounding roadway network according to the existing travel patterns in the area, the location of the proposed site, and the major roadways in the study area. Alternative 2 trips would be very similar to Alternative 1.

Approximately 52 percent of Alternative 2-related traffic would be oriented to the east along SW 128th Street, SW 136th Street, and SW 148th Street. An additional 21 percent would orient to the north along Ambaum Boulevard SW and 15 percent would orient to the south along Ambaum Boulevard SW. The remaining 11 percent would orient to the west along SW 128th Street, SW 136th Street, and SW 148th Street. Trip distributions for Alternative 2 (and Alternative 1) are summarized in Figure 3.1-3.

Trips were assigned to the study area roadways based on this trip distribution and the trip generation forecasts. Figure 3.1-6 shows the resulting weekday PM peak hour trip assignments at the study area intersections for Alternative 2.

Traffic Volume Impacts
Alternative 2-generated traffic was added to the No Action Alternative traffic volumes to obtain the with-Project volumes for the study intersections shown in Figure 3.1-7. In addition to Figure 3.1-7, future weekday PM peak hour traffic volume estimates for Alternative 2 are summarized in Table 3.1-7.

Table 3.1-7: Alternative 2 Future Traffic Volume Impacts

	2010 PM Peak Hour		
Intersection	Project-Generated Trips	With-Project Trips	Project Trip Impact
SW 128th Street/Ambaum Boulevard SW	42	2,327	1.8%
SW 136th Street/Ambaum Boulevard SW	89	2,154	4.3%
SW 148th Street/Ambaum Boulevard SW	42	2,532	1.7%

Source: The Transpo Group 2007.

As shown in Table 3.1-7, Alternative 2 would create the largest percent increase in traffic volume (4.3 percent) at the SW 136th Street/Ambaum Boulevard SW intersection. This is due to the close proximity of this intersection to the Project and the fact that it will serve as the Project's primary access to Ambaum Boulevard SW. At the other study area intersections, Alternative 2 would create a maximum of a 1.8 percent increase in future traffic volumes. These expected increases would be within the daily fluctuations typically observed in background traffic volumes. It is unlikely that the average motorist would perceive any increase in traffic volumes due to these increases.

Overall, traffic volume impacts are expected to be very similar in the two action alternatives, with the impacts being slightly greater for Alternative 1 due to its higher trip generation.

Traffic Operations Impacts
As in Alternative 1, the 2000 *Highway Capacity Manual* (TRB 2000) methodologies were applied and all intersection parameters, such as channelization, intersection control, and signal timings, used to determine potential impacts on traffic operations were consistent with those used in the evaluation of the No Action Alternative conditions. Table 3.1-8 summarizes the 2010 with-Project intersection LOS at the study intersections during the weekday PM peak hour for Alternative 2. In the table, Alternative 2 LOS impacts are compared to the No Action Alternative LOS performance levels. Intersection LOS worksheets providing additional detail on the analysis results can be found in Appendix D.

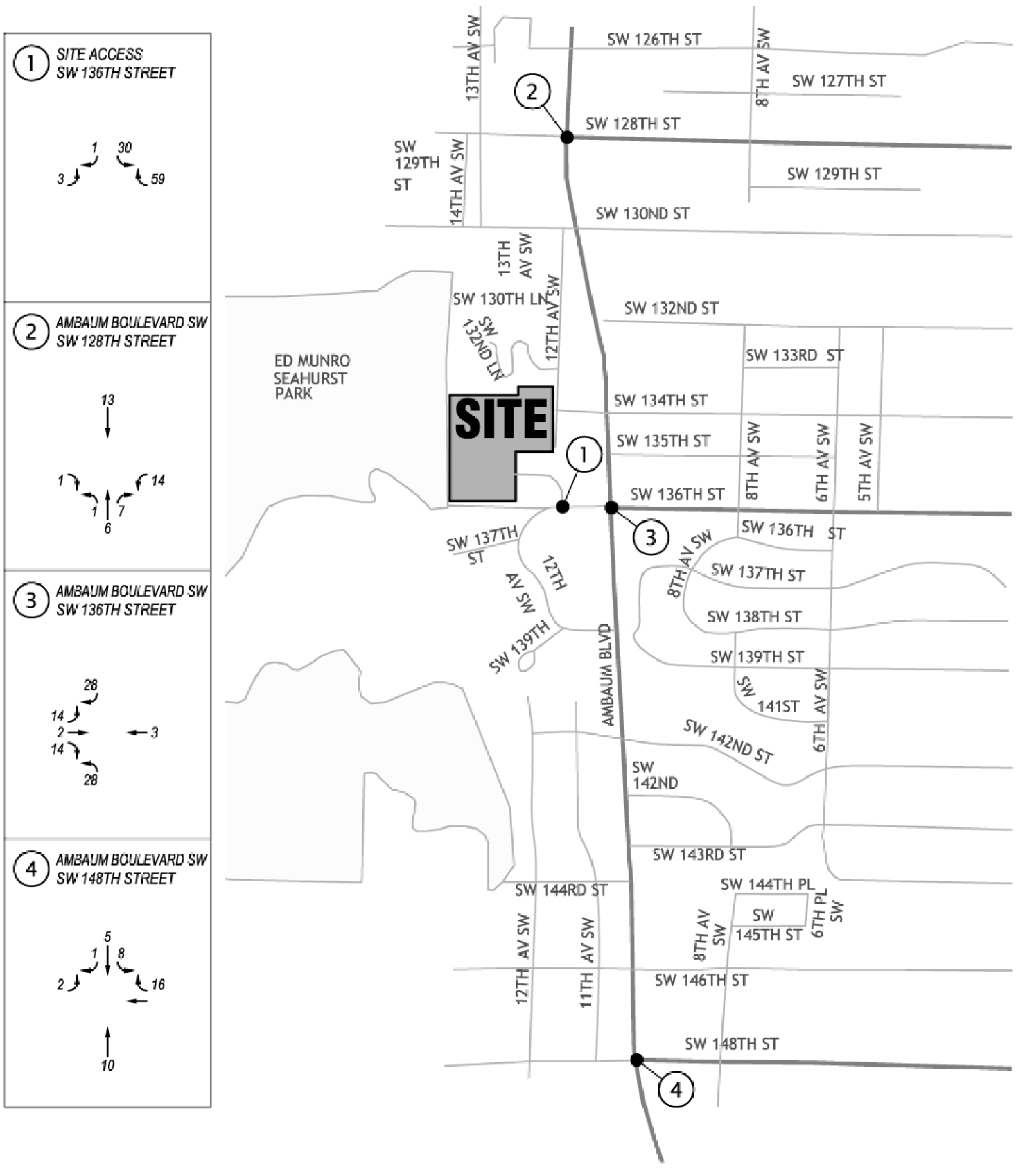

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Figure 3.1-6 Alternative 2 Project-Generated Weekday PM Peak Hour Traffic Volumes

Source: The Transpo Group, 05/03/07

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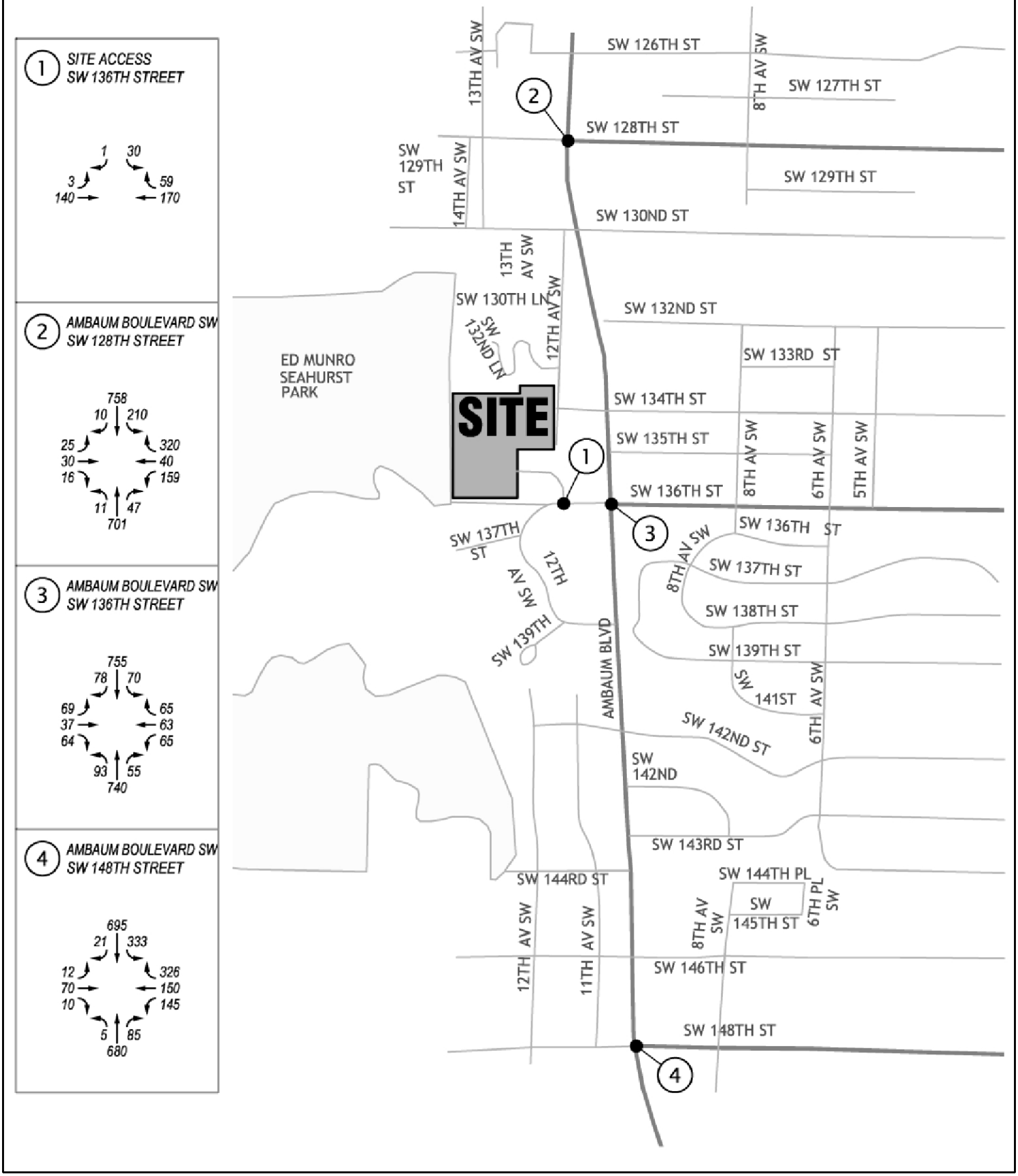

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Figure 3.1-7 Alternative 2 2010 With-Project Weekday PM Peak Hour Traffic Volumes

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Source: The Transpo Group, 05/03/07

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Table 3.1-8: Alternative 2 Level of Service

Intersection	Action PM Peak Hour			No Action PM Peak Hour		
	LOS[1]	Delay[2]	V/C[3]	LOS	Delay	V/C
SW 128th Street/Ambaum Boulevard SW	B	17.8	0.53	B	17.4	0.52
SW 136th Street/Ambaum Boulevard SW	A	7.6	0.37	A	6.8	0.34
SW 148th Street/Ambaum Boulevard SW	C	25.5	0.67	C	25.1	0.66

Notes: 1. Level of Service
2. Average delay in seconds per vehicle.
3. Volume to capacity ratio.
Source: The Transpo Group 2007.

As shown above, Alternative 2 would not change the current LOS at any of the study area intersections. As in Alternative 1, the additional traffic created in Alternative 2 would increase the overall delay at each intersection by less than 1 second per vehicle. Comparing Alternative 1 and Alternative 2, all three study area intersections are expected to operate at the same LOS. Under Alternative 1, average vehicle delays would be slightly higher than under Alternative 2 (by less than half a second per vehicle).

Site Access
The Alternative 2 site plan identifies a single access point along SW 136th Street, west of Ambaum Boulevard SW (same as in Alternative 1). The access drive would be two lanes, one lane inbound and one lane outbound, and would accommodate full turning movements into and out of the site.

The site access driveway was evaluated using the same methodologies described in the previous traffic operations sections of this report. Based on this evaluation, all movements at the driveway would operate at LOS B or better for Alternative 2. Delays in Alternative 2 would be slightly less than those estimated for Alternative 1. The intersection LOS worksheets detailing the results are contained in Appendix D.

Non-Motorized Impacts
For both Alternative 1 and Alternative 2, the proposed Project would construct new sidewalks along the south property frontage on SW 136th Street. Once completed, sidewalks would connect the Project with Ambaum Boulevard.

Traffic Safety Impacts
As indicated by the existing traffic accident history, none of the study intersections currently exhibit an unusually high rate of traffic accidents. This suggests that the facilities are currently operating within average safety parameters. The Project would increase traffic through these intersections by varying degrees and therefore cause a proportional increase in the probability of traffic accidents. However, the facilities are expected to continue operating within the existing safety parameters. As such, it is unlikely that these increases would create a safety concern or significantly increase the number of reported accidents at the study intersections.

Cumulative Impacts

Cumulative impacts from the implementation of Alternative 2 are the same as for Alternative 1.

3.1.2.3 No Action Alternative

Short Term Impacts

Since the Project site would remain undeveloped, no short-term impacts would result from the No Action Alternative.

Long Term Impacts

A future (2010) No Action Alternative analysis was developed to identify forecast traffic conditions without the development proposed in the action alternatives. These evaluations establish a baseline for identifying Project impacts compared to without-Project traffic conditions. The future roadway network, traffic volumes, and traffic operations are defined in this section.

Traffic Volumes

Future No Action Alternative traffic volumes were forecasted by applying an annual growth rate to the existing weekday PM peak hour traffic volumes. A 2 percent annual growth rate was used as provided by City staff, which represents the historical trends in general traffic growth in the area. The resulting No Action Alternative weekday PM peak hour traffic volumes are shown in Figure 3.1-8.

Traffic Operations

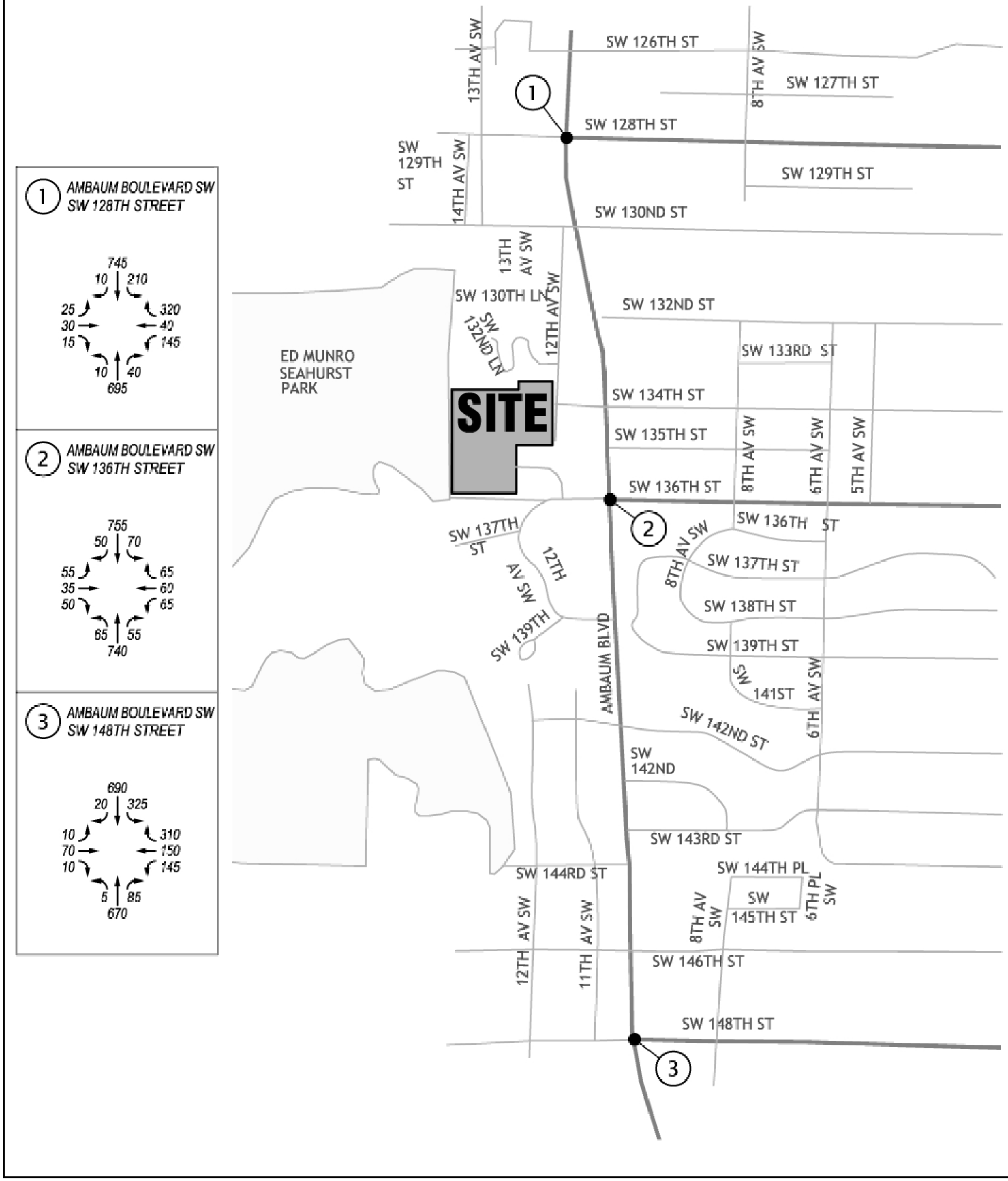
Future traffic operations in the study area for the No Action Alternative were evaluated based on the 2010 forecast traffic volumes described above, using the same methodologies discussed in the evaluation of existing LOS. Table 3.1-9 provides a summary of the No Action Alternative LOS for the study area intersections. The intersection LOS worksheets detailing the results are contained in Appendix D.

Table 3.1-9: No Action Alternative Level of Service

Intersection	PM Peak Hour		
	LOS[1]	Delay[2]	V/C[3]
SW 128th Street/Ambaum Boulevard SW	B	17.4	0.52
SW 136th Street/Ambaum Boulevard SW	A	6.8	0.34
SW 148th Street/Ambaum Boulevard SW	C	25.1	0.66

Notes: *1. Level of Service.*
2. Average delay in seconds per vehicle.
3. Volume to capacity ratio.
Source: *The Transpo Group 2007.*

As shown, all study intersections would continue to operate at LOS C or better in 2010 with average delays of approximately 25 seconds or less. As in the existing condition, all three intersections are expected to operate within their LOS standards.



Emerald Pointe EIS - Burien, WA

Figure 3.1-8 2010 No Action Alternative Weekday PM Peak Hour Traffic Volumes

N

Source: The Transpo Group, 05/03/07

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Traffic Safety
There would be a slight increase in the potential for traffic accidents at the study intersections in 2010, proportionate to the increase in traffic due to background traffic growth. However, the facilities are expected to continue operating within the existing safety parameters.

Cumulative Impacts
No cumulative impacts would result from the No Action Alternative.

3.1.3 Mitigation Measures

Since all study area intersections would operate within their LOS standards, no significant adverse traffic impacts are anticipated from either Alternative 1 or Alternative 2. Therefore, no transportation mitigation would be necessary in either alternative.

3.1.4 Significant Unavoidable Adverse Impacts

No significant unavoidable adverse traffic-related impacts would occur under Alternative 1 or Alternative 2.

3.2 Drainage & Water Quality

This section presents information on the existing drainage and water quality characteristics of the Project site and its watershed. Potential impacts resulting from the Action Alternatives are identified. In these determinations, the No Action Alternative serves as the baseline for determining potential impacts of the two action alternatives. The section also addresses potential methods to mitigate significant adverse impacts and isolates potential adverse impacts that cannot be avoided.

3.2.1 Affected Environment

3.2.1.1 Applicable Regulations

As land use regulations, stormwater runoff and water quality guidelines for new development were vested in 1990. At the time, the Draft King County Surface Water Design Manual guided site development. The manual was finalized as the "1992 King County Surface Water Design Manual" (1992 Manual) by King County and later adopted by many cities, including the City of Burien. Under these guidelines, a single rainfall event model is used (the unit hydrograph method) to determine storm precipitation volumes and peak runoff rates for sizing detention facilities and release rates for a developed site. However, despite vesting to this earlier standard, the Applicant and the City have agreed to incorporate the 2005 standards into the ultimate stormwater infrastructure design. Therefore, the preliminary stormwater collection and treatment system for the Preferred Alternative has been prepared to meet the design criteria required by the 2005 King County Surface Water Design Manual criteria (2005 Manual).

Designing to the 2005 Manual provides a higher level of runoff and water quality protection than the 1992 Manual guidelines. The 2005 Manual design storms are modeled using continuous flow models. These models have been shown to better represent actual rainfall durations, volumes, and intensities than the unit hydrograph method. The 2005 Manual also

requires developments to meet more restrictive water quality targets for the release of collected stormwater runoff. Using the continuous flow model more accurately represents the historical rainfall patterns and target flows, resulting in a stormwater system design that better matches the historical flow rates of the site, provides improved runoff water quality, and supports downstream flow patterns reflective of natural hydrologic regimes.

Based on vesting, the Project will provide temporary construction erosion and sediment control (TESC) mitigation measures, designed using the 1992 Manual However, while the Project is vested to the 1992 Manual, if the 1992 Manual thresholds are exceeded, TESC measures for the 2005 Manual will apply. Final TESC plans are required to go through a review and approval process by the City to ensure that correct TESC plans and measures are provided and are in full compliance. Detailed individual sediment and erosion control measures are called BMPs.

3.2.1.2 Site Description

Generally, the Project site slopes downhill from east to west at an average grade of 30 percent. The site is currently mostly forested with Douglas-fir, big-leaf maple, and red alder trees. Stormwater runoff flows westward across the site as surface flow and then enters the wetland that originates along western edge of the site and extends into Seahurst Park (see Figure 3.5-1).

The Project site lies within a watershed sub-basin that drains westerly across the entire site and into the wetland. The sub-basin includes approximately 1.5 additional acres outside and to the east of the Project limits. The Draft Storm Drain Level 1 report prepared by the Project engineers more clearly defines the sub-basin limits (Touma 2007). The off-site contributing area of the drainage sub-basin consists of the area along the 12th Avenue SW right-of-way, adjacent to the site, and the Highline School District property located southeast of the site, between 12th Avenue SW and SW 136th Street. This portion of the drainage basin is mostly forested except for the four Highline School District buildings and associated sidewalks located in the SW corner of the School District property.

Existing vegetation and organic topsoil on the site provide an efficient and self-regulating means to collect and transport sediment-free runoff water to the wetland. The topsoil and vegetation act as a sponge to hold and store initial stormwater runoff volumes, releasing the stored runoff slowly after the heavier precipitation events have passed. Subsurface flow occurs as one of two types, groundwater and interflow. Interflow is water that travels within topsoil and at the interface between the topsoil and the underlying soil. Groundwater predominantly travels deeper within the underlying soils. Interflow naturally cleans water as it travels through and within the topsoil. The predominantly naturally-vegetated site controls runoff and its release and distribution rate to the wetland. Movement of runoff through soil controls the water temperature. Water passing through soil tends to be cooler than surface runoff water during warmer times of the year, resulting in a consistent temperature of the water flowing to the wetland. Changes to this existing natural runoff collection and water delivery system would have the potential to impact runoff rates and water quality to the wetland.

A geotechnical study undertaken as a part of the Project planning (Terra Associates 1991) developed a series of borings and test pits across the site. Groundwater was encountered at a depth of between approximately 9 to 141 feet in depth. This depth corresponded to a static groundwater level of approximately 273 feet in elevation. The shallowest groundwater encountered in that testing program was at a test pit in the southwestern corner of the site, at one of the lowest elevations, at approximately 285 feet in elevation. Some seepage and springs were noted lower down on the hillside, outside of the property limits.

3.2.2 Impacts

Site development (clearing and grading) would expose most of the site to rainfall and erosion. Natural vegetation provides many water quality and runoff control benefits to the site. Topsoil and vegetation create a sponge effect where initial precipitation is stored. Natural vegetation provides transpiration action of precipitation, reducing runoff volumes. Transpiration (also called evapo-transpiration) is the direct return of moisture from plant leaves to the atmosphere. Precipitation remaining on vegetation after a storm event would be, in predevelopment conditions, returned to the atmosphere through evapo-transpiration. Without the existing vegetation, this water volume would be added to the runoff volume. Water travels more slowly and uniformly through and across the natural vegetated soil. Removing vegetation and topsoil during construction also removes the energy-dissipating effects they provide. Direct rainfall on exposed soil would separate fine particles and suspend them in the runoff water, generating turbid (or sediment laden) runoff. Runoff from exposed soil surfaces would occur sooner and with larger peak rates for each storm event.

With development, increased runoff volume occurs for two reasons: 1) water that under predevelopment conditions was absorbed and held within the topsoil, then slowly released during or after the storm event, now falls on impervious surfaces, such as roofs and pavement, or less absorptive surfaces, such as lawns, and flows off at much higher rates; and 2) removing topsoil exposes underlying soils that are more susceptible to erosion and initiates runoff earlier in a storm event, at the same time creating more sediment in the runoff.

Off-site runoff originating upslope of the Emerald Pointe site will be collected before reaching the construction runoff, and conveyed around the work area. Collecting this off-site stormwater before it mixes with turbid construction site runoff eliminates the need to treat this stormwater before releasing it into the wetland.

New impervious pollution-generating and non-pollution-generating surfaces (e.g., roads, roofs, and walks) would be created by the action alternatives, replacing the existing vegetation and topsoil. This additional impervious surface would increase runoff volume and reduce the water quality of runoff to the wetland for the same reasons described above (e.g. loss of protective vegetation and topsoil, loss of transpiration, etc.).

3.2.2.1 Alternative 1

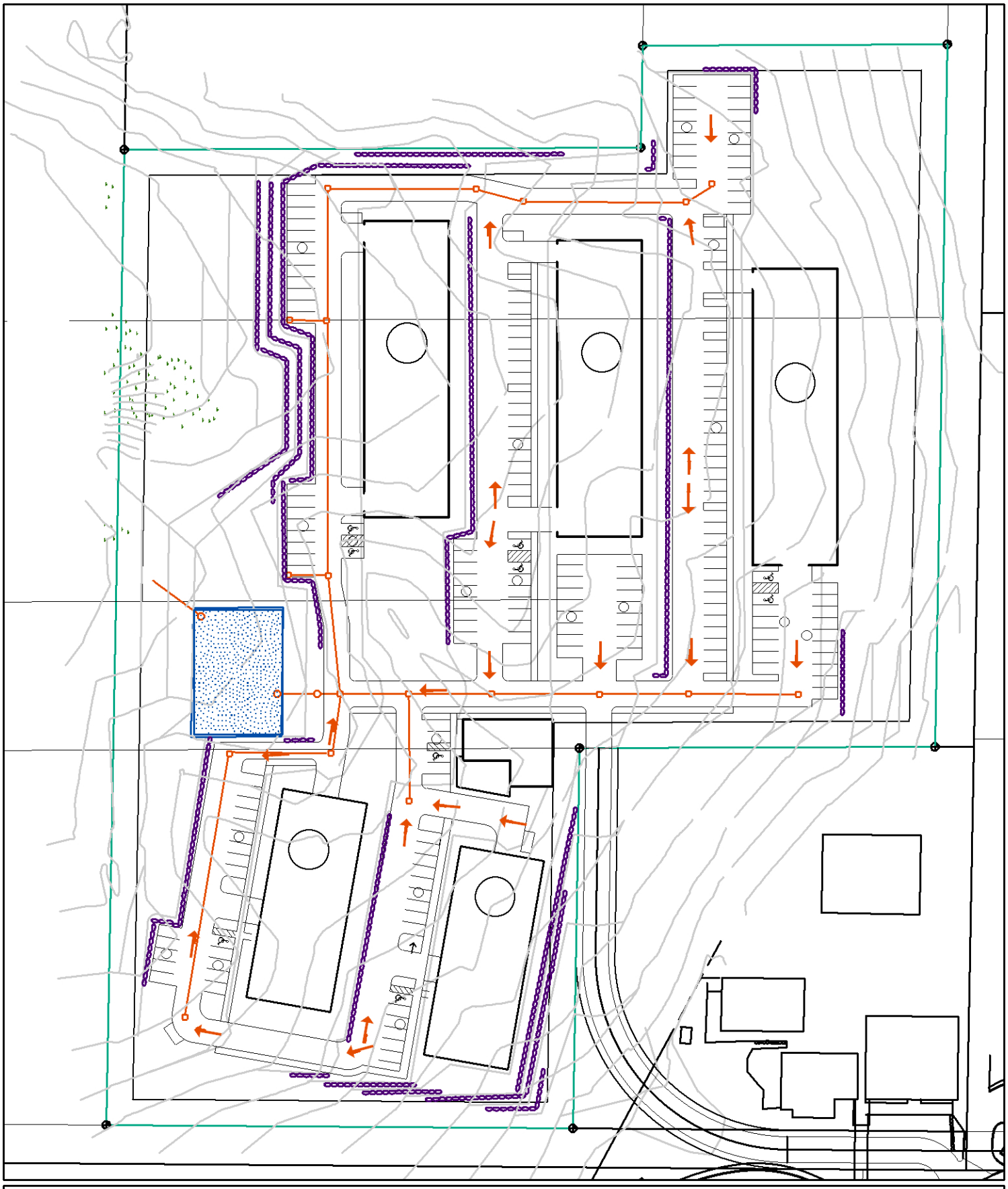
Short-Term Impacts

Construction activities create the largest impact on runoff rate and water quality. Initial site clearing and grading in Alternative 1 would expose soils on approximately 75 percent of the site to the elements. Any exposed soil would generate sediment-laden runoff water, and the release of this collected runoff would be concentrated or partially concentrated at locations upslope of the wetland limit. Sediment control measures would be needed to minimize sediment loads in construction runoff leaving the site. Once steep slopes are cleared of vegetation, runoff control on the slopes is extremely difficult. Clearing and construction staging and well-planned TESC measures would be required to meet construction stormwater control criteria. Effective runoff controls would ensure successful diversion of surface runoff and interflow water across the site during construction.

An approved TESC plan would be required for this work and must be implemented to mitigate runoff during construction. Construction activities should be sequenced during final design to ensure that the TESC criteria, per the 2005 Manual, are met. If 100 percent infiltration of collected construction stormwater is not possible, the 2005 Manual requires development of NPDES standards for construction activities document be prepared. This is identical to the Washington Department of Ecology (DOE) 2005 requirements, where 100 percent infiltration of runoff is not achievable on-site. This would also require the development of a SWPPP in addition to the basic TESC plan. The SWPPP provides a much more detailed set of BMPs to address the management of construction stormwater runoff.

The Alternative 1 site layout shows a three-tier site that steps down from tier to tier. There would be a 20-foot elevation difference between the upper and middle tiers, as well as between the middle and lower tiers (see Figure 3.2-1). Alternative 1 would include many large retaining walls that would require a substantial removal of soil from the site's steep slopes. These walls would require geotechnical engineering. The main retaining walls separating the tiers have roads above them with integrated drainage and catchbasin systems that would intercept surface runoff before it reaches the walls. Retaining walls along the north and south property limits would not include significant runoff catchment areas and, therefore, would collect only minor amounts of runoff. All wall designs would incorporate wall drainage systems of a size and type to relieve hydrostatic pressure from behind the walls as well as adequately convey surface and subsurface flows out to the main trunk lines under the road systems and ultimately to the vault retention systems.

Several large walls would be located close to the north and south site property lines. These would be gravity walls that require significant excavation that could encroach on adjacent properties. In that case, temporary construction easements would be required along with associated temporary and permanent drainage measures. An example of gravity walls that require significant excavation are Mechanically Stabilized Earth (MSE) walls, where excavation behind the wall is roughly equal to the wall height. This amount of excavation is needed to layer geotextile fabric and backfill material behind the wall. Ground surface



Emerald Pointe EIS - Burien, WA

Figure 3.2-1 Alternative 1 Stormwater and Grading Plan

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Storm Drainage

Property Boundary

Retaining Wall

Detention Vault

Source: Touma Engineers

Back of figure

behind these walls would be restored to near-original grades, as needed, and would include replacement of fences, structures, and vegetation.

Different wall types could be used if easements cannot be acquired or if soil conditions preclude stabilized or gravity walls. Structural walls, for example, could be used, provided they do not require significant excavation to construct. Soldier pile or cast-in-place concrete retaining walls are examples of structural wall types that use the wall face as the primary structural feature to retain the soil and do not require extensive excavation behind the wall. Using these wall types would still require addressing final drainage features, but would reduce the temporary drainage features needed.

Long-Term Impacts

Long-term impacts associated with Alternative 1 would result from the creation of approximately 180,000 square feet of new impervious surfaces, resulting in two primary drainage impacts: (1) reduced runoff water quality; and (2) increased runoff quantity from the site. Wet vault detention structures incorporating controlled release of collected site runoff will be used to counter reduced water quality and increased runoff flow. Final system design will incorporate features to mimic interflow or subsurface flows to the wetland. The Project design would include the collection of these flows in the site drainage system or in a separate bypass system and return runoff to the wetland.

The Draft Storm Drain Level 1 Report (Touma 2007) proposes a stormwater control vault system to collect and treat runoff. The sizing and release rates for these vaults would be designed according to the criteria in the 2005 Manual. All onsite runoff would be collected, treated, detained, and released within and from the vault system located beneath onsite driveways just upslope of the wetland. Impacts to downstream water flow rates and water quality from storms within the design parameters are limited to those allowed within the limits of the 2005 Manual.

As described in Section 2 of this DEIS, collecting and routing runoff from areas upslope of the Project excavation would be required to divert offsite surface runoff water around the excavations, walls and buildings. This water could either be routed in a separate bypass system or the flow could be added to the site storm drainage system. Interflow could be estimated from borings, but would be more precisely identified and defined during construction. Test borings to date reveal no apparent groundwater flow through the site above elevation 273 feet ASL. The vaults would require foundation drainage features designed to meet existing soil conditions at the base of the vaults where ground water levels or interflow would reduce potential buoyant forces under the vaults.

Cumulative Impacts

Redevelopment of the adjacent parcel to the east, currently owned by the Highline School District, is in the early planning stages. Stormwater treatment and release from that site will also be regulated by the 2005 Manual. As the site straddles a subbasin boundary, it is not clear where the stormwater from the site will ultimately flow. Whichever basin receives the water is not expected to result in cumulative impacts.

3.2.2.2 Alternative 2

Substantial forest area would be cleared and many substantial walls would be required in Alternative 2, similar to the area in Alternative 1. The Alternative 2 Drainage Plan and the Stormwater and Grading Plan are shown in Figure 2.4-1 and Figure 3.2-2, respectively.

Short-Term Impacts

Short-term impacts in Alternative 2 are identical to those identified in Alternative 1, with the exception that the site layout and excavation and TESC design would be adjusted to the slight difference in road and building geometry of this Alternative.

Long-term Impacts.

Long-term impacts for Alternative 2 are also nearly identical to those identified in Alternative 1. Water quality impacts due to new impervious surfaces, the size and number of retaining walls, required excavation, and the amount landscaped area would be slightly less in Alternative 2, resulting in slightly reduced size of vaults, design release rates, and level spreader structures.

Cumulative Impacts

Cumulative impacts from the implementation of Alternative 2 are expected to be the same as in Alternative 1.

3.2.2.3 No Action Alternative

Short-Term Impacts

No construction activities would be a part of the No Action Alternative and, therefore, no short-term impacts would occur as a result of this alternative.

Long-Term Impacts

In the long-term, existing trees and topsoil would continue to attenuate the amount and quality of runoff directed to the wetland in the No Action Alternative. The existing vegetation and ground cover would continue to act as it has historically, moderating runoff rates while providing water quality for site runoff to the wetland. As a result, no long-term impacts would occur.

Cumulative Impacts

No cumulative impacts would result from the No Action Alternative.

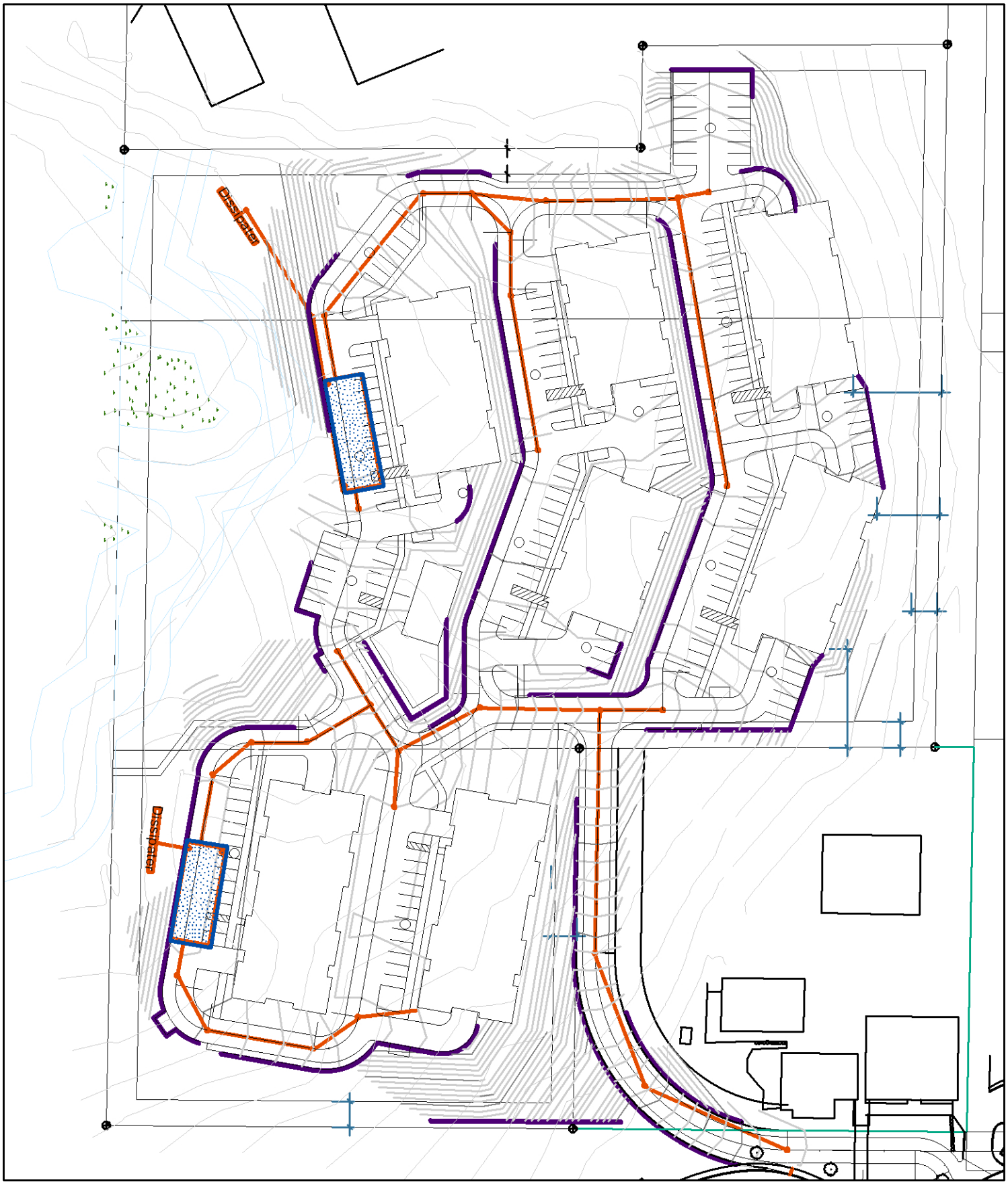

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Figure 3.2-2 Alternative 2 Stormwater and Grading Plan

N

Storm Drainage

Property Boundary

Retaining Wall

Detention Vault

Source: Touma Engineers

Back of figure

3.2.3 Mitigation Measures

3.2.3.1 Alternative 1

Alternative 1 would require obtaining approval of grading and drainage plans, TESC plans and all offsite areas included in any temporary construction easements. The Draft Stormwater Level 1 Report (Touma 2007) provides a final site conditions stormwater system consistent with the 2005 Manual criteria for the site. The system consists of collection and conveyance features that would collect runoff and direct it to the water quality and detention vault system. The system would capture runoff from all pollution-generating surfaces and convey runoff to the two water quality and detention vaults.

Construction staging, sequencing and TESC measures would be determined according to the 1992 Manual criteria (as per the vested Code). However, if the construction stormwater plan is unable to contain all construction runoff water from the site, a NPDES permit would be needed. The Phase II NPDES permit would require completing a SWPPP, which could require additional BMPs beyond the 1992 Manual requirements. The TESC measures would address runoff impacts to the site, such as sediment-laden runoff, dust, and other construction-related pollutants. TESC needs would be determined prior to final design. Some of available TESC BMPs to be used would include: defining a construction entrance to reduce soil material tracked from site by vehicular traffic; filter fabric fences at clearing limits to capture runoff before it leaves the site; temporary surface coverings such as straw, plastic sheeting or erosion control mats for exposed soils that would remain exposed for long periods; and sediment ponds to collect runoff and allow heavier sediment to settle out. Additional BMPs would be employed, as necessary, to limit turbid water to Code levels. These and other measures would be developed with the plans for approval prior to beginning construction activities. Construction runoff would include all areas impacted by construction, including any off-site excavation for wall construction.

The Alternative 1 storm drainage system would collect runoff from all pollution-generating impervious surfaces, such as asphalt roads, as well as runoff from roofs, sidewalks, and adjacent landscaping areas. The new site roads would both collect and convey surface runoff. Catch basins would be located in the center of the roads, and in landscaped areas as needed, to collect runoff. Roof downspouts and wall underdrains also would be connected to the system.

Collected runoff would be conveyed to a water quality and detention vault system. The vault would act as both a water quality and detention structure, designed as a wet vault for water quality treatment and sized to hold the 25-year design storm volume. The vault would be designed in accordance with the 2005 Manual. The detention portion of the vault would be designed using a continuous hydrological model to the Level 2 requirements, which matches the historic durations for 50 percent of the 2-year through the 50-year peak durations and matching the 2-year and 10-year peaks. The conveyance system would be checked to ensure that the 100-year design flow event could safely pass the system. A wet vault design would provide oil control through methods such as a Frop-T structure in the last catch basin before the system enters the vault or with a baffled oil/water separator at the vault inlet.

Algae control would be provided through reduced oxygen levels and lack of sunlight in the vaults. The water from each vault would be released through a riser and conveyed to a level spreader feature. This spreader would distribute the flow over a wide area located upslope of the wetland buffer limits. Level spreader designs would need to be evaluated and approved by a licensed geotechnical engineer and may also require additional review by the City. This would allow the natural ground surface to accept the released flow without erosion and would slowly reintroduce the runoff into the wetland.

Overflow measures would be provided at the vaults for extreme precipitation events. These would likely consist of an outflow manhole equipped with water energy dissipators and an armored surface below it to accommodate any large flows that exceed the design dispersion system, while also dispersing flows into the wetland without causing erosion. Armoring may consist of rip rap, erosion control mats, interlocking concrete block mats, or other methods.

3.2.3.2 Alternative 2

Mitigation measures required for Alternative 2 would be similar to those identified for Alternative 1, excepting that the system proposed for Alternative 2 is a two vault system. Figure 2.4-1 shows the proposed site drainage and vaults for Alternative 2. The Alternative 2 storm drainage system would collect runoff from all pollution-generating impervious surfaces, such as asphalt roads, as well as runoff from roofs, sidewalks, and adjacent landscaping areas. The new site roads would both collect and convey surface runoff. Catch basins would be located in the center of the roads, and in landscaped areas as needed, to collect runoff. Roof downspouts and wall underdrains also would be connected to the system.

3.2.3.3 No Action Alternative

No mitigation measures would be required for the No Action Alternative.

3.2.4 Significant Unavoidable Adverse Effects

Developing the site according to either of the action alternatives would not create any significant unavoidable adverse impacts to runoff water release or quality. Impacts to water quality, and significant increases in runoff volume and release rates from development of the alternatives can be mitigated through incorporating applicable code and policy measures in approved plans. Proper construction methods and oversight would ensure that all measures are installed properly to protect the wetland and mitigate potential erosion.

3.3 Earth & Geotechnical

This section presents information on the existing geologic conditions and hazards at the site and the impact of the alternatives on these conditions. This section also addresses potential methods to mitigate any significant adverse impacts and identifies potential adverse impacts that cannot be avoided.

3.3.1 Affected Environment

3.3.1.1 Applicable Regulations

A number of regulations guide the management of earth and geotechnical resources on the Project site. Generally, these regulations are vested to the 1990 King County Code (KCC), because they are defined as land use regulations, except for building codes, which are not vested due to their role in providing for health and safety (for additional information on applicable regulations, see Appendix A). Therefore, applicable policies, standards, and regulations used in this analysis of earth and geotechnical resources include:

- KCC 21.54 Special Control Areas, in effect February 15, 1990;
- KCC 16.82 Grading, in effect February 15, 1990; and
- Current International Building Code (IBC) adopted in the BMC by reference (as adopted by reference in Chapter 19.27 RCW).

Determining consistency between the proposed alternatives and these regulations represents the primary aim of this section. When the alternatives conflict with these regulations, inconsistencies are identified and potential mitigation measures are presented.

3.3.1.2 Geologic Setting

Burien is situated in the central part of the Puget Lowland, a structural and topographic trough bounded on the east by the Cascade Mountains and on the west by the Olympic Mountains. The Puget Lowland is part of a major, elongated, north-trending topographic and structural depression that extends through western Washington from the central part of the state to southern British Columbia. The Puget Lowland is chiefly underlain by locally thick deposits of Quaternary sediments that, in turn, overlie interbedded Tertiary volcanic and sedimentary bedrock.

The Lowland has been occupied several times by lobes of a Cordilleran ice sheet that advanced periodically southward from British Columbia during the ice age (Pleistocene). These lobes (called the Puget Lobe) extended as far south as the Black Hills, south of Olympia, and the north flank of the Chehalis River valley. Most of the major topographic features of the Puget Lowland north of this area are the result of either glacial deposition or erosion. Each advance of the ice into the Lowland overrode the previously deposited glacial and interglacial deposits, eroding and reworking them and depositing a new sequence of glacial drift.

Through this process a complex sequence of glacial and interglacial deposits has accumulated over Tertiary bedrock. The sequence is especially thick in areas where structural basins have developed in the bedrock in response to tectonic movement. Radiometric data (Yount and others (1993)) indicates that the latest glacial advance covered Burien approximately 17,500 years before present and the last period of glaciation in the Lowland ended about 14,000 years ago when as much as 3,000 feet of ice covered the greater Seattle area (Booth and Goldstein (1994)). This latest period of glaciation is known as the

Vashon Stade of the Fraser Glaciation. Deposits from this glaciation underlie most of the Puget Sound area.

The surficial topography of the Puget Lowland, formed by the dramatic pattern of glaciation described above, consists of a series of rolling, elongated ridges and troughs. The ridges and troughs have long axes oriented generally north to south. The troughs range in depth from the bottom of Puget Sound to shallow valleys.

3.3.1.3 Site Description

The Project site is located within an open, westerly facing bowl that overlooks Puget Sound. The site generally has a rectangular footprint with the eastern boundary of the property extending approximately 840 feet along 12th Avenue SW and the southern boundary of the property extending approximately 636 feet along an extension of SW 136th Street. The eastern boundary of the property abuts a fairly level plateau with a ground surface elevation of approximately 420 feet above sea level (ASL). The ground surface within the bowl generally slopes down to the west to an elevational low of approximately 280 feet ASL at the western property line along the axis of the bowl. The bowl itself is oriented in the east-west direction. Wetlands and springs are located in the western portion of the property but are not evident at the higher elevations in the eastern portion of the property.

3.3.1.4 Site Soils and Groundwater

According to mapping by Booth and Waldron (2004), the topographic open bowl within which the Project is located is underlain by sequence of glacial sediments including a Vashon till cap ground surface at the crest of the slope along the eastern property line. The Vashon till is a compact, concrete-like mixture of silt, sand, gravel and clay, which typically overlies glacial advance outwash deposits of sand and gravel. The advance outwash deposits overlie older fine-grained glacial deposits consisting of silt and clay. These fine-grained deposits may be present at lower elevations near the western boundary of the site. Finally, the northwest quadrant of the site has been mapped as being underlain by landslide deposits, which likely were derived from the upland advance outwash deposits and till.

Information derived from published geologic maps supports the findings of test pits and exploratory borings previously conducted at the site (Terra Associates, 1990) and of the current geological reconnaissance of the site. Specifically, glacial till was encountered in the explorations at the upper rim of the bowl surrounding the site, between elevations of approximately 365 feet ASL and 420 feet ASL. The till overlies the advance outwash sand, which extends to an elevation of approximately 270 feet, where the outwash deposits overlie the older glacial deposits of silt and clay. All of the undisturbed glacial soils are very dense or hard.

Also, similar to the mapped geology, the northwest corner of the site is underlain by colluvial soils or landslide deposits. The colluvial soils comprise outwash sands that have eroded from the steeper slopes in the upland portion of the site and accumulated on the flatter slopes in the western portion of the site. These colluvial deposits typically have a loose consistency.
Exploratory borings conducted at the site indicate the groundwater table at an elevation of approximately 275 feet ASL, which correlates with the elevation of the wetlands at the

western margin of the site. Groundwater at the site flows from east (uplands area) to west. Several springs or zones of seepage were observed during our site reconnaissance along the western boundary of the site near the wetlands at an estimated elevation of approximately 285 feet. Springs or other evidence of groundwater seepage were not observed at higher elevations on the property.

3.3.1.5 Seismicity

The tectonics and seismicity of western Washington are largely affected by the interaction between the Juan de Fuca tectonic plate, which lies off the Washington coast, and the adjacent North American plate, which underlies the continental United States. Specifically, one set of tectonic forces is driving the Juan de Fuca plate to the east such that it collides with and dives below (subducts) the North American plate. Additionally, there is another set of tectonic forces related to the Pacific plate further to the south of the Juan de Fuca plate that creates a southeast-northwest set of tectonic stresses in the Pacific Northwest through a complex interaction of tectonic blocks between California and Canada. The combination of these regional stresses results in conditions where earthquakes are found within three seismogenic source zones: 1) Crustal, 2) Benioff (Intraplate), and 3) Interplate (subduction).

The majority of the seismic events in the Puget Sound area are related to shallow, crustal sources that are located within approximately 25 km of the surface. Generally, crustal earthquakes are of magnitude (M) 5 or less and are not associated with known fault structures. However, the most significant crustal fault in the vicinity of the Project is the Seattle Fault. The Seattle Fault is an easterly trending structure that extends from the city of Bainbridge Island to the city of Issaquah. The last major movement on the Seattle Fault occurred approximately 1,100 years ago as inferred from regional uplift and subsidence of shorelines, dating of tsunami deposits, and dating of landslide deposits. The United States Geological Survey has postulated that the Seattle Fault may be capable of producing a maximum earthquake of about M 7.25.

The historically damaging earthquakes in the Puget Sound region have occurred within the subducting Juan de Fuca plate and, as such, occur within the Benioff zone. This seismogenic zone is located beneath the Puget Lowland between the Cascade and the Olympic Mountains. Earthquakes occurring within the Benioff zone are commonly called intraplate events. Such earthquakes typically occur at depths between 40 and 60 km. The largest historic earthquakes in the Puget Sound region have all occurred within the Benioff zone and include the April 13, 1949, M 7.1 Olympia Earthquake; the April 29, 1965, M 6.5 Puget Sound (SeaTac) Earthquake; and the February 28, 2001, M 6.8 Nisqually Earthquake. The Benioff zone may be capable of producing characteristic earthquakes with a maximum magnitude of about M 7.5.

The Cascadia Subduction Zone (CSZ) is the seismogenic source zone that may be capable of producing the largest earthquakes in the region, with maximum magnitudes for this zone being postulated to range between M 8 and 9. Earthquakes within the CSZ will typically originate westward of the Washington coast and, as such, these events will typically be located at least 120 km from the greater Puget Sound area. The occurrence of earthquakes on the CSZ has been inferred from historical records of tsunami occurrence in Japan and the US

and from dating regional coastal uplifts. From these data, it has been concluded that the CSZ has repeatedly ruptured on an average of 500-year intervals over the past 3,000 years, with the last movement occurring roughly 300 years ago. While the CSZ may be capable of generating large magnitude earthquakes at fairly consistent intervals, the distance of this source zone would significantly reduce the level of ground shaking experienced locally to be much lower than the motions expected from a rupture of the Seattle Fault. However, the duration of expected motion from a subduction zone earthquake would be several times longer than the motions expected from a characteristic earthquake on the Seattle Fault. The longer duration of a CSZ event will have implications for the potential occurrence of liquefaction.

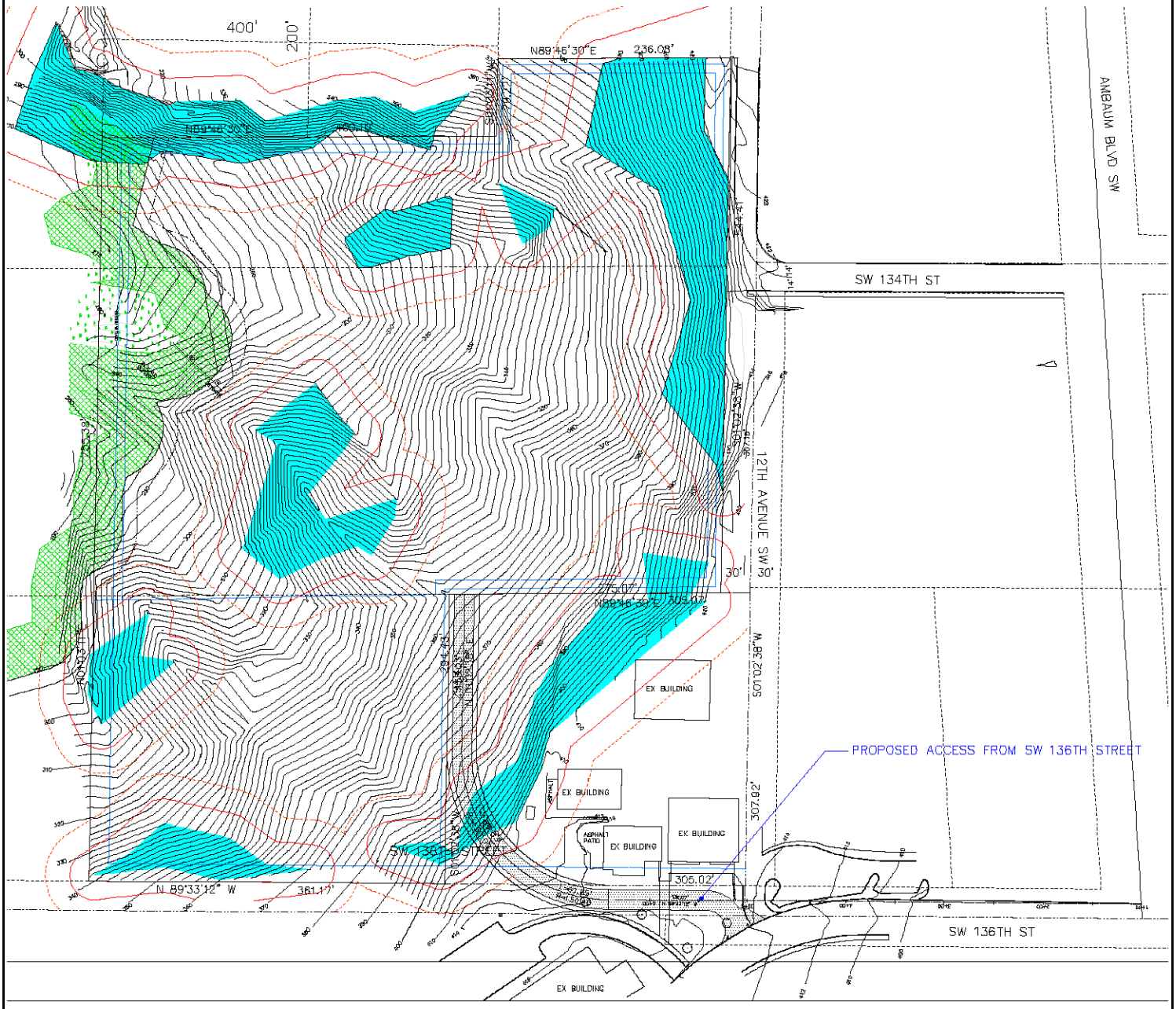
3.3.1.6 Geologic Hazards

Landslides
The northwest corner of the site is underlain by soils identified on geologic maps (Booth and Waldron (2004) and King County Sensitive Areas Folio (1990)) as landslide deposits. This portion of the site is currently identified by the City of Burien as having a high landslide potential. The triggering mechanism for ground movement in the northwest corner of the site is groundwater seepage at the face of the exposed slopes near the wetland areas, between elevations of approximately 275 and 285 ASL feet. This seepage occurs at or near the contact between the advance outwash sand and the underlying older glacial deposits of silt and clay. This condition has resulted in local slumping or movement at the toe of the slope, typically during the winter or spring when the groundwater table and subsurface flows are at their highest levels.

The upper slopes of the property, typically above elevation 300 feet ASL, appear to be stable, based on the surface topography, geomorphic expression and site vegetation. The upper slopes have not been identified by the City of Burien as having a high landslide risk nor were these slopes identified by King County in 1990 as being within a landslide susceptible area.

Steep Slopes
Steep slopes or slopes with grades that are steeper than 40 percent have been identified by various agencies, such as the City of Burien, as being potentially susceptible to landslide movement. The slopes along the north, east and south margins of the site typically have grades of approximately 40 percent or more (see Figure 3.3-1). However, the very dense materials underlying these slopes are stable and have contributed to the historic stability of the upland slopes.

Seismic
The 1990 King County Sensitive Areas Folio does not indicate that the Project site falls within a seismically hazardous area. Such areas could generally be susceptible to increased levels of ground shaking because of underlying subsurface conditions, potential ground rupture from fault displacement, earthquake-induced liquefaction of saturated granular soils, and earthquake-induced instability.



Emerald Pointe EIS - Burien, WA

Figure 3.3-1 Existing Topography

- 40% or greater Slopes
- Voluntary Wetland Buffer
- Wetland

Source: Touma Engineers, R.W. Thorpe & Associates

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While the hillside topography at the site may be susceptible to somewhat higher levels of ground shaking, as compared to conditions with a level ground surface, use of currently adopted building codes (i.e. 2006 and later editions of the International Building Code (IBC) (ICC 2003)) would provide adequate seismic design for the proposed site development. Potential ground rupture from earthquake faulting is not a hazard for the property because the site is located about 8 miles south of the nearest known active fault, the Seattle Fault.

Earthquake-induced liquefaction is a phenomenon in which saturated deposits of loose sand experience significant strength loss during ground shaking as a result of increases in pore pressure induced by the earthquake ground shaking. Liquefaction is not a hazard to the very dense glacial outwash sand or the hard till soils because of the very dense nature of these materials and the general absence of water within these materials. Liquefaction, however, may potentially affect the loose, saturated, colluvial soils at the toe of the slope along the western margin of the property. Liquefaction of these soils may result in ground instability and lateral spreading at the toe of the slope, typically between elevations 275 and 285 ASL feet.

Earthquakes may also trigger instability of marginally stable hillside slopes. However, excluding ground movement that may be induced by liquefaction at the toe of the slope, we believe that expected levels of earthquake ground shaking associated with and IBC earthquake design would not necessarily trigger instability of the upland slopes at the site because of the compact nature of the underlying material

Erosion
Although the 1990 King County Sensitive Areas Folio map does not show the site to be susceptible to erosion hazard, the outwash sand exposed on the face of the upland slopes and the sands comprising the colluvial or landslide deposits at the toe of the slope are moderately susceptible to erosion. Surface erosion, however, has typically not been a significant hazard at the site because of the lack of exposure of the slopes to runoff water and the absence of groundwater seepage on the upland slopes. However, the lower slope in the northwest corner of the site has been susceptible to erosion from spring flows.

Settlement
The very dense and hard glacial soils underlying the upland slopes are not susceptible to settlement that might occur with the placement of surficial fill. The loose sand comprising the colluvial soils and landslide deposits at the toe of the slope in the northwest corner of the site are moderately susceptible to settlement from fill placement.

Figure 3.3-2 depicts the City's current sensitive area ordinance designations within the Project vicinity. Areas currently designated by the City as high landslide risk areas adjacent to and on the Project site were designated as "landslide hazard areas" by King County in its 1990 Sensitive Areas Folio Map (King County 1990b).

3.3.1.7 Earth and Geotechnical Construction Details

In general, the two development options would involve major regrading of the site and infrastructure construction (i.e. roads and utilities), expected to be completed as a single

phase in the summer of 2008. In both action alternatives, buildings would be constructed in three phases, starting in 2008 and completed by 2011.

Site development would first require construction of an access road into the property on the east side of the site. The access road would require an easement and/or land purchase from the School District property. Additionally, because of the lack of space on site for equipment storage and contractor lay down, the Project development plans would likely need to include provisions for contactor storage at an off-site location. Such off-site staging and storage would, most likely, require lease arrangements with upslope property owners, including provisions to construct temporary access roads.

Following construction of a temporary access road, likely involving minor cuts and fills on the hillside slopes, the site would be cleared and grubbed of vegetation. This activity would also include installation of temporary erosion and sediment control measures, such as silt fences and a temporary detention pond near the western boundary of the site. At this time, the planned locations of any temporary access roads and/or detention ponds have not been indicated on site development drawings.

It is expected that a temporary storm water detention basin at the west end of the site would be one of the first structures to be built. This structure would be needed early in the construction process to adequately treat runoff resulting from construction activities.

Subsequent elements of construction would include site cuts and fills for the roadway and parking areas. Much of the on-site materials from hillside cuts is expected to meet engineering requirements to qualify to be used as common borrow for the roadway and embankment fills.

Individual buildings would be the final elements of construction. Again, because of the steep slopes at the site, building pads would be expected to be constructed on both cut and fill surfaces. Assuming wood frame construction that is relatively tolerant of differential settlement, conventional spread footings would likely be used for building support. The east walls of several of the buildings would require temporary excavation support systems to restrain hillside cuts of up to about 20 feet. These excavation support systems might include soil nail walls, as well as soldier pile and tieback walls.

3.3.2 Impacts

This section addresses the potential impacts of the two action alternatives. From an earth and geotechnical perspective, Alternatives 1 and 2 have indistinguishable differences in their impact upon the earth environment. Overall, the amount of site disturbance would be very similar under the

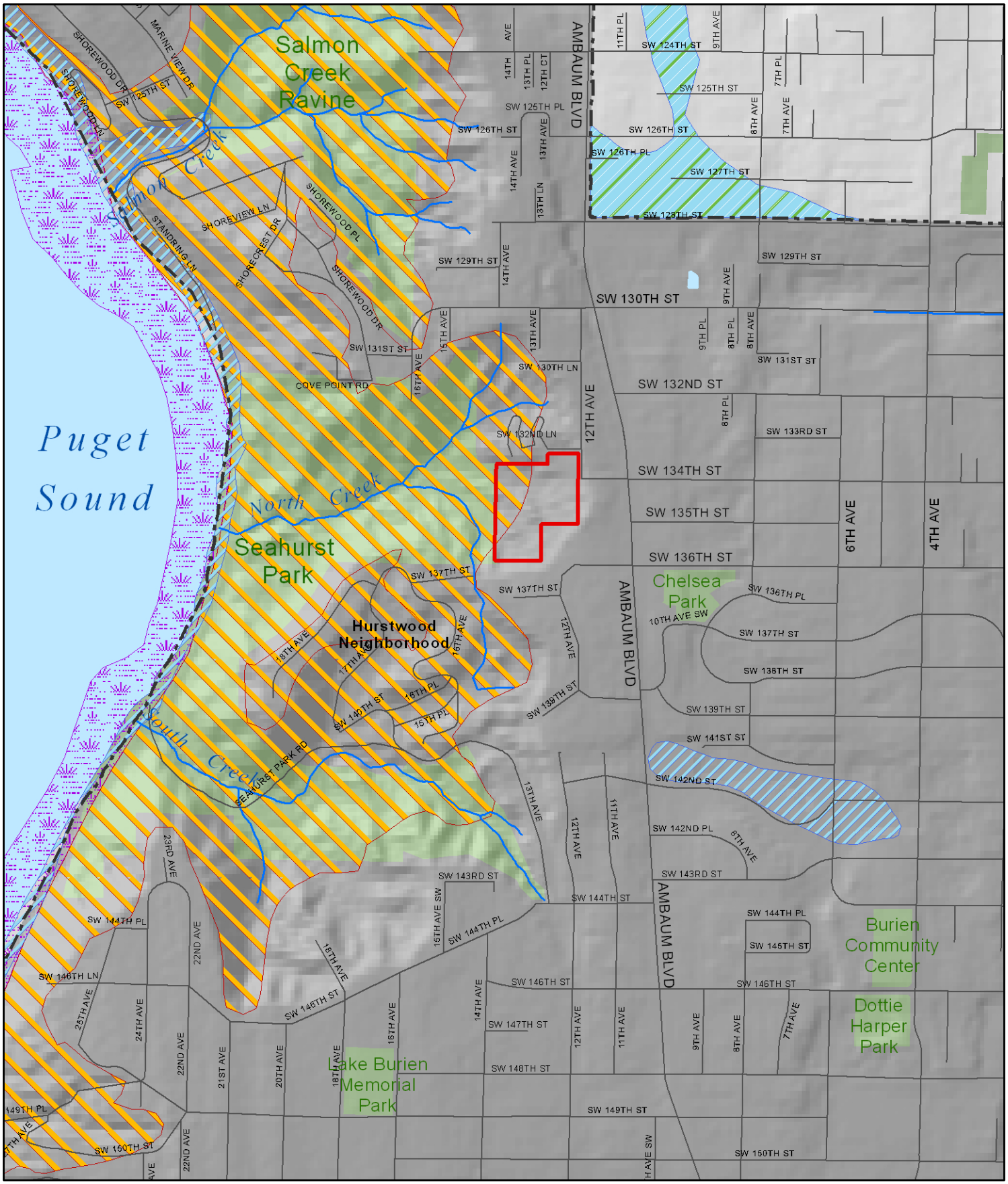

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Figure 3.3-2 Current Sensitive Area Ordinance Designations

- SAO High Landslide Risk Areas (same as 1990 KC Designation)
- SAO Wetlands
- Floodplain Areas
- Critical Aquifer Recharge Areas
- Emerald Pointe Site Location
- Burien City Limits
- Roads
- Parks/Open Space
- Drainages
- Open Water

N

0 0.1 0.2
Miles

0 200 400 600 800
Feet

EDAW | AECOM August 2007

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two alternatives. The impact discussion below is divided between short-term impacts, which would occur as the result of construction-period activities, and long-term impacts, which would occur once construction is completed.

3.3.2.1 Alternative 1

Short-Term Impacts

Construction of Alternative 1 would involve hillside cuts of up to approximately 30 feet and fills of up to approximately 22 feet. Walls constructed to retain fill slopes would be as high as 10 feet, and walls constructed at the toe of cut slopes would be as high as 18 feet. The development is expected to use balanced cuts and fills, whenever possible, to limit material import and export. The building areas, roadways, and parking areas would be stripped of vegetation and soil cover, which might be subsequently used in the site landscaping. Surface runoff would need to be contained in a temporary detention pond near the western property line until permanent drainage facilities could be completed. The following discusses the potential short-term impacts of the Project construction.

Landslides

The site construction would include grading that would locally alter existing steep hillside slopes with cuts and fills. The grading would typically produce slopes on the order of 2:1 (horizontal: vertical). The anticipated cuts and fills would slightly reduce the stability of the upland slopes. While the 2:1 hillside cut and fill slope are generally feasible in the upland portion of the site, the cuts and fills along the western margin of the site (i.e. mapped landslide area) would need to be specifically evaluated for overall stability. Areas with inadequate stability would need to be addressed with remedial measures, such as grading, drainage and structural walls.

The Project would also include construction of 4-foot to 10-foot high retaining walls at grade breaks adjacent to the roads and parking areas.

Basement walls for some of the buildings would retain cut slopes as high as 18 feet. Such basement walls constructed adjacent to cut slopes likely would require temporary excavation support systems consisting of soldier piles, tiebacks, and/or soil nails to restrain the hillside at locations where the vertical cut heights exceed approximately four feet.

Site excavations for the storm water detention vaults could be accomplished with open excavations. However, the base of the excavation for the north vault, at an estimated elevation of approximately 286 feet ASL, could encounter the groundwater table or a spring area. Consequently, such excavations may require shoring and/or dewatering to provide for the stability of the adjacent slopes during construction.

Steep Slopes

Proposed hillside cuts would slightly reduce overall hillside stability. Stability analyses would be needed to confirm that the hillside cuts and fill slopes possess adequate factors of safety during final design. Construction methods for retaining walls at the perimeter of the property may require temporary or permanent construction easements, depending on the type

of construction method chosen. This is particularly true for the area within the SW 136th St. ROW along the southern boundary of the site.

Seismic
Seismic effects are typically not evaluated for short-term construction.

Erosion
Site construction would expose temporary cut and fill slopes that would be susceptible to potential erosion from rainfall. Accordingly, all cut and fill slopes would require temporary protection from surface erosion. Temporary storm water detention facilities would need to accommodate surface runoff flows and prevent off-site sediment transport. Detention ponds should be lined to reduce infiltration that could adversely affect hillside stability. The outlets from the detention facilities would also need to be designed to avoid scour or erosion.

Settlement
Construction of fills, particularly over the loose colluvial soils and landslide deposits in the western portion of the site, may induce settlement of the underlying foundation soils. Mitigation may be required to avoid undesirable fill settlement.

Long-Term Impacts

The long-term impacts of the Project development would include increased rainfall runoff associated with the removal of the site vegetation and replacement with impervious surfaces (i.e. roofs and roadways). As a result, the completed development would likely increase water flow to the wetlands due to increased site runoff volume. The following discussion addresses the potential long-term affects of the action alternatives.

Landslides
The completed site construction may not significantly affect the stability of the hillside slopes over conditions during construction. That is, the final landscaping of the slopes would improve the stability of the surficial soils over that of the construction cut and fill slope that lack surface vegetation. The addition of landscape irrigation systems, however, would add water to the hillside that may slightly decrease slope stability. Hence, no significant improvement or decrease in the stability of the hillside slope would be expected with the completion of construction.

Steep Slopes
As discussed above, the completed site construction would not significantly affect the stability of the hillside slopes over conditions during construction.

Seismic
Proposed hillside grading would generally have slightly reduced seismic factors of safety for overall stability as compared with existing conditions. However, the seismic stability would be reduced to a greater extent in areas where fill is placed over colluvial soils, particularly with the potential development of liquefaction within the colluvial soils. Analyses would be needed to confirm the stability of the fill in these areas.

Erosion
The potential for site erosion and local hillside instability may be increased in the areas proposed for storm water discharge. Mitigation may be required to reduce the erosion potential and to improve local hillside stability.

Settlement
Potential settlement of site fills would primarily occur during construction. Some settlement of buildings constructed partially on cuts and partially on fills may occur after completion of the building construction.

Cumulative Impacts
No cumulative impacts would result from Alternative 1.

3.3.2.2 Alternative 2

Short-term and long-term earth and geotechnical impacts associated with Alternatives 2 would be similar to impacts identified in Alternative 1; however, although details are lacking on the final site grading for Alternative 2, this option may have a reduced impact on hillside stability if it involves a reduced amount of site grading. The Alternative 2 Grading Plan is shown in Figure 3.3-3.

Short-Term Impacts
Short-term impacts would be similar to those identified in Alternative 1.

Long-Term Impacts
Long-term impacts would be similar to those identified in Alternative 1.

Cumulative Impacts
No cumulative impacts would result from Alternative 2.

3.3.2.3 No Action Alternative

The following briefly discusses the impact of the No Action Alternative, which assumes that the site remains in its current state.

Short-Term Impacts
No construction activities would be a part of the No Action Alternative and, therefore, no short-term impacts would occur as a result of this alternative.

Long-Term Impacts
Landslides
With the No Action Alternative, the upland slopes would remain stable and the colluvial slopes near the wetlands would continue to be susceptible to minor sloughing and slumping from groundwater seepage.

Steep Slopes
Same as landslides discussion above.

Seismic
The No Action Alternative would not affect the seismic performance of the site.

Erosion
With the No Action Alternative, the colluvial slopes adjacent to springs and seeps would remain somewhat susceptible to instability and erosion.

Settlement
The No Action Alternative would not be susceptible to ground surface settlement because fills would not be placed to induce settlement.

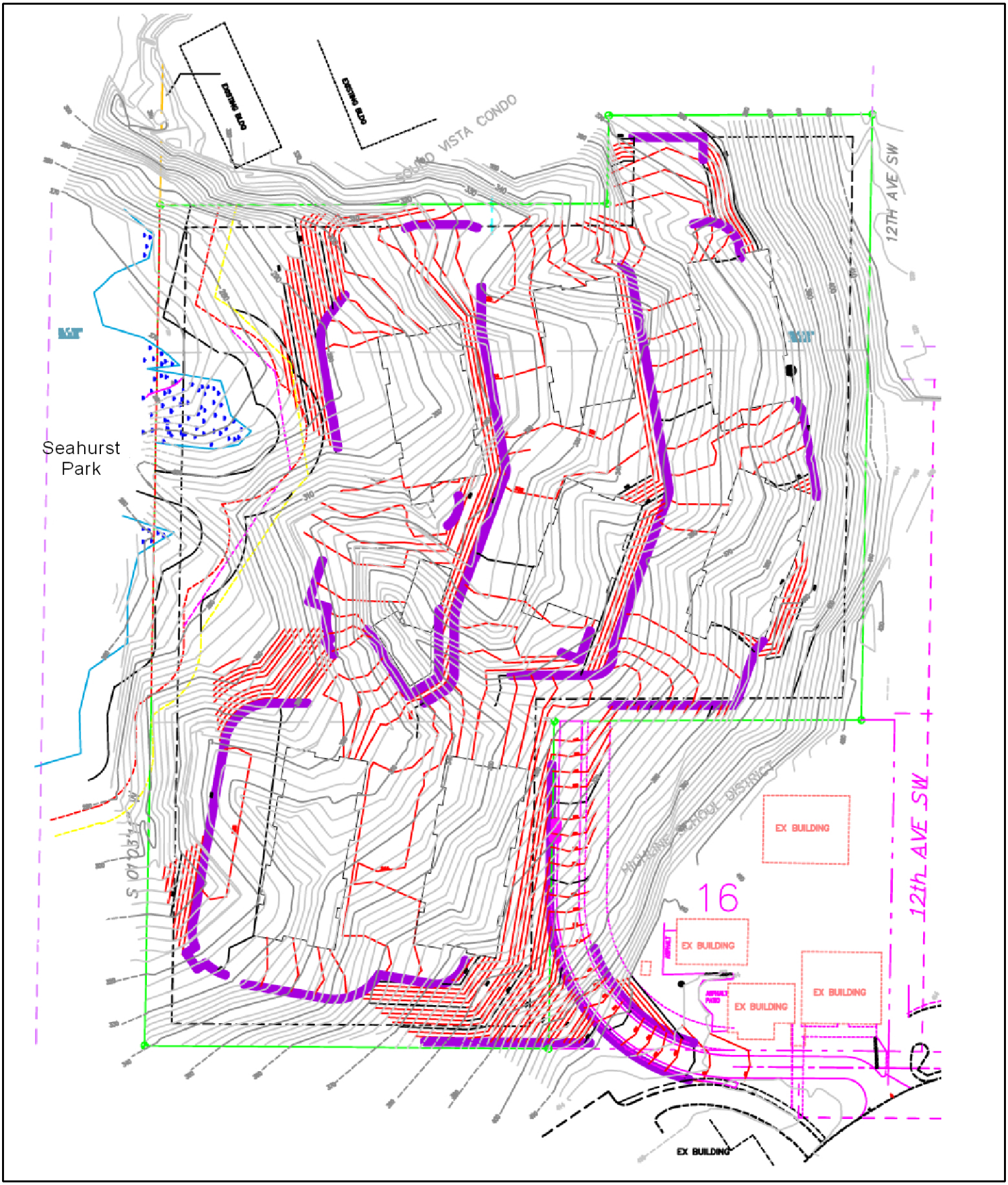
Cumulative Impacts
No cumulative impacts would result from the No Action Alternative.

3.3.3 Mitigation Measures

Construction of either Alternative 1 or Alternative 2 would require mitigation measures during construction to minimize off-site sediment transport. These measures would include the following:

- Protection of cut slopes and fill stockpiles from rainfall and re-vegetating cut and fill slopes: Provide measures to prevent rain from striking and eroding bare soil, either as slopes or stockpiles. Protect temporary stockpiles with appropriate covers. Revegetate exposed soils as soon as is practical, especially those areas which will sit untouched for long periods due to timing of construction phasing.
- Provide sediment transport and runoff velocity controls: Stormwater runoff would require temporary detention to remove sediment and to control discharge flows. Temporary ponds shall be designed with liners to minimize groundwater recharge which could reduce hillside stability. Discharge trenches for storm water flow shall be designed to include energy dissipators to avoid flow concentrations that could cause erosion and seepage that could reduce hillside stability.

- Slope Stability: The stability and settlement of fills placed over colluvial soils that are saturated and potentially susceptible to liquefaction shall be confirmed. Toe buttressing and drainage measures, such as French drains and horizontal drains, would be needed to improve the stability of fills placed over colluvial soils where the water table is relatively shallow and seasonal springs exist on the hillside slopes (e.g. near the western property line).
- Placement and Construction of Retaining Walls: Site retaining walls, particularly walls overlying colluvial soil, would need to be evaluated for overall stability Cut walls with heights of 10 feet or greater located close to property lines would need to be evaluated for stability and the ability of the wall to provide adequate lateral support to the adjacent property. Cantilever soldier pile walls may be needed to provide lateral support where walls with heights of 10 to 15 are needed (e.g. at property lines). Taller walls at property lines would require permanent tiebacks and tieback easements from adjacent property owners.



Emerald Pointe EIS - Burien, WA

Figure 3.3-3 Alternative 2 - Grading and Drainage Plan

N

- Grading Contours
- Existing Major Contours
- Existing Minor Contours
- Voluntary Wetland Buffer (65 ft.)
- Retaining Wall
- Property Boundary
- Wetland

Source: Touma Engineers

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The Applicant could pursue a street vacation of the SW 136th Street ROW in order to facilitate future ongoing maintenance of this area, rather than relying on a permanent easement to install retaining wall tie-back systems. The City has indicated that it might support such an approach (pers. comm., Steve Clark 2007).

3.3.4 Significant Unavoidable Adverse Effects

The Project would have no significant unavoidable adverse impacts on earth and geotechnical resources.

3.4 Plants & Animals

This section addresses existing conditions, impacts, and mitigation measures for the plants and animals element of the natural environment. The plants and animals element includes vegetation and terrestrial habitat, wildlife, fisheries, and TES species.

3.4.1 Affected Environment

This section describes the vegetation and terrestrial habitat, wildlife, wetland habitat, and TES species that occur on the Project site.

3.4.1.1 Applicable Regulations

A number of regulations guide the management of plants and animals on and adjacent to the Project site. Generally, these regulations are vested to the 1990 KCC, because they are defined as land use regulations (for additional information on applicable regulations, see Appendix A). Applicable policies, standards, and regulations used in this analysis of plants and animals include:

- KCC 21.54 Special Control Areas, in effect February 15, 1990;
- KCC 21.51 Landscaping and Screening, in effect February 15, 1990; and
- U.S. Endangered Species Act.

Determining consistency between the proposed alternatives and these regulations represents the primary aim of this section. When the alternatives conflict with these regulations, inconsistencies are identified and potential mitigation measures are presented.

3.4.1.2 Plants & Animals Background

Since 1991, there have been three different surveys on the Project site, related to vegetation and/or wildlife. The first of these was a Wildlife Technical Report completed by Beak Consultants, Inc. in March 1991. The second survey conducted on the Project site was a Sensitive Species Assessment completed by Raedeke Associates in August 1992. In 2006, biologists from EDAW, Inc. visited the Project site to conduct vegetation and wildlife surveys and to confirm general wetland boundaries (see Section 3.5, Wetlands). Two site visits by EDAW, Inc. occurred in October 2006. A summary of past efforts and observations from the surveys are described in the following sections.

3.4.1.3 Vegetation and Terrestrial Habitat

A combination of second-growth coniferous forest and mixed deciduous-coniferous forest dominates the site. The range of plant species is generally uniform throughout the site. Trails are generally bordered by English ivy (*Hedera helix*). Upland areas are dominated by red alder (*Alnus rubra*), western red cedar (*Thuja plicata*), and western hemlock (*Tsuga heterophylla*), with bigleaf maple (*Acer macrophyllum*) saplings also present. Douglas-fir (*Pseudotsuga menziesii*) and Pacific madrone (*Arbutus menziesii*) are present, but scarce throughout the property. Salmonberry (*Rubus spectabilis*), red elderberry (*Sambucus racemosa*), Indian plum (*Oemleria cerasiformis*), and Oregon ash (*Fraxinus latifolia*) constitute most of the shrub layer. Red huckleberry (*Vaccinium parviflorum*), evergreen huckleberry (*Vaccinium ovatum*), and Oregon grape (*Mahonia nervosa*) occur infrequently throughout the shrub layer. In the portion of the site surrounding the wetland, the canopy layer is dominated by red alder and bigleaf maple. The shrub layer comprises mostly salmonberry, sword fern (*Polystichum munitum*), lady fern (*Athyrium filix-femina*), and piggy-back plant (*Tolmiea menziesii*). Salal (*Gaultheria shallon*) appears in the upland areas as well as the wetland portion of the site. In the wetland habitat, salal occurs only on large woody debris (LWD) and does not sprout directly from the soil. A list of plant species observed during a 2006 survey is provided in Table 3.4-1.

Table 3.4-1: Common Plant Species Observed in Uplands at Emerald Pointe, Burien, WA

Scientific Name	Common Name
Acer macrophyllum	Bigleaf maple
Alnus rubra	Red alder
Arbutus menziesii	Pacific madrone
Fraxinus latifolia	Oregon ash
Hedera helix	English ivy
Ilex aquifolium	English holly
Mahonia nervosa	Oregon grape
Oemleria cerasiformis	Indian plum
Polystichum munitum	Sword fern
Pseudotsuga menziesii	Douglas-fir
Rubus discolor	Himalayan blackberry
Rubus spectabilis	Salmonberry
Sambucus racemosa	Red elderberry
Thuja plicata	Western red cedar
Tsuga heterophylla	Western hemlock
Vaccinium ovatum	Evergreen huckleberry
Vaccinium parvifolium	Red huckleberry

Source: EDAW 2006.

The Project site and the adjacent Seahurst Park are documented as Urban Natural Open Space (UNOS) area by the Washington Department of Fish and Wildlife (WDFW 2006a, WDFW 1999). These Priority Habitat areas provide a number of potential functions, but have no regulatory implications and are used primarily by WDFW as an educational/planning tool. They may provide breeding, foraging, or other habitat for priority species; create a

corridor for connecting priority habitats; or be remnants of natural habitats larger than 10 acres surrounded by urban development. Seahurst Park is an UNOS area due to its 169 acres of semi-forested terrain that provides habitat for a variety of plant and wildlife species. Large, mature trees occur on the Project site, primarily in the southern section. These may provide nesting, perching, foraging, and refuge habitat for a variety of wildlife species. The Project site and the adjacent Seahurst Park are also listed as an UNOS due to the presence of deep ravines. Some of these areas within the park are associated with streams and hence may provide habitat for a variety of avian, amphibian, and small mammal species. It should be noted that there are no streams in the Project site.

3.4.1.4 Wildlife

Many snags throughout the Project site and vicinity exhibit evidence of foraging by pileated woodpeckers (*Dryocopus pileatus*). Bird species observed in the area (by sight and/or sound) include American crow (*Corvus brachyrynchos*), woodpecker spp., black-capped chickadee (*Poecile atricapillus*), kinglets (*Regulus* spp.), red-tailed hawk (*Buteo jamaicensis*), and peregrine falcon (*Falco peregrinus*). Surf scoters (*Melanitta perspicillata*) and horned grebes (*Podiceps auritus*) were observed in Puget Sound adjacent to Seahurst Park, located downslope of the site.

In a 1991 survey of the Project site, wildlife species observed included American robin (*Turdus migratorius*), downy woodpecker (*Dendrocopos scalaris*), an unidentified wren, and cone middens of Douglas squirrel (*Tamiasciurus douglasi*). Few signs of game trails or wildlife use were found (i.e., scat, rubs, foraging, scent stations) (Beak Consultants 1991).

Habitat quality for wildlife within the Project site is affected by the existing developed areas to the north and south of the site as well as Ambaum Boulevard SW to the east, local disturbance from pedestrian traffic, litter and prevalence of non-native vegetative species (i.e., English holly [*Ilex aquifolium*] and English ivy). In addition, a worn system of user-made trails winds through Seahurst Park and into the Project site, indicating regular pedestrian use. This site also has been used as a public dumping area and a camping area for vagrants.

Mature western hemlock and western red cedar are fairly common on the site and in the vicinity (average 31 inches diameter at breast height [dbh]) (Photo 3.4-1) and may provide important nesting, perching, foraging and refuge habitat for a variety of wildlife (i.e., birds, small mammals, amphibians and reptiles). The presence of mature trees on the Project site, including the wetland habitat, links the developed neighborhoods surrounding the site and the less disturbed habitat of Seahurst Park to the west (wetland vegetation is discussed in detail in Section 3.5.1.1). Mature second-growth forests on the site provide pathways, or corridors, for wildlife travel between adjacent open space parcels. In general, larger undisturbed land parcels support a greater variety of wildlife compared to smaller parcels. Studies in the Pacific Northwest indicate that larger urban parks have the following (Gavareski 1976):

- Similar assemblages, or communities, of birds compared to rural forested tracts;
- Support greater numbers of bird species; and
- Support fewer edge-adapted species, such as cowbirds (*Molothrus ater*).

Edge-adapted species (e.g., birds) are generalists that are able to exploit human resources where human disturbance and development come together with natural areas (McKinney 2002). Many edge-adapted species are non-native and become more dominant as residential development increases and competition from native species declines (Germaine et al. 1998). In particular, cowbird density and brood parasitism have been found to be correlated with increases in human development (Tewksbury et al. 1998). When areas of undeveloped native vegetation become fragmented due to human development, these native habitat patches provide questionable value to native birds and other species (Germaine et al. 1998). Wildlife residing within the park and the Project vicinity (i.e., in the adjacent neighborhoods and along the informal trails) are affected by human disturbance and thus require a connection between habitats (i.e., foraging and nesting) to sustain population levels.

3.4.1.5 Fisheries

Based on a review of previous studies and the field survey conducted in October 2006 by EDAW, Inc., no streams are located on the Project site. However, the wetland area at the western edge of the site is a headwater to several tributaries draining west into North Creek (in Seahurst Park). These off-site streams may be inhabited by common fish species, such as the three-spined stickleback (*Gasterosteus aculeatus*) and cutthroat trout (*Oncorhynchus clarkii*). A small salmon hatchery is located at the base of the hill in the Sea-Tac OSC Marine Technology Lab in Seahurst Park, where the mouth of North Creek (Anchor Environmental, L.L.C. 2002) approaches the waterfront portion of the park. The lab serves as a marine educational facility and an active salmon hatchery. It has been located in Seahurst Park since 1970. The site originally began under WDFW operations; however, in the 1990s the program was recreated under a Hatchery and Genetic Mapping Plan (HGMP) managed by the state. The hatchery operates from approximately late October through late November and supports a returning non-native coho salmon (*Oncohrynchus kisutch*) run. North Creek directly feeds the rearing ponds within the marine facilities located within the park (Joe Weiss, pers. comm., 2006).

Photo 3.4-1: Western hemlock tree (approximately 31 inches dbh) located on the site.

3.4.1.6 Threatened, Sensitive and Endangered Species

WDFW records indicate that six species of interest occur in the Project site vicinity. Species of interest refers to those listed as a Federal or State Threatened, Sensitive, Endangered, Candidate, or Monitor species. These species include the western pond turtle, great blue heron, bald eagle, pileated woodpecker (*Dryocopus pileatus*), peregrine falcon (*Falco peregrinus*), and tall bugbane (see Table 3.4-2). These species and their potential to use the Project site and adjacent areas are described below.

The marbled murrelet (*Brachyramphus marmoratus*) (Federally Threatened and State Threatened) and the northern spotted owl (*Strix occidentalis caurina*) (Federally Threatened and State Endangered) (WDFW 2006) are not listed as potentially occurring on the Project site by WDFW records. Additionally, no suitable habitat is present on the Project site for either species, and no sightings of these species have been documented in the vicinity (Stofel, pers. comm., 2006). These species are not expected to occur in the planned Project site or immediate vicinity and thus are not discussed further in this document.

Table 3.4-2: Threatened, Endangered, and Sensitive Species Potentially Occurring at Emerald Pointe, Burien, WA

Scientific Name	Common Name	Species Category	Status
Ardea herodias	Great blue heron	Bird	State Monitor Species
Cimicifuga elata	Tall bugbane	Plant	Federal Species of Concern State Sensitive Species
Haliaeetus leucocephalus	Bald eagle	Bird	State Threatened Species
Clemmys marmorata	Western pond turtle	Reptile	Federal Species of Concern State Endangered Species
Dryocopus pileatus	Pileated woodpecker	Bird	State Candidate Species
Falco peregrinus	Peregrine falcon	Bird	Federal Species of Concern State Sensitive Species

Source: USFWS 2005, WDFW 2004, Washington Department of Natural Resources (DNR) 2006

A sensitive species assessment was completed on the Project site for presence of tall bugbane and great blue heron in 1992 (Raedeke Associates 1992). The 1991 survey on the Project site concluded the presence of potential tall bugbane habitat (Terra Associates 1991), a State Sensitive species and a Federal Species of Concern. Associated species include red alder, bigleaf maple, western red cedar, Douglas-fir and sword fern, all of which reside in the Project boundary. Tall bugbane grows in mixed coniferous-deciduous forests, although optimal conditions involve mature or old-growth stands (WNHP 1998). The 1992 assessment resulted in no findings of tall bugbane or evidence of great blue herons nesting on the Project site (Raedeke Associates 1992).

Historical records (Murphy 1988, Shipe and Scott 1981) of a great blue heron rookery in Seahurst Park refer to four nests occurring inside the park boundary with a maximum of 18 herons observed at the site. Although the colony had established within the area sometime in 1981, evidence of the colony had abated by 1986 (Murphy 1988, Shipe and Scott 1981).

Bald eagle nests frequently occur near the Puget Sound shoreline, lakes, rivers, and reservoirs of Washington. This species was removed as a Federal Threatened species on June 28, 2007 but is currently a State Threatened species (U.S. Fish and Wildlife Service [USFWS] 2007,

WDFW 2004). Bald eagles can be found along Puget Sound throughout the year and densities increase during the winter when the birds often congregate where salmon are found. One study in Discovery Park, located approximately 15 miles north of Seahurst Park, found the following waterfowl prey items in a bald eagle nest: western grebe (*Aechmophorus occidentalis*), gulls, pigeons (*Columba livia*), crows and a common loon (*Gavia immer*). Wintering bald eagles come from distances reaching the northern Canadian provinces and Alaska to feed on fall salmon runs in Washington State (Stinson et al. 2001). Bald eagles are known to nest and winter near the Project vicinity and are likely to perch occasionally in larger trees on the site and the adjacent park throughout the year. A bald eagle nest in Seahurst Park is located approximately 1 mile southwest of the site, and its current occupancy status is unknown (WDFW 2006a). In an April 2006 survey, two adults were observed perched in a nest tree; the nest was unrepaired from the previous season. The most recent accounts of nesting activity stem from an April 2005 survey in which one adult bald eagle was observed incubating a repaired nest in the park (WDFW 2006c). No bald eagles were observed in the October 2006 site visit (EDAW 2006).

The western pond turtle is listed as a Federal Species of Concern and a State Endangered species in Washington (USFWS 2005, WDFW 2004). One individual occurrence was recorded in 1988 near Hicks Lake, approximately 1.41 miles north-northeast of the site. In Washington, this species generally occurs in natural rivers or stream bodies below 300 feet in elevation in habitats not subject to human disturbance. They are sometimes associated with ponds or small lakes and inhabit a variety of substrates (e.g., boulders, cobble, gravel, mud and decaying vegetation). Western pond turtles overwinter in upland areas up to 500 m from the water and require open areas dominated by grasses and herbaceous vegetation for nesting (Hays et al. 1999). No recent sightings of this species have occurred in the Project vicinity, and none were observed during the 2006 survey (EDAW 2006). Suitable habitat for this species does not occur at the Project site.

Pileated woodpeckers are found in second-growth, mature, and old-growth forests with large snags and fallen trees (Lewis and Azerrad 2004). Due primarily to a loss of habitat, this woodpecker is considered a State Candidate species in Washington (WDFW 2004). This species provides important habitat for other wildlife by creating cavities in standing snags and decaying live trees. Pileated woodpeckers may inhabit residential areas located near parks, remnant patches of forest or greenbelts. This species forages on large- and small-diameter coniferous and hardwood trees and snags in suburban areas, with occasional use of suet feeders, utility poles, and fruit trees. Pileated woodpeckers generally select western red cedar trees for roosting habitat and Pacific silver fir (*Abies amabilis*) and western hemlock trees for nesting in western Washington. Recent studies have shown that pileated woodpeckers nest in trees ranging from 26 inches to 61 inches dbh, with an average nest tree diameter of 40 inches

Photo 3.4-2: Pileated woodpecker activity in a Douglas-fir snag located in the Project area.

(Lewis and Azerrad 2004). Western hemlock trees measuring approximately 31 inches dbh were commonly observed during 2006 site surveys (EDAW 2006). Snags (particularly Douglas-fir species) containing indications of pileated woodpecker foraging activity were observed on the Project site (see Photo 3.4-2).

The peregrine falcon is a State Sensitive species in Washington and a Federal Species of Concern (USFWS 2005, WDFW 2004). These are generalist predators, feeding on shorebirds, waterfowl, and other small- to medium-sized birds. While they prefer cliffs as a nesting habitat, peregrine falcons are commonly known to nest in tall buildings and on bridges. Their goal is to achieve a high elevation for hunting prey or avoiding predators. During the winter, peregrine falcons use an extensive home range to include mostly tide flats and open water, with occasional use of upland forest for hunting and roosting (Hayes and Buchanan 2002). This species is known to nest in downtown Seattle (Falcon Research Group 2006, Stofel, pers. comm., 2006), and one peregrine falcon was observed perched on a radio tower just outside the Project site. This bird was observed flying over the site as well (EDAW 2006). Based on this information, it is likely that peregrine falcons occasionally use the general Project vicinity.

3.4.2 Impacts

This section describes potential impacts to the plants and animals that occur on the Project site resulting from the two Action Alternatives and No Action Alternative.

3.4.2.1 Alternative 1

Vegetation and Terrestrial Habitat

Short-Term Impacts

Approximately 7.4 acres would be cleared by construction activities under Alternative 1. During the construction process, some remaining vegetation would potentially be damaged and soils would be compacted from foot traffic and construction equipment. Vegetation would be temporarily affected by the compaction impacts and would be expected to recover over time. Soil erosion and sedimentation may result from compaction and influence surface water quality (see Section 3.2, Drainage and Water Quality). The Project would involve grading and filling on the site, which would also contribute to erosion and sedimentation during the construction phase.

Long-Term Impacts

Construction of the 200 multi-family residential units would result in the removal of approximately 7.4 acres of upland forest with about 2.4 acres remaining. The Project would result in the clearing of second-growth forest and mature, large-diameter trees (approximately 31 inches dbh). Most large trees are concentrated in the southern portion of the site. Construction activity might increase seed dispersal from non-native species, which could contribute to a long-term increase of non-native species throughout the Project site and into the existing park boundary. Several non-native species were observed adjacent to the senior center located at the southeast corner of the property, including Scotch broom (*Cytisus scoparius*) and himalayan blackberry (*Rubus discolor*). Due to the absence of canopy cover

to shade out invasive shoots, these species might become established on the site and spread into the park if left uncontrolled.

Cumulative Impacts

No cumulative impacts would be expected from the implementation of Alternative 1.

Wildlife

Short-Term Impacts

Short-term impacts to wildlife would stem from construction-related noise and human disturbance. Noise levels and presence of pedestrians, automobiles and machinery would increase during the construction phase. Wildlife using the Project site and adjacent habitat would likely avoid the area during the construction period.

Long-Term Impacts

Clearing of vegetation across the Project site would remove approximately 7.4 acres of wildlife habitat. Removal of this habitat will have a corresponding negative effect on the ability of the site to support wildlife. Tree and shrub removal on the Project site would limit perching, roosting, and nesting opportunities for a variety of wildlife species, including birds, small mammals, amphibians, and reptiles. Vegetation removal would involve the removal of many snags used by pileated woodpeckers for foraging and by cavity-nesting birds. Increased noise levels and pedestrian and automobile traffic associated with the newly constructed residential units would also cause long-term impacts to wildlife. As a result, this might contribute to an increase in edge-adapted species on the Project site and in the adjacent park.

Cumulative Impacts

Impacts from removal of upland habitat would contribute to cumulative habitat loss in the WRIA 9 Nearshore Subbasin. Removal of habitat reduces the ability of the watershed to support wildlife and results in fragmentation of habitat connections.

Fisheries

Short-Term Impacts

Construction activity may potentially increase short-term sedimentation in the downslope wetland and potentially in downstream tributaries and channels. Implementation of erosion and sedimentation control measures will minimize but not entirely eliminate adverse effects. This would result in temporary, adverse habitat effects to fish species (e.g., three-spined stickleback and cutthroat trout).

Long-Term Impacts

Without mitigation, increased surface water runoff from impervious surfaces installed on the Project site would create additional surface water discharge with the potential to affect surface water quantity and quality. However, Alternative 1 would include the construction of a water quality and detention vault at the west edge of the Project development to manage stormwater runoff through the Project site and into the adjacent park. This would offset the increase in runoff from impervious surfaces constructed on the site, which would cover approximately 7.4 acres. The detention vault would reduce excessive runoff from flowing

into the wetland and associated tributaries, which flow off-site into North Creek and eventually into Puget Sound. Water from the vault would be released through a riser and conveyed to level spreader features that would distribute the flow over a wide area located upslope of the wetland buffer limits. The conveyance system would be designed to handle a 100-year flow event, and vault overflow measures would be provided for extreme precipitation events. Vault overflow measures may include an energy-dissipating manhole with an armored surface below, using rip-rap, erosion control mats, interlocking concrete block, or other armoring materials. Development of the 200 units likely would cause alterations in groundwater infiltration in the Project site and downstream areas. This may affect the hydrology of the first order tributaries to North Creek. The implementation of the long-term stormwater control system would minimize, but not entirely eliminate effects to hydrology and fish. This would have a minor, long-term effect on habitat quality for fish in the off-site stream channels affected by the Project, which is not expected to be significant.

Cumulative Impacts

Alternative 1 would contribute to the increase of impermeable surface area in the watershed and the corresponding effects to groundwater, surface water, and aquatic habitat.

Threatened, Endangered, and Sensitive Species

Short-Term Impacts

Peregrine falcons may be affected by a loss of perching habitat as a result of the vegetation clearing in Alternative 1. Noise levels and human disturbance, including pedestrian, automobile, and machine traffic on the site, would increase during construction. As a result, bald eagles, peregrine falcons, and pileated woodpeckers may avoid the Project site and adjacent park habitat during construction activity.

Long-Term Impacts

The Project would result in the removal of most of the larger diameter trees used by bald eagles. This would result in a loss of potential nesting, perching, and roosting sites for this species. Removal of the second-growth forests on the site, including snags and fallen trees, would have a direct impact on bald eagles and pileated woodpecker. Pileated woodpeckers have been associated with high interspersion between forested and developed landscapes; however, it is possible they could adapt to the altered environment adjacent to the forested park habitat (Rohila 2002).

Cumulative Impacts

Removal of upland, mature trees would contribute to the cumulative loss of perch and potential nesting habitat for bald eagles and nesting and foraging habitat for pileated woodpecker.

3.4.2.2 Alternative 2

Vegetation and Terrestrial Habitat

Short-Term Impacts

Short-term impacts to vegetation and soils on the Project site would be similar to those addressed in Alternative 1.

Long-Term Impacts

Approximately 7.2 acres of land would be cleared under Alternative 2, which is about 0.2 less than that of Alternative 1. Construction activity could lead to invasion of non-native species on the Project site and in the adjacent park boundary. Landscape plans for Alternative 2 include potential Seahurst Park trail access at the south end of the property. Pedestrian travel between the property and the park could aid in the transport of non-native species into the adjacent park habitat.

Cumulative Impacts

Cumulative impacts would be the same as those described under Alternative 1.

Wildlife

Short-Term Impacts

Alternative 2 would have similar impacts to those described under Alternative 1.

Long-Term Impacts

Long-term impacts to wildlife are similar, but slightly less than those described under Alternative 1. Loss of approximately 7.2 acres of habitat would have a long-term, corresponding effect on the ability of the site to support wildlife. Construction of the 178 residential units includes plans for direct access to Seahurst Park at the south end of the property (adjacent to proposed Building G in Alternative 2). This would potentially lead to an increased use of the trail system adjacent to the Project site and in Seahurst Park, causing further disturbance to resident wildlife and vegetation.

Cumulative Impacts

Cumulative impacts under Alternative 2 would be the same as those described under Alternative 1.

Fisheries

Short-Term Impacts

Similar to the Alternative 1, surface water runoff and water quality issues could result from construction activities. Implementation of erosion and sedimentation control measures would minimize but not entirely eliminate these effects. While not expected to be significant, effects to water quality could affect amphibians and fish in downslope wetlands and headwater streams.

Long-Term Impacts

Long-term impacts on water quality and downstream fish species would be similar to those caused by Alternative 1.

Cumulative Impacts
Cumulative impacts would be similar to those described under Alternative 1.

Threatened, Endangered, and Sensitive Species

Short-Term Impacts
Short-term impacts to known TES species on the Project site would be similar to those described under Alternative 1.

Long-Term Impacts
Alternative 2 would cause long-term impacts to TES species similar to impacts described under Alternative 1.

Cumulative Impacts
Cumulative impacts would be the same as those described under Alternative 1.

3.4.2.3 No Action Alternative

Vegetation and Terrestrial Habitat

Short-Term Impacts
The No Action Alternative involves no construction on the Project site and no changes to the existing conditions. No short-term impacts to vegetation or terrestrial habitat would occur.

Long-Term Impacts
The second-growth forest occurring on the property would continue to mature and provide suitable habitat for a variety of avian, small mammal, amphibian, and reptilian species. The Project site is part of the western hemlock zone, hence this species, along with western red cedar, would become more dominant on the site over time. Deciduous species, such as bigleaf maple and red alder, would become less abundant. Existing non-native species located in the southeast corner of the site likely would expand in range over a short-term period. English ivy could expand under mature forest canopy, while blackberry would be less likely to spread under the shaded conditions. With proposed landscape installation and maintenance, the potential for impacts would be minimized.

Cumulative Impacts
No cumulative impacts would result from the No Action Alternative.

Wildlife

Short-Term Impacts
Under the No Action Alternative, the site would remain undeveloped and there would be no short-term impacts to wildlife.

Long-Term Impacts
The forests on the property would continue to provide a corridor for wildlife travel between the park and adjacent habitat. Use of user-made trails on the site and in the adjacent park would continue to cause a minor human disturbance to wildlife. The maturing timber stand would afford habitat for a variety of wildlife species.

Cumulative Impacts
No cumulative impacts would result from the No Action Alternative.

Fisheries

Short-Term Impacts
No construction would occur under this alternative, and there would be no alteration in surface water runoff or water quality as a result of the Project. Hence, there would be no short-term impacts to fish associated with water bodies downslope of the Project site.

Long-Term Impacts
The off-site tributaries linking the site's wetland to North Creek would continue functioning in their current state. The off-site tributaries and downstream water bodies would not experience water quality issues or runoff from impervious surfaces directly from the Project site.

Cumulative Impacts
No cumulative impacts would result from the No Action Alternative.

Threatened, Endangered, and Sensitive Species

Short-Term Impacts
The site would remain undeveloped under the No Action Alternative. There would be no short-term impacts to known TES species on the Project site.

Long-Term Impacts
Under the No Action Alternative, the absence of development and disturbance on the Project site, combined with the ongoing maturation of the forested stands, would increase habitat quality for wildlife. Great blue herons could eventually nest in the forest. Bald eagle use of the Project site for perching would likely increase as the trees continued to grow in height and diameter. Pileated woodpeckers would continue to use standing snags and decaying live trees in the Project site and adjacent park for foraging. More Douglas-fir trees would be expected to deteriorate over time as western hemlock and western red cedar species gradually dominate the forest canopy.

Cumulative Impacts
No cumulative impacts would result from the No Action Alternative.

3.4.3 Mitigation Measures

This section describes mitigation measures for potential impacts that could occur on plants and animals as a result of the two Action Alternatives and the No Action Alternative.

3.4.3.1 Alternative 1

The following narrative describes the mitigation measures that address impacts to plants and animals from Alternative 1.

Vegetation Retention: Alternative 1 would retain up to approximately 2.4 acres of second-growth forest and undeveloped property, thus retaining these areas in their natural condition.

The current landscape designs show planted strips of trees and shrubs adjacent to the parking lot on the west side of the Project site with ground cover extending to the west property line. To improve the function of the wetland buffer, maintain wildlife habitat, and reduce habitat loss, the existing native vegetation in this area of the Project site should be retained rather than replaced with landscaping. At a minimum, trees measuring 26 inches dbh and greater should be retained along this side of the property.

Revegetation: The replanting proposed by the Applicant would include planting two trees for each significant tree removed on the Project site (excluding alders). "Significance" in this instance is defined as the minimum size of tree used by pileated woodpeckers, i.e. a coniferous tree that measures at least 26 inches dbh. This measure is in keeping with the requirements of the KCC 21.51.40 in effect in February 1990 (see section 3.1.6.3). In order for these new plantings to establish successfully on the site, it is recommended that one of the following courses of action be adopted:

- Plant gallon-size trees in autumn at a ratio of 3:1 or 4:1 to ensure that a substantial number of planted trees become successfully established; or
- Plant gallon-size trees in autumn at a ratio of 2:1 and adhere to a two-year monitoring and contingency replacement plan.

The replacement trees should be gallon size and not bare root stock because the more substantial plantings would have a probability of becoming establishing. For the plantings to succeed on the site, either a higher ratio of replacement trees should be planted after Project construction, or a monitoring and contingency plan should be followed. The plantings would correspond with species used as nesting, foraging, and roosting habitat by pileated woodpeckers. This primarily includes Douglas-fir, western hemlock, and western red cedar, which are tree species utilized by pileated woodpeckers (Lewis and Azerrad 2004).

Erosion and Sedimentation Control: Mitigation measures related to erosion and sedimentation control during construction, permanent storm water control, and public education are described under the mitigation measures related to wetlands, Section 3.5.

Landscape Maintenance: The landscape installed as a part of the Project should be maintained on a regular basis to encourage growth of the species installed, and to suppress the growth of invasive non-native species.

3.4.3.2 Alternative 2

Mitigation measures for Alternative 2 would be the same as those recommended for Alternative 1.

3.4.3.3 No Action Alternative

The Project site would remain undeveloped under the No Action Alternative, hence no mitigation measures would be necessary.

3.4.4 Significant Unavoidable Adverse Effects

The Project would not cause any significant unavoidable adverse impacts on plants and animals.

3.5 Wetlands

This section describes existing conditions, regulations, impacts, and mitigation measures for the wetlands element of the natural environment. Vegetation, soils, and hydrology within the wetland habitat are included in this element.

3.5.1 Affected Environment

A wetland occurs along the western property line (see Figure 3.5-1). The wetland straddles the Project property line, spanning east to west along the topographical gradient, with approximately 0.14 acres of wetland located on the Project site. Water travels downslope and westward from the wetland into small off-site tributaries to North Creek within Seahurst Park and eventually to Puget Sound.

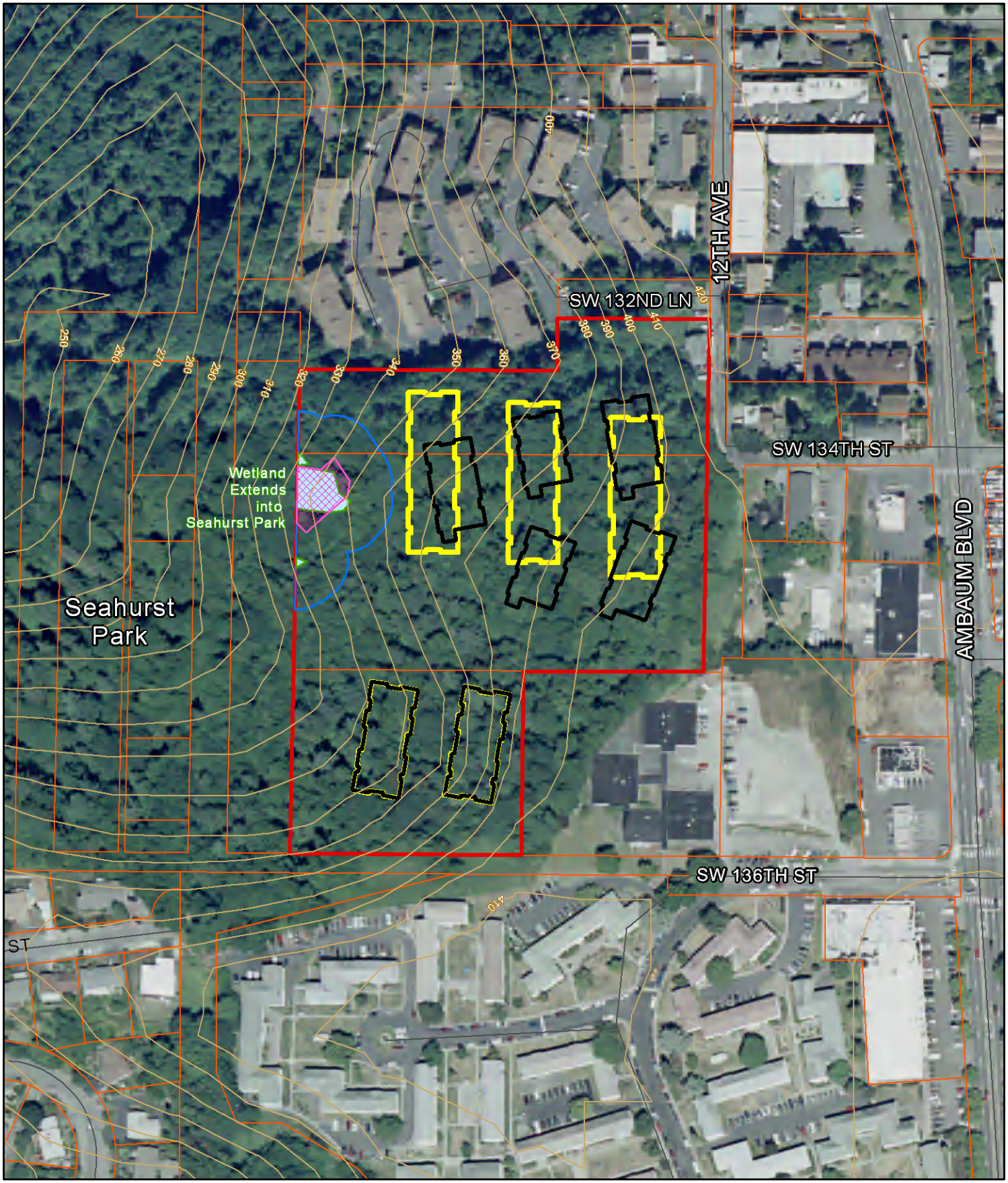
The site and wetland are located in the Nearshore Subwatershed, which is part of the Green/Duwamish and Central Puget Sound Watershed (WRIA 9). This subwatershed includes all shorelines and streams that drain directly into Puget Sound. Land use in the mainland portion of the Nearshore Subwatershed is dominated by residential and industrial development (Green/Duwamish and Central Puget Sound Watershed WRIA 9 Steering Committee 2005).

3.5.1.1 Applicable Regulations

The U.S. Army Corps of Engineers (Corps) is responsible for administering the permitting under Section 404 of the federal Clean Water Act (CWA), which applies directly to activities affecting wetlands. The Corps has jurisdiction over the discharge of dredged or fill material in waters of the United States, which includes streams and wetlands:

> *The Army Corps' regulatory authority is contained within §404 of the CWA. Army Corps jurisdiction is over "waters of the United States" which is defined at 33 Code of Federal Regulations [CFR]328.3 as (1) all navigable waters and their tributaries; (2) all interstate waters and their tributaries; (3) all other waters, the use, degradation, or destruction of which could affect interstate commerce; (4) all water impoundments; (5) territorial seas; and (6) wetland adjacent to waters identified above.*

According to 33 CFR 328.4, the Corp's limits of jurisdiction extend over (a) territorial seas; (b) tidal waters of the U.S; and (c) non-tidal waters of the U.S. The Project's wetland area is a non-tidal water of the U.S. that is adjacent to surface water connections that flow into Puget Sound. Thus, the Corps has jurisdiction over the wetland on the Project site under its authority under the CWA.



Emerald Pointe EIS - Burien, WA

Figure 3.5-1 Approximate Wetland Location and Buffer Zone

- Wetland (GPS derived, 2006)
- Existing Wetland Delination (1991)
- Voluntary Wetland Buffer (65 ft.)
- Alternative 1 Building Footprints, 200 units
- Alternative 2 Building Footprints, 178 units
- Emerald Pointe Site Location
- Parcels
- Contours (10 ft.)
- Roads

N

0 50 100
Feet

EDAW | AECOM August 2007

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The Corps and other agencies develop guidelines for working with wetlands. The Corps 1987 Manual was developed to aid in the definition and identification of wetlands to properly administer permits under the CWA. The CWA applies to the wetland on the Project site because of potential impacts caused by construction activities; these impacts are discussed in Section 3.5.2.

The Project was vested in February 1990, before the City of Burien was incorporated. Thus, February 1990 KCC regulations apply to this Project, rather than the current BMC. The 1990 regulations allow for disturbance or alteration of wetland habitat if one of two conditions is present: either the wetland does not serve any characteristic functions, including but not limited to providing wildlife habitat and natural drainage functions, or the proposed development would preserve or enhance wetland functions. No language discussing or requiring a wetland buffer is present in this version of the KCC. Therefore, according to vested 1990 KCC regulations, no wetland buffer requirements apply to the wetland on the Project site (1990 KCC Section 21.54.160).

Wetland Surveys
A wetland study was completed in 1991 using the Corps Wetlands Delineation Manual (Environmental Laboratory 1987) and the U.S. Fish and Wildlife Service wetland classification system (Cowardin et al. 1979). This wetland did not occur on the King County Sensitive Areas Folio Map in 1990 (Terra Associates 1991), nor does it occur on the current National Wetlands Inventory map register (USFWS 2006). Surveyors determined this to be a King County Class II palustrine forested wetland (Terra Associates 1991) using the September 1990 KCC (1990 KCC Section 21.54.270). September 1990 KCC regulations dictated Category II wetlands shall have a 50-foot buffer. These regulations required a minimum 15-foot building setback line in addition to the wetland buffer and do not allow for buffer averaging (1990 KCC Section 21.54.270). The Project is vested under February 1990 KCC regulations, so the September 1990 regulations do not apply to the Project site. However, these buffers have been proposed by the Applicant on their construction and landscape plans.

A brief field reconnaissance was completed in October 2006 to confirm the general location and boundary of the wetland. While the 1991 delineation by Terra Associates and the 2006 reconnaissance by EDAW, Inc., resulted in similar boundaries, there are some minor differences (see Figure 3.5-1). In the 2006 survey, the central-eastern section of the wetland boundary was extended to the north and the central-western section of the wetland boundary was extended to the south (see Figure 3.5-1). This survey was carried out using a Global Positioning System (GPS) unit and not actual survey locations. EDAW verified the boundaries of the wetland in during a reconnaissance but did not conduct a formal wetland delineation. The results of the past wetland delineation (Terra Associates) and the EDAW reconnaissance are shown in Figure 3.5-1).

3.5.1.2 Vegetation

The vegetation surrounding the wetland at the Project site is dominated by a forested canopy with underlying shrub and herbaceous layers. As such, this wetland is categorized as a palustrine forested wetland (Cowardin et al. 1979). Dominant wetland vegetation includes

red alder, salmonberry, and lady fern, with presence of some skunk cabbage (*Lysichitum americanum*). Additional wetland indicator species observed in the wetland include water parsley (*Oenansthe sarmentosa*) and giant horsetail (*Equisetum telmaeia*) (Terra Associates 1991). These species were not observed during the October 2006 site visit that occurred outside of the growing season (EDAW 2006), but were observed during a subsequent visit in April. A complete list of wetland species observed in the 1991 and 2006 Project wetland surveys is presented in Table 3.5-1.

Table 3.5-1: Wetland Plant Species Observed at Emerald Pointe, Burien, Washington.

Scientific Name	Common Name	Wetland Indicator Status
Alnus rubra	Red alder	FAC
Athyrium filix-femina	Lady fern	FAC
Equisetum telmateia	Giant horsetail	FACW
Lysichitum americanum	Skunk cabbage	OBL
Oenanthe sarmentosa	Water parsley	OBL
Ranunculus repens	Creeping buttercup	FACW
Rubus spectabilis	Salmonberry	FAC
Thuja plicata	Western red cedar	FAC
Tolmiea menziesii	Piggy-back plant	FAC
Urtica dioica	Stinging nettle	FAC

Notes: ***FAC****=Facultative. Species that are equally likely to occur in wetlands or uplands (estimated probability 34 to 66%).* ***FACW****= Facultative wetland. Species that usually occur in wetlands (estimated probability 67 to 99%), but occasionally are found in uplands.* ***OBL****= Obligate. Species that almost always occur in wetlands (estimated probability >99%) under natural conditions.*

Source: EDAW 2006, Terra Associates 1991

3.5.1.3 Soils

The Project site and immediate vicinity were not included in the King County Area Soil Survey (U.S. Soil Conservation Service 1973), nor have they been mapped to date (Natural Resources Conservation Service [NRCS] 2006). Similar areas nearby are mapped as Alderwood, gravelly sandy loam and were used for comparison in the 1991 wetland survey (Terra Associates 1991). This is a moderately deep, moderately well-drained soil type formed on till plains over a hardpan. The Alderwood gravelly sandy loam is not listed as a hydric soil.

Upland soils sampled in the 1991 survey were consistent with the Alderwood gravelly sandy loam profile. Samples were generally dry and sandy, and colors ranged from dark brown to dark yellowish-brown with no redoximorphic features (mottles). Wetland soil samples were saturated, and colors ranged from gray to very dark gray with some redoximorphic features. All wetland soil samples were concluded to be hydric (Terra Associates 1991).

In 2006, similar observations were made by EDAW. One soil sample uphill of the wetland was well-drained. The sample was taken in a drainage channel (a depression that channels precipitation and runoff into the downhill wetland and off-site streams), but no signs of hydrology were present, and any moisture in the area appeared to be absorbed by the thick layer of duff present. This is a topographic depression with no defined channel or scour marks and supports upland plant species. There is no intermittent stream in this topographic feature. West (downslope) of a remnant road/trail the topography increases in steepness and contains surface water from numerous seeps. Several auger samples were taken around the

wetland area. Soils in the wetland appeared to be a sandy clay loam with a low chroma. Substantial inclusions of organic soils occur within the wetland. Soils were saturated and met the hydric soil criteria.

3.5.1.3 Hydrology

The main water source for the wetland on the Project site is groundwater seepage, which occurs at several points along the toe of the slope that borders the east and south sides of the wetland (Terra Associates 1991). Other water sources include precipitation and runoff (surface flow). Observed wetland hydrology includes standing water, water stains, flow patterns, and groundwater seepage. Water travels from the wetland area off-site into North Creek, which flows west through Seahurst Park and into Puget Sound. At the time of the October 2006 site visit, flowing and standing water were present in several areas of the wetland (see Photo 3.5-1).

Photo 3.5-1: Groundwater seepage present in a side channel of the Project site wetland.

3.5.2 Impacts

This section describes potential impacts to wetlands from the two Action Alternatives and the No Action Alternative.

3.5.2.1 Alternative 1

Short-Term Impacts

No Project construction would take place in the wetland, thus no wetland vegetation would be removed or disturbed as a result of Alternative 1. Potential short-term, indirect impacts to wetland vegetation could result from sedimentation and surface water runoff from the upslope Project site during the construction phase. Construction activity may cause a short-term increase in surface water runoff flowing to the wetland from removal of vegetation and grading over approximately 7.4 acres. Increased runoff could carry excess sediment to nearby wetlands and streams and affect vegetation, amphibians, and resident fish. Implementation of stormwater plans during construction will minimize, but not eliminate these impacts. Details on the stormwater regulations can be found in Section 3.2. Implementation of Alternative 1 would require compliance with standards set forth in the CWA and the Environmental Protection Agency's NPDES permit program (U.S. Environmental Protection Agency [EPA] 2006).

Long-Term Impacts

Construction equipment could transport non-native species into the Project site, which could become established in the long-term near or in the wetland habitat. Due to the removal of forest habitat near the wetland, areas exposed to sunlight would increase and could provide suitable conditions for invasive species. Aggressive invasive species, such as Himalayan

blackberry, currently exist on the Project site and could expand into the wetland habitat over time as a result of forest clearing under Alternative 1.

Installation of approximately 7.4 acres of impervious surface in Alternative 1 would increase surface water runoff on the Project site and potentially contribute to long-term issues of erosion and sedimentation in the wetland habitat and surrounding areas. Project activities, particularly vegetation removal and installation of impervious surfaces, would contribute to increased surface water runoff in the long term and may affect water quality in the wetland (see 3.2 Drainage and Water Quality). Mitigation measures describe in Section 3.2 would minimize, but not eliminate these effects. Surface runoff associated with the impervious surfaces in the 200-unit complex would be managed with a water quality and detention vault installed on the site. Off-site runoff would be routed either in a separate bypass system or added to the site storm drainage system. Stormwater plans do not include treatment of off-site runoff in the water quality detention vaults.

Roads, cut and fill slopes, buildings, and parking lots associated with the proposed Project may affect the ground water hydrology and consequently affect the nearby wetland. The wetland appears to rely partly on groundwater seepage that may be affected from the development and the ensuing changes to groundwater hydrology. Over the long-term the wetland may become smaller or there could be a change in vegetation species composition. It is difficult to predict such effects without extensive groundwater monitoring and modeling.

Cumulative Impacts

Development in the Nearshore Subasin of WRIA 9 continues to remove upland habitat that has a cumulative effect on wetlands within the watershed. While this Project is implementing the required stormwater control plans and is leaving a buffer that is not required under the vested regulations, removal of upland habitat in the watershed will have cumulative contributions to regional wetland impacts.

3.5.2.2 Alternative 2

Short-Term Impacts

Approximately 7.2 acres of land would be disturbed under Alternative 2. Short-term impacts to wetland vegetation, soils and hydrology would be similar to those addressed under Alternative 1.

Long-Term Impacts

Alternative 2 would cause similar long-term impacts to wetlands as described under Alternative 1.

Cumulative Impacts

Cumulative impacts under Alternative 2 would be similar to those described under Alternative 1.

3.5.2.3 No Action Alternative

Short-Term Impacts

Under the No Action Alternative, wetland soils and vegetation would not be disturbed. There would be no impacts to water quality or hydrology to wetlands that occur on the site.

Long-Term Impacts

The forest canopy associated with the wetland would continue to mature and provide shade to the site. Over time, trees would decay and fall onto the forest floor, creating large woody debris or habitat logs. These structural transformations would provide valuable habitat for fish and wildlife. The likelihood of non-native species currently present on the site to spread into the wetland area would be significantly lower under the No Action Alternative compared to Alternative 1 and Alternative 2. Scotch broom would be unlikely to invade the wetland habitat due to the shade and moist conditions present in the wetland. English ivy and evergreen blackberry are both capable of adapting to shade and could potentially encroach upon the wetland habitat over time, particularly with continued pedestrian use of the trails providing access to Seahurst Park from the Project site.

Cumulative Impacts

No cumulative impacts would result from the No Action Alternative.

3.5.3 Mitigation Measures

This section describes mitigation measures for the potential impacts to the wetland habitat on the Project site resulting from the action alternatives.

3.5.3.1 Alternative 1

The following narrative describes the mitigation measures related to wetland protection proposed for Alternative 1:

Erosion and Sedimentation Control During Construction: BMPs would be applied during the construction process to reduce sedimentation and erosion issues. These BMPs concern the use of establish erosion and sedimentation control plans that will be part of the City Clearing and Grading Permit and the NPDES Permit.

Permanent Stormwater Control System: A stormwater system (Section 3.2) would be developed to meet the detention, retention, and release rates. Implementation of the system will reduce the Project effects to nearby wetlands and streams.

Wetland Buffer: The Project proponent will implement a voluntary 50-foot-wide buffer around the existing wetlands to help protect the function of these systems. The current design for the stormwater ponds does encroach upon these buffers along the northwest quarter.

Use of Native Plants for Landscaping: Areas temporarily disturbed by construction equipment and landscaped areas in the new development should be planted with native species.

Public Education: Interpretive signs should be installed to educate the public and residents about the function of sensitive wetlands. If the public understands about the protected habitat within their development, they are more likely to foster a sustainable habitat for native species in the area.

3.5.3.2 Alternative 2

Mitigation measures under Alternative 2 are the same as those addressed in Alternative 1.

3.5.4 Significant Unavoidable Adverse Impacts

The Proposed Action would not cause any significant unavoidable adverse impacts on the Project site wetland.

3.6 Land Use (Including Relationship to Plans & Policies)

This section describes the land use characteristics and policies and regulations applicable to the Project site. Potential land use impacts and regulatory conflicts of the two Action Alternatives and No Action Alternative, as well as any appropriate mitigation measures to avoid or reduce those impacts, are discussed.

3.6.1 Affected Environment

The following describes the existing land uses in the vicinity of the Project and applicable land use regulations controlling the Project and its components. As discussed in Chapter 1, due to the vesting of the Project in February of 1990, King County land use regulations in place at the time represent the applicable land use statutes for Project review.

3.6.1.1 Applicable Regulations

A number of policies and regulations guide land uses on and adjacent to the Project site. As land use regulations, these regulations are vested to the 1990 KCC (for additional information on applicable regulations, see Appendix A). Applicable policies, standards, and regulations used in this analysis of land use include:

- KCC 21.12 RM 2400, in effect February 15, 1990;
- KCC 21.14 RM 1800, in effect February 15, 1990
- KCC 21.48 General Provisions – Height, Yards, Area, and Open Space, in effect February 15, 1990;
- KCC 21.50 General Provisions – Loading Areas and Off Street Parking, in effect February 15, 1990; and
- KCC 21.51 Landscaping and Screening, in effect February 15, 1990.

In addition to these vested regulations, the current Burien Comprehensive Plan provides guidance when vested regulations do not apply or are silent.

3.6.1.2 Existing Land Use

Currently, the Project site is a collection of three undeveloped parcels characterized by natural vegetation, including many trees and other plant material. The Project site is accessed by foot via 12th Avenue SW or SW 136th Street. Visitors have established informal user-made trails on the site that connect to the Seahurst Park trail network. The Project site connects directly with Seahurst Park along its western border.

With the exception of Seahurst Park to the west, land uses in the vicinity of the Project site are primarily a combination of multi-family and single-family residential uses, intermixed with some commercial uses along Ambaum Boulevard. Overall, the large majority of parcels adjacent to the Project site are developed. A number of multi-family developments are located to the north, northeast, and south. Directly north of the Project site is the Sound Vista Condominiums, containing a total of 117 residential units. Sound Vista Condominiums, a similar development to the proposed Emerald Pointe Project, includes condominium units in several 3-story structures and was built in the 1980s. Residential density for the Sound Vista Condominium Project is approximately 22.5 dwelling units per acre. A number of other multi-family developments are located farther north and northeast of the Project site. Adjacent to the Project site on the south side, the Vintage Park Apartment complex, built in 1948, provides 543 units of rental housing and some commercial uses for Burien residents. Residential densities at Vintage Park Apartments are approximately 15 dwelling units per acre. Property containing a collection of buildings formerly used as the Burien Senior Center abuts the Project site to the southeast. These buildings are currently vacant.

There are a number of single-family residences farther from the Project site. To the southwest, a large number of single-family residences are bordered by Seahurst Park to the north and south in the Hurstwood Neighborhood. Similarly, single-family residences are the predominant use southeast of the Project site, beyond the intersection of Ambaum Boulevard SW and SW 136th Street.

Finally, to the east, along Ambaum Boulevard SW, a number of commercial developments, including a produce market, medical/dental office, an automotive repair business, small restaurants, and other businesses have been established.

3.6.1.3 Applicable Land Use Regulations

Land use regulations provide the framework for the development of the Project site. Zoning regulations and future land use designations contained in the applicable Comprehensive Plan represent the primary guides for the development of a given parcel. Since the Project officially vested under King County land use regulations in February 1990, thezoning code in effect at that time established the land use regulations applicable to the Project site, while the current 2006 Burien Comprehensive Plan provides the framework for new land uses in the vicinity. This analysis discusses the Project in relation to both the applicable February 1990 regulations and the current Burien Comprehensive Plan (2006). However, in accordance with the Project's vesting status, the 1990 King County zoning takes precedence in this Proposed Action (see Section 1.3, Project History, for more information on Project vesting).

1990 King County Zoning

Overall, the Project site comprises three individual parcels, all owned by the Applicant. The February 1990 King County land use requirements guide development on the site because of its vesting status. According to the 1990 King County zoning, these three parcels are split between RM-2400 and RM-1800 (King County 1990b). The two northernmost parcels are zoned RM-1800 and the southernmost parcel is zoned RM-2400.

King County's RM-2400 zoning designation provides for medium density multi-family residential development. A range of uses is allowed in the RM-2400 zone, including single-family uses, duplexes, senior citizen apartments, retirement homes, day nurseries, and other uses (1990 KCC 21.12.020). The minimum lot size in this zone is 7,200 square feet, and the lot area per dwelling unit shall be no less than 2,400 square feet (1990 KCC 21.12.040). All lots in this zoning district must provide a front yard setback of no less than 20 feet and minimum side yard setback of five feet. Residential buildings within the RM-2400 zoning may not exceed 30 feet in height. Other structures or buildings (non-residential) may exceed the 30-foot maximum if the side yard and/or open space setback of the building is increased. In that case, for each additional foot added to the side yard or open space setback, an additional foot in height can be added to the maximum height. Under no circumstances may a building exceed 50 feet in height (1990 KCC 21.12.080). Additionally, developments in RM-2400 must provide at least a 5-foot setback between any building and any lot side line or rear property line. Individual buildings must also be 10 feet apart, and all of the buildings, including accessory buildings and structures (not including swimming pools and residential parking areas), cannot cover more than 50 percent of the area of the lot (1990 KCC 21.12.100, 1990 KCC 21.12.090).

Similar development requirements are found within the RM-1800 zoning designation, a high density multi-family zoning category. Generally, the same uses are allowed in the RM-1800 and RM-2400 zones, although open area public parking areas and self-service storage facilities (a conditional use) represent two additional uses allowed in the RM-1800 designation. Minimum lot size is 7,200 square feet, as in the RM-2400 designation, but the lot area shall be no less than 1,800 square feet per dwelling unit (KCC 21.14.030, KCC 21.14.040). In this zoning designation, no building shall exceed a height of 35 feet (compared to 30 feet in RM-2400), unless the required width of any side yards or open spaces is increased. (The requirements of the RM-1800 designation do not differentiate between residential and non-residential uses, as in RM-2400.) In this case, the proponent may increase the total building height by one foot for each foot of width in side yards and/or open spaces added (KCC 21.14.080). In contrast to the RM-2400 designation, there is no maximum height limit in the RM-1800 zoning designation (compared to a maximum height of 50 feet in the RM-2400 zone).

As with the RM-2400 zone, the RM-1800 zone requires a 5-foot separation between all structures and side lot and rear property lines and a 10-foot separation between buildings (KCC 21.14.100). Total building coverage in the RM-1800 designation shall not exceed 50 percent of the lot in the RM-1800 zone (KCC 21.14.090).

Guidance regarding certain environmental constraints is found elsewhere in the February 1990 KCC. In February of 1990, King County required applicants to consider a number of environmentally "sensitive areas," including flood hazard areas, wetlands, landslide areas and others in site planning and construction activities. The Project site contains areas defined in King County's Special Control Areas Ordinance as landslide hazard areas and wetlands (see Figure 3.3-2 and Figure 3.5-1). These areas require additional action to avoid impacts caused by development. A soil study that adequately demonstrates that the Project can be constructed safely (with mitigation measures, if necessary) on landslide hazard areas as

required by 1990 KCC 21.54.150. Additionally, wetlands located on a Project site "shall not be disturbed or altered through excavation, filling, building, or other improvements," unless it is determined that 1) the wetland does not serve any of the functions identified in 1990 KCC 20.12.080 and Corps 33 CFR 320.4 (b), or 2) the development would preserve or enhance the wildlife habitat, natural drainage and/or other functions as defined in the aforementioned sections of the KCC and Corps documents.

In addition to Special Control Areas regulations, the 1990 KCC requires that new development meets a number of landscaping requirements along side and rear property lines. According to these regulations, the Project must provide a minimum of a 5-foot planting area with "Type III" landscaping along all property lines not abutting a public street. Type III landscaping shall consist of a mix of evergreen and deciduous plantings, including living trees, shrubs, and ground covers and shall meet the following requirements:

- Shrubs and ground covers shall be chosen and spaced to result in a covering of the landscape strip within three years;
- Shrubs shall not exceed approximately three to four feet in height at maturity;
- Deciduous trees shall have a minimum trunk diameter of one and three-quarter inches at the time of planting, and be spaced so as to result in touching of branches after 10 years of normal growth; and
- Evergreen trees shall be a minimum of four feet tall at the time of planting and spaced equal to the mature spread of trees used (1990 KCC 21.51.040 [C]).

This section of the 1990 King County zoning allows for deviation from these standards in a number of cases, including cases when:

- Architectural barriers or berms are incorporated into the design of the landscaping and contribute to the intent of the type of landscaping required and the minimum width of planting is not reduced by more than 50 percent (1990 KCC 21.51.050[3]);
- Application of requirements of this section would result in more than 15 percent of the site area being landscaped, in which instance the manager shall modify those requirements such that not more than 15 percent of the site must be landscaped, provided the landscaping and corresponding setbacks required are those most beneficial to the public (1990 KCC 21.51.050[4]); or
- Inclusion of significant existing vegetation located on the site would result in as good as or better satisfaction of the purposes of this chapter (1990 KCC 21.51.050[5]).

Additionally, landscaping requirements for parking areas are proposed in 1990 KCC 21.51, including these:

- At least three percent of the parking area exceeding 30 parking stalls shall be utilized for landscaping (excluding any other required landscaping);
- At least one tree for every five parking stalls shall be provided, to be reasonably distributed throughout the parking lot;
- No parking stall shall be more than 60 feet from some landscaping;

- Permanent curbs and/or structural barriers shall be provided to protect the plantings from vehicle overhang; and
- A minimum of forty percent of tress shall be evergreen (1990 KCC 21.51.030 [D]).

All parking area landscaping must be "Type IV" landscaping. Requirements for Type IV landscaping include the following requirements:

- Shall consist of canopy-type deciduous trees or spreading evergreen trees planted in wells or strips, with a mix of living evergreen and deciduous ground covers and low shrubs;
- Shrubs shall not exceed approximately three to four feet at maturity;
- Planting wells or strips shall be a minimum of 32 square feet in area, with the narrowest dimension not less than four feet;
- Deciduous trees shall have a minimum trunk diameter of one and three-quarter inches at the time of planting, and
- Evergreen trees shall be a minimum of four feet tall at the time of planting.

2006 City of Burien Comprehensive Plan and Zoning Designations

Although allowable uses on the site under the proposal are determined by the 1990 KCC, as confirmed by an adjudicated court decision, allowable uses on adjacent parcels are determined by current City of Burien regulations. To understand the proposal within the context of the City of Burien's current vision for the area, the City of Burien Comprehensive Plan and Zoning Code designations are discussed below. However, it should be understood that these regulations do not apply to the Project in question, as it is vested under the KCC regulations in place in February 1990.

Comprehensive Plan

The City of Burien's Comprehensive Plan (2006) future land use designations and zoning designations are generally the same, with a few exceptions. As shown in Figure 3.6-1, residential uses in Burien are grouped into four general future land use categories, including: 1) Low Density Residential Neighborhood, 2) Moderate Density Residential Neighborhood, 3) Low Density Multi-Family Neighborhood, and 4) High Density Multi-Family Neighborhood. Residential neighborhoods northwest and southwest of the Project site are designated as Low Density Residential Neighborhood. Parcels directly north, south, and east of the Project are designated High Density Multi-Family Neighborhood. Seahurst Park, just west of the Project site, and the former Burien Senior Center, abutting the Project site to the southeast, are designated Public Parks/Schools/Recreation/Open Space. A number of parcels at the intersection of Ambaum Boulevard SW and Sw 136th Street are designated "Intersection Commercial" in the Burien Comprehensive Plan.

Zoning

As with future land use, the current zoning designations in the Project vicinity primarily include single-family medium-density, and high-density residential zoning designations. Parcels to the west, northwest, southeast, and southwest of the Project site are zoned RS-12,000 by the City of Burien (see Figure 3.6-2). The Vintage Park Apartments property (the large parcel directly south of the Project site) is zoned RM-18, a multi-family residential

designation that allows up to 18 dwelling units per acre. Parcels directly north and northeast of the Project site, including the parcel containing Sound Vista Condominiums, are zoned RM-24. RM-24, a high-density zoning designation, allows for the development of a maximum of 24 dwelling units per acre. A range of uses can be developed within Burien's medium- and high-density zoning designations, including single- and multi-family residential (including townhouses), mixed-use developments, and senior citizen housing, among others.

A limited number of nearby parcels have been zoned for commercial use. Parcels zoned for commercial use are clustered around the SW 136th Street and Ambaum Boulevard SW intersection (see Figure 3.6-2). All of these parcels have been designated in the "CI, Intersection Commercial" zone. The purpose of this zone is to "establish areas (in otherwise residential areas) for low to moderate intensity convenience commercial uses to serve customers traveling to and from their nearby homes" (BMC 19.15.020). Allowed uses in this designation include eating and drinking establishments, convenience retail, auto service, office uses, day care facilities and mixed-use developments, among others. These diverse uses should be designed to serve and be compatible with multiple nearby neighborhoods, encourage pedestrian and transit access, and maintain road and utility capacity. No other parcels in the Project's general vicinity are zoned for commercial uses (see Figure 3.6-2).

3.6.2 Impacts

This section addresses the potential impacts of the two Action Alternatives and No Action Alternative on land uses and related plans and policies. The following impact discussion is divided into short-term impacts, which are those impacts that could occur as the result of construction activities, and long-term impacts, which are impacts that would occur once construction is completed. Mitigation measures to address any potential impacts can be found in Section 3.6.3.

3.6.2.1 Alternative 1

Short-Term Impacts

Implementation of Alternative 1 would involve the construction of a collection of five buildings providing a total of 201 residential units (including the manager's unit), a clubhouse and pool complex (which will also include a manager's unit), and Project infrastructure, including internal roads, water and sewer infrastructure, and stormwater facilities. Construction activities would occur in three phases, with clearing and grading activities completed in 2008 and construction of all buildings complete by 2011. Construction access to the site would be achieved via 12th Avenue SW and SW 136th Street, two streets characterized by low-to-medium intensity residential development, so traffic conflicts will be minor. Construction activities would comply with applicable Burien health and safety requirements and within the City's established construction windows (see Section 3.2, Drainage and Water Quality, and Section 3.8, Noise, for more discussion on applicable construction windows.) As such, the Project would not be expected to create conflicts with adjacent uses. No significant short-term impacts would result from implementation of Alternative 1.

Long-Term Impacts

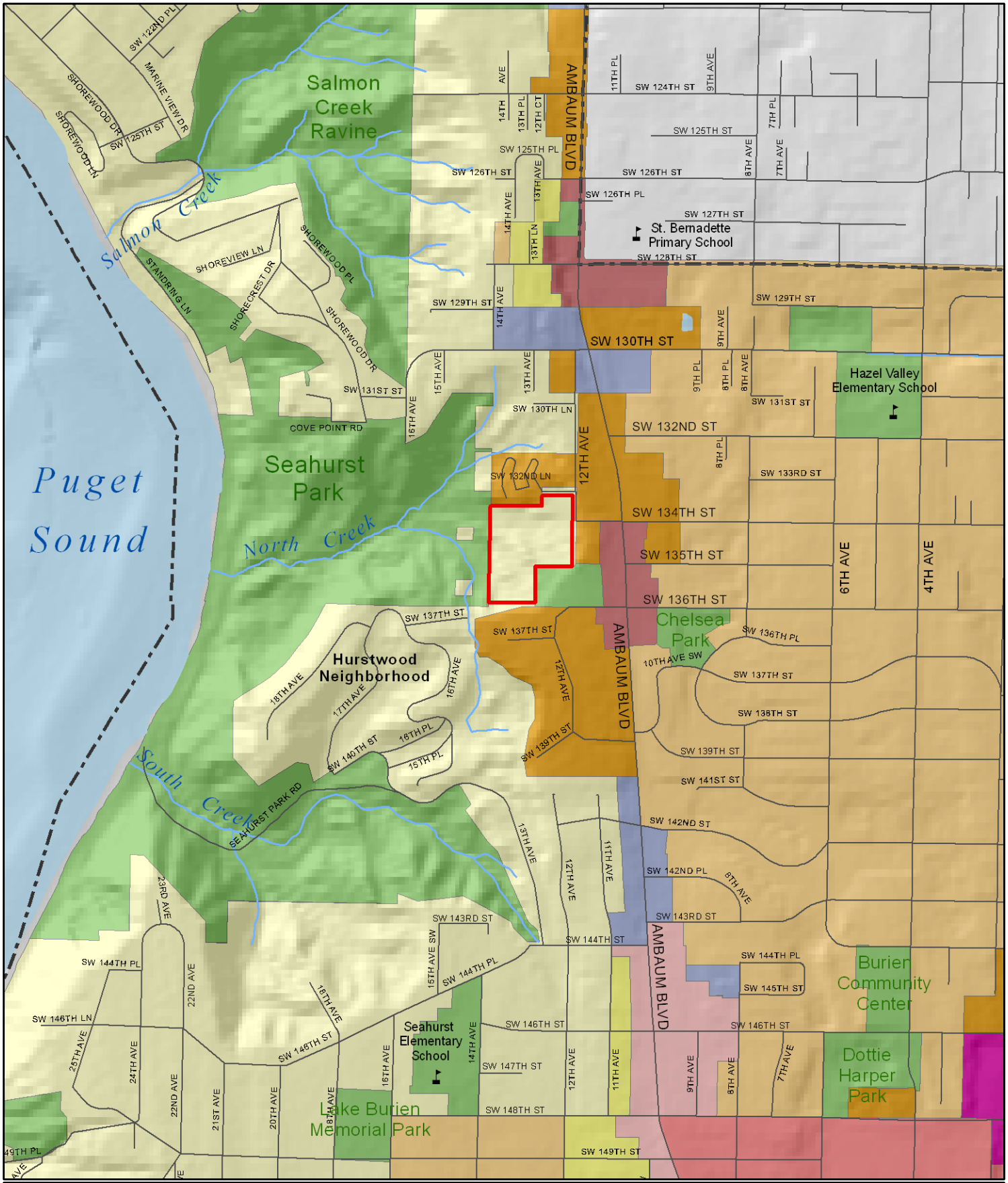
In the long-term, the implementation of Alternative 1 would convert the currently undeveloped, vegetated site into a 201-unit multi-family development (including the manager's unit), with a clubhouse and pool facility. This development would be consistent with the densities and development types located on surrounding parcels and would be consistent with vested land use regulations. It would constitute an infill project completing the land use pattern to the north and south along the hillside. In determining the potential long-term impacts of Alternative 1, three prominent considerations are discussed below: 1) land use conversion and compatibility, 2) expected activity levels, 3) and relationship to land use plans, policies, and regulations.

Land Use Conversion and Compatibility
Alternative 1 would result in the conversion of the Project's three parcels from an undeveloped condition primarily characterized by forest species, to a new multi-family residential development. The existing undeveloped parcels would be converted into a complex of five residential buildings (average of 20.3 dus per acre), ranging from three stories (two buildings) to five stories (three buildings) in height, and a three-story clubhouse building, including a pool. This conversion is consistent with the uses allowed in applicable regulations (see below) and similar in character to adjacent land uses.

Generally, multi-family developments surround the Project site, and a 201-unit multi-family development would be similar to surrounding uses and densities. For instance, the Sound Vista Condominiums, located just along the north border of the Project site, contains a total of 117 occupant-owned residential units in 12 buildings (22.5 dus per acre). Another multi-family development to the north, known as Burien Place, provides 47 apartments within three residential buildings (38 dus per acre). To the south, Vintage Park Apartments provides over 500 rental units to Burien residents in a total of 44 buildings (15 dus per acre) (including those designated for commercial uses). In addition to adjacent multi-family buildings, no land use conflicts would be expected between Alternative 1 and the Highline School District facility to the southeast. This facility is currently vacant and in disrepair, but would be expected to be replaced over time.

Similarly, the multi-family land use proposed in Alternative 1 would be compatible with the concentration of commercial uses along Ambaum Boulevard SW. Emerald Pointe residents in this alternative would have easy access to a range of commercial uses along this road and, in many cases, they would be able to walk to uses along Ambaum Boulevard SW.

Activity Levels
Implementation of Alternative 1 would result in a substantial increase in activity levels on the Project site. Currently, due to its undeveloped nature, the Project site is characterized by low activity levels, primarily limited to use of the site for access to Seahurst Park through informal trails. Land uses proposed in Alternative 1 would result in higher-intensity residential development. This increased intensity would increase automobile and pedestrian trips to, from, and around the Project site. Based on Burien's average 2000 household size of



Emerald Pointe EIS - Burien, WA

Figure 3.6-1 City of Burien Future Land Use Designations

Future Land Use

- Low Density Residential Neighborhood
- Low Density Multi-Family Neighborhood
- Moderate Density Residential Neighborhood
- High Density Multi-Family Neighborhood
- Community Commercial
- Downtown Commercial
- Intersection Commercial
- Office
- Public Park/Schools/Rec./Open Space
- Special Planning Area 3
- Emerald Pointe Site Location
- School Locations
- Roads
- Drainages
- Open Water
- City of Burien

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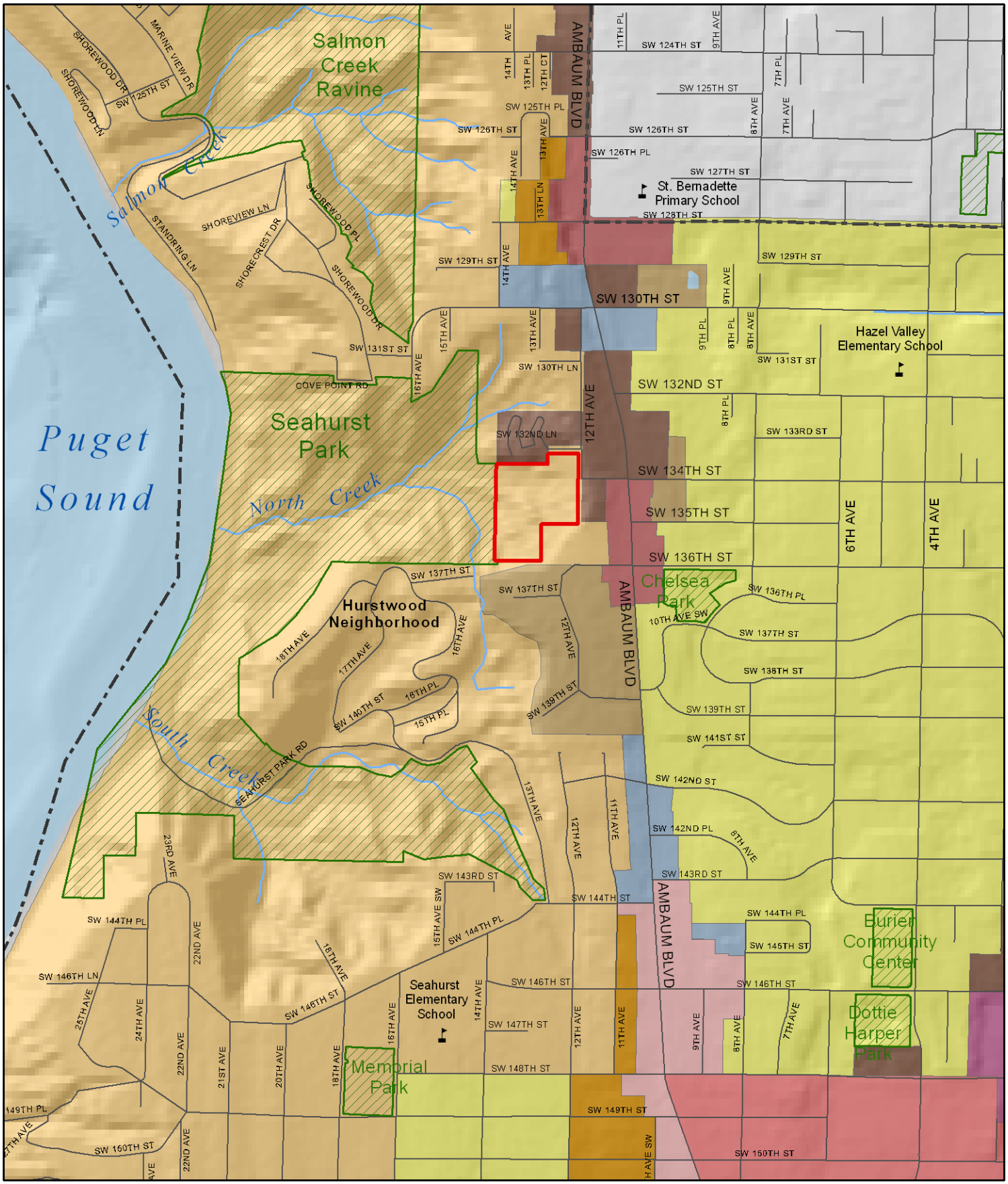

Emerald Pointe EIS - Burien, WA

Figure 3.6-2 Current Zoning in Project Vicinity

Zoning

- RS-7200, Residential Single-Family
- RS-12000, Residential Single-Family
- RM-12, Residential Multi-Family
- RM-18, Residential Multi-Family
- RM-24, Residential Multi-Family
- CC-1, Community Commercial
- DC, Downtown Commercial
- CI, Intersection Commercial
- O, Office
- SPA-3, Special Planning Area 3

- Emerald Pointe Site Location
- School Locations
- Roads
- Drainages
- Open Water
- Parks/Open Space
- City of Burien

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2.36 persons, approximately 450 residents would inhabit Emerald Pointe in Alternative 1. This is likely a conservatively high estimate, given that the Project is a condominium Project with a target market of older active adults. Nonetheless, this level of activity would be compatible with and similar to levels of activity on adjacent land uses.

Relationship to Land Use Policies and Regulations

Land uses proposed in Alternative 1 would be consistent with applicable land use policies and regulations. Unit counts and densities proposed in Alternative 1 would be consistent with the development standards allowed in the RM-1800 and RM-2400 zones of the 1990 KCC. Residential units proposed in the RM-1800 zone (northern portion) of the Project site would be constructed at an average density of one unit per 2,068 square feet (21.1 dus per acre). This density compares to the maximum density of one unit per 1,800 square feet (24.2 dus per acre) allowed in the zone. Similarly, residential densities proposed in the RM-2400 zone (southern portion) of the Project site are consistent with allowable densities. Dwelling units within the RM-2400 zone would be constructed at an average density of one unit per 2,410 square feet (18.1 dus per acre). This residential density is just below the maximum density of one dwelling unit per 2,400 square feet (18.2 dus per acre) allowed in the RM-2400 zone. The Project increases density in an urbanized area, consistent with mandated guidelines of the State of Washington's Growth Management Act (GMA).

In addition to meeting the density requirements of the applicable zoning designations, the Alternative 1 site plan also meets the 1990 KCC requirements for landscaping. Implementation of Alternative 1 would include the provision of a 5-foot planting area around the property lines not abutting a public street. In this case, existing vegetation would make up the majority of landscaping in the planting area (see Figure 2.2-3). Project landscaping may include existing vegetation, as allowed under 1990 KCC 21.51.050(5). Landscaping requirements for parking areas (1990 KCC 21.51.030) would also be met in Alternative 1.

Alternative 1 would similarly meet the 1990 KCC requirements for Special Control Areas. As required by 1990 KCC 21.54.150, a soil study was completed for the Project site (Terra Associates 1990). This study concluded that the Project site could accommodate the development of greater intensity than that proposed in Alternative 1 (the study investigated the feasibility of a 216-unit multi-family project). Due to the slope of the Project site, cuts and fills of up to 30 feet would be required to successfully implement Alternative 1. Cutting and filling of the landslide hazard areas on the site would not constitute a significant impact, according to the 1990 KCC. The wetland present on the western portion of the Project site represents a second area regulated by the Special Control Areas zoning stipulations. As stated in Section 2.2, the wetland would not be modified with implementation of Alternative 1. Some temporary site work for Alternative 1 (i.e. grading, construction staging, etc.) may be completed within the 65-foot landscaped area surrounding the existing wetland, but care would be taken to avoid any disturbance of the wetland itself.

Overall, Alternative 1 would not be expected to create a significant impact on land use during construction or Project implementation.

Cumulative Impacts

Cumulative land use impacts from the implementation of Alternative 1, in conjunction with the eventual redevelopment of the adjacent Highline School District property, will result in the intensification of land use in the Project vicinity. This intensification will be in keeping with the existing character of the overall neighborhood.

3.6.2.2 Alternative 2

Short-Term Impacts

Short-term impacts associated with Alternative 2 would be similar to those identified in Alternative 1. Alternative 2 would include the construction of seven buildings containing a total of 179 residential units (including the manager's unit), a clubhouse and pool complex (which will also include a manager's unit), and Project infrastructure including internal roads, water, and sewer infrastructure, and stormwater facilities. Construction activities would occur in three phases, with clearing and grading activities complete by summer of 2008 and construction of buildings completed between 2008 and 2011 (approximately two buildings completed per year). All Alternative 2 construction activities would comply with applicable City of Burien health and safety requirements within the City's established construction window and, as such, would not be expected to create conflicts with adjacent uses.

Long-Term Impacts

Long-term land use impacts of Alternative 2 would be similar to those identified in Alternative 1. Implementation of Alternative 2 would convert the currently undeveloped, vegetated site into a 179-unit multi-family development (including the manager's unit), a clubhouse, and pool facility. Generally, the proposed use would be similar to, but less intensive than that proposed in Alternative 1. The development would be consistent with densities and development types located on surrounding parcels and would be consistent with vested 1990 King County land use regulations.

Land Use Conversion and Compatibility

Alternative 2 would result in the conversion of the Project's three parcels from an undeveloped condition primarily characterized by forest species, to a new, multi-family residential development. The existing undeveloped parcels would be converted into a complex of seven residential buildings ranging from three stories (two buildings) to five stories (five buildings) in height, and a three-story clubhouse building, including a pool. This conversion is consistent with the uses allowed in applicable regulations (see below) and similar in character to adjacent land uses.

Total unit count and residential density in Alternative 2 would be compatible with nearby land uses. The 179 units proposed in Alternative 2 would be compatible with the size and scale of surrounding uses, including Sound Vista Condominiums, Burien Place, and Vintage Park Apartments. As in Alternative 1, no land use conflicts would be expected between proposed development in Alternative 2 and the Highline School District facility to the southeast. Similarly, residential densities proposed in Alternative 2 would be similar to adjacent land uses. Alternative 2's average residential density of one unit per 2,408 square

feet (18.1 dus per acre) is similar to surrounding multi-family Projects and commercial uses along Ambaum Boulevard SW.

Activity Levels
Activity levels resulting from the implementation of Alternative 2 would be similar to those in Alternative 1, with slightly fewer residents expected (approximately 400 residents compared to 450 in Alternative 1).

Relationship to Land Use Policies and Regulations
Similar to Alternative 1, land uses proposed in Alternative 2 would generally be consistent with applicable land use policies and regulations. Alternative 2 unit counts and densities would be consistent with the development standards allowed in the RM-1800 and RM-2400 zones of the 1990 KCC. Residential units proposed in the RM-1800 zone (northern portion) of the Project site would be constructed at an average density of one unit per 2,407 square feet (18.1 dus per acre). This density compares to the maximum density of one unit per 1,800 square feet (24.2 dus per acre) allowed in the zone. Residential densities in the RM-2400 zone in Alternative 2 (southern portion) are also consistent with allowable densities and are the same as in Alternative 1 (one unit per 2,410 square feet, or 18.1 dus per acre).

Alternative 2 would also meet all requirements related to landscaping and Special Control Areas contained in the applicable 1990 KCC. Slightly less cutting and filling would be required during the construction of Alternative 2 than in Alternative 1, due to the use of smaller residential buildings. Building placement in Alternative 2 would reduce the impact of development on existing the landslide hazard areas on the site.

Overall, Alternative 2 would not be expected to create a significant impact on land use during construction or Project implementation.

Cumulative Impacts
Cumulative impacts in Alternative 2 would be similar to those in Alternative 1.

3.6.2.3 No Action Alternative

Short-Term Impacts
No short-term impacts would be expected to result from the No Action Alternative. The Project site would remain undeveloped and no construction would occur on the site.

Long-Term Impacts
No long-term impacts would be expected to result from the No Action Alternative. The Project site would remain undeveloped and no changes in land use would occur on the site. (According to its current City of Burien Comprehensive Plan and Zoning Code designations, the Project site could be developed as low-density (RS-12,000) single-family residential units in the future. Due to Project vesting, this scenario was not investigated as a part of this EIS.)

3.6.3 Mitigation Measures

This section describes mitigation measures necessary to avoid potential impacts on land use resulting from the action alternatives.

3.6.3.1 Alternative 1

Given that the development proposed in Alternative 1 would generally be consistent and compatible with surrounding uses and the applicable land use policies and regulations, no mitigation measures would be required upon implementation of Alternative 1.

3.6.3.2 Alternative 2

Mitigation measures for Alternative 2 would be the same as those proposed for Alternative 1.

3.6.4 Significant Unavoidable Adverse Impacts

The Project would not cause any significant unavoidable adverse land use impacts.

3.7 Aesthetics, Light, and Glare

This section reviews the existing conditions of the aesthetic/visual resource environment and discusses potential visual, light, and glare impacts from the two Action Alternatives and the No Action Alternative on the neighborhoods and land uses surrounding the Project site. Potential regulatory conflicts of the alternatives and any appropriate mitigation measures to avoid or reduce those impacts are discussed.

3.7.1 Affected Environment

The following describes the existing visual character in the vicinity of the Project and applicable nuisance and related regulations controlling the Project and its components.

3.7.1.1 Applicable Regulations

Two primary policies and regulations address impacts associated with aesthetics, light, and glare. Applicable policies, standards, and regulations used in this analysis of aesthetics, light, and glare include:

- KCC 21.12.080 Height (RM-2400), in effect February 15, 1990; and
- KCC 21.14.080 Height (RM-1800), in effect February 15, 1990.

As land use regulations, these regulations are vested to the 1990 KCC (for additional information on applicable regulations, see Appendix A). In addition to these vested regulations, the current City of Burien Comprehensive Plan (2006) provides guidance when vested regulations do not apply or are silent.

As discussed in Section 3.6, the Zoning Code (1990 KCC 21) of the 1990 KCC applies two zoning designations to the Project site, RM-2400 (Medium Density, Multiple Dwelling) and RM-1800 (High Density, Multiple Dwelling). Residential buildings within the RM-2400 zoning designation may not exceed 30 feet in height and must provide at least a 5-foot setback between any building and any lot side line or rear property line, and all buildings must be at least 10 feet apart. Similar development requirements are included in the RM-1800 zoning designation. In areas zoned RM-1800, no building shall exceed a height of 35

feet, unless the required width of any side yards or open spaces is increased. In this case, the proponent may increase the total building height by one foot for each additional foot of width in side yards and/or open spaces. Additionally, the RM-1800 zoning requires a 5-foot setback from side lot and rear property lines and at least a 10-foot separation between buildings (as with RM-2400). In both zoning categories, total building footprint area shall not exceed 50 percent of the area of the lot.

The current City of Burien Comprehensive Plan (2006), which may be used as guidance in assessing Project impacts, establishes that residential housing should be properly buffered from disturbances such as excessive light and glare (Policy HS 1.4). Potential sources of light and glare from the Project area include excessive light reflection from the windows of residential units during the day or unnecessarily intense internal lighting, parking area lighting, and street lighting. In both of the action alternatives, the longest edges of the Project's multi-family buildings would face either west or northwest (see Figure 2.2-1 and Figure 2.3-1). Parking areas for residents would be located within the bottom floor of each building, with additional guest and overflow parking spaces provided in surface lots adjacent to buildings. These guest and overflow parking areas would require lighting to ensure safety.

3.7.1.2 Aesthetics and Views

The majority of the Project site is forested, consisting of a combination of second growth coniferous forest and mixed deciduous-coniferous forest (see Section 3.4, Plants and Animals). Mature tree heights for larger species identified on-site can range from 50 feet to 80 feet or more (Wasson 2004). Due to topography, tree height, and vegetation density, views out from the Project site are currently very limited.

The Project site is bordered to the north and south by multi-family housing. Sound Vista Condominium forms the northeast boundary of the site and the Vintage Park apartment buildings flank the southern boundary of the property. The architecture and site design of both of these developments is typical of multi-family residential structures: two- to three-story buildings and associated surface parking lots. In Sound Vista, three-story buildings are constructed over a ground level of parking. To the east is a building previously used as the Burien Senior Center. This building is in a deteriorated condition. Views of the site are possible from portions of these adjacent properties, as well as from adjacent streets, particularly 12th Avenue SW and SW 136th Street.

Along its western edge, the Project site abuts Seahurst Park, a State-designated UNOS area (WDFW 2006, WDFW 1999) (see Section 3.4, Plants and Animals). Park vegetation is very similar to that on the site, being a combination of second growth coniferous forest and mixed deciduous-coniferous forest with mature tree heights estimated at 50 feet or more. Due to topography, tree height, and vegetation density, views into the site from Seahurst Park are not possible except from near the park's eastern edge.

3.7.1.3 Light and Glare

The site is currently undeveloped and includes no artificial lighting sources. Light sources on adjacent developed parcels are typical of multi-family residential development; no light sources within Seahurst Park are visible from the site. Due to differences in elevation

between the Project site and adjacent developed parcels, it is possible that lighting on adjacent sites would be visible after trees and other vegetation on the site are removed.

3.7.2 Impacts

This section describes impacts on aesthetics, light, and glare that could occur as a result of the two Action Alternatives and the No Action Alternative.

3.7.2.1 Alternative 1

Aesthetics

Short-Term Impacts

During site preparation and construction, the visual quality of the site would be changed due to the removal of trees, site grading, and construction activities. At the present time, clearing and grading of the site is expected to last approximately 12 weeks. Because the construction of buildings will be conducted in phases, starting in mid-2008 and ending in 2010 or 2011, some aesthetic impacts due to ongoing construction activities will exist throughout this period. These impacts are expected to be comparable to those of other multifamily residential construction projects and would not affect a large number of viewers due to the relatively low visibility of the Project site from much of the surrounding area.

Long-Term Impacts

Development of the site would reduce the quantity of UNOS-designated land on the Project. However, this designation serves no regulatory purpose. Permanent removal of existing forest on the site and development of housing may be perceived by some area residents as a negative aesthetic impact. However, the site comprises a relatively small portion of the area's open space acreage (less than 5 percent) and has low visibility from much of the surrounding area.

Multi-family building heights would range from three to five stories (approximately 34 feet to 53 feet) above grade. As the lowest floors would be partially below grade (owing to the slope of the site), buildings heights would be approximately 10 feet lower (approximately 24 feet to 43 feet) on the uphill sides. Due to the topography of the site, Project would generally be located at a lower elevation than adjacent development. In addition, existing vegetation would be retained along the northern, eastern, and southern property lines, and additional trees and shrubs would be planted to provide visual screening. Consequently, development would be only partially visible from buildings and properties to the north, east, and south.

The proposed multifamily buildings and clubhouse would be constructed from typical contemporary building materials and architecture styles and are not expected to exhibit a visual character in conflict with adjacent residential development. The development would also exhibit relatively low site coverage: building footprints in both of the action alternatives cover approximately 15 to 16 percent of the total Project site. This would moderate the visual impact of development.

Alternative 1 provides a minimum setback of 25 feet between each building and adjacent rear and side lot lines have been established; most buildings would be located from 50 feet to 85

feet from lot lines. Additionally, multifamily buildings would be located so that they are no closer than 70 feet to one another.

Existing trees in Seahurst Park, which are estimated to average 50 feet or more in height, would partially screen the development from the Park. However, due to the steep topography of the site, some portions of the proposed buildings would be visible from Seahurst Park and the Puget Sound.

Cumulative Impacts

No significant cumulative impacts would be expected from the implementation of Alternative 1.

Lighting and Glare

Short-Term Impacts

Site preparation and construction during evening hours, possibly leading to an increase in light and glare from headlights and construction site lighting, would not be expected, due to regulations limiting working hours. For this reason, short-term lighting and glare impacts are expected to be negligible.

Long-Term Impacts

Due to the increased number of residents, lighting from interior and exterior fixtures as well as headlights would increase under Alternative 1. However, lighting levels in exterior parking and paved areas, as well as lighting levels in pedestrian areas and public spaces such as the pool, are not expected to exceed those of typical multifamily residential developments. Due to the topography of the site, buildings, drives, and parking areas would generally be located at a lower elevation than adjacent development. A vegetated buffer is also planned along significant portions of the property line. It is expected that these conditions would lead to light being intercepted before it leaves the site. Proposed multifamily buildings and the clubhouse would not incorporate large window areas or reflective surfaces that could create inordinate glare problems due to reflected sunlight. Taken together, these characteristics are expected to reduce the overall potential for glare and light spillover.

Cumulative Impacts

No significant cumulative impacts would be expected from the implementation of Alternative 1. Nighttime light levels in the Project area will increase between Seahurst Park and Ambaum Boulevard with the implementation of Alternative 1 and the eventual redevelopment of the adjacent School District property.

3.7.2.2 Alternative 2

Aesthetics

Short-Term Impacts

Short-term impacts for Alternative 2 could be slightly less than those identified for Alternative 1, as Alternative 2 will require construction of 22 fewer residential units. This reduction could lead to a shorter construction schedule and an associated reduction in construction-related aesthetic impacts. However, as the acreage of land to be cleared and

scale of grading to be undertaken will be very similar for both alternatives and, as these activities will have the greatest effect on aesthetics, the difference is not expected to be noticeable.

Long-Term Impacts

Long-term impacts for Alternative 2 could be somewhat less than those identified for Alternative 1, as Alternative 2 will include 22 fewer residential units (approximately 11 percent fewer). However, this decrease is not expected to appreciably affect building heights, setbacks, amount of open space, amount of existing vegetation retained, or other factors which would substantially decrease aesthetic impacts. .

Cumulative Impacts

No significantly cumulative impacts would be expected from the implementation of Alternative 2.

Lighting and Glare

Short-Term Impacts

Short-term impacts for Alternative 2 could be slightly less than those identified for Alternative 1, as Alternative 2 will require construction of 22 fewer residential units. This reduction could lead to a shorter construction schedule and an associated reduction in light and glare impacts. However, light and glare associated with clearing and grading of the site is not expected to be significantly different, as the acreage of land to be cleared and scale of grading to be undertaken will be very similar for both alternatives.

Long-Term Impacts

Long-term impacts for Alternative 2 would be somewhat less than those identified for Alternative 1, as Alternative 2 will include 22 fewer residential units (approximately 11 percent fewer) and therefore fewer residents who might serve as sources of light and glare.

Cumulative Impacts

Cumulative impacts in Alternative 2 would be similar to those in Alternative 1.

3.7.2.3 No Action Alternative

Aesthetics

Short-Term Impacts

Under the No Action Alternative, no construction would take place on the Project site and the site would remain undeveloped. No short-term aesthetic impacts would be created.

Long-Term Impacts

Under the No Action Alternative, no construction would take place on the Project site and the site would remain in undeveloped. No long-term aesthetic impacts would be created.

Lighting and Glare

Short-Term Impacts

Under the No Action Alternative, no construction would take place on the Project site and the site would remain undeveloped. No short-term lighting and glare impacts would be created.

Long-Term Impacts

Under the No Action Alternative, no construction would take place on the Project site and the site would remain undeveloped. No long-term lighting and glare impacts would be created.

3.7.3 Mitigation Measures

3.7.3.1 Alternative 1

Mitigation measures that are required for Alternative 1 include the following:

- Compliance with City, State, and Federal regulations discussed in Section 3.7.1.3; and
- Limiting work hours to those allowed under BMC.

Additional recommended mitigation measures for Alternative 1 include the following:

- Construction sites should be maintained in an appropriate neat and sanitary manner, with refuse and materials for recycling properly stored;
- Until all on-site construction is completed, turf grass and erosion control measures established on future building sites should be maintained in good condition;
- Retention and/or planting of vegetation should occur in appropriate locations along the northern, eastern, and southern property lines to provide visual screening and reduce light trespass; and
- Exterior lighting should be designed and installed so as to minimize excessive lighting levels, glare, and light trespass onto adjacent properties.

3.7.3.2 Alternative 2

Mitigation measures for Alternative 2 would be the same as those recommended for Alternative 1.

3.7.4 Significant Unavoidable Adverse Impacts

While changes in aesthetics, light, and glare conditions would occur, these changes would not represent significant and unavoidable adverse impacts.

3.8 Noise

This section discusses the ambient noise conditions within and adjacent to the Project site, identifies potential noise impacts of the two Action Alternatives and the No Action Alternative on the noise levels in the surrounding area, and defines mitigation measures to offset noise impacts when appropriate.

3.8.1 Affected Environment

3.8.1.1 Applicable Regulations

A number of regulations were used to identify the potential noise impacts of the three alternatives under consideration in this EIS. Noise regulations serve a health and safety function and, as such, are not vested. Therefore, current City of Burien noise regulations apply to the Project. Applicable noise policies, standards, and regulations include (for additional information on applicable regulations, see Appendix A):

- Burien Municipal Code (BMC) 9.105.400(2)(h);
- Maximum Environmental Noise Levels (173-60 WAC); and
- Washington Noise Control Act of 1974 (Chapter 70.107 RCW).

Table 3.8-1 describes various noise levels and their possible effects on humans. This table serves as a baseline for the discussion below of the applicable noise regulations for the Project.

Table 3.8-1: Noise Levels and Possible Effects

Thresholds/ Noise Sources	Sound Level (dBA)	Subjective Evaluations	Possible Effects on Humans
Human Threshold of Pain Carrier jet takeoff at 50 ft	140	Deafening	Continuous exposure to levels above 70 dB can cause hearing loss in majority of population
Siren at 100 ft Loud rock band	130		
Jet takeoff at 200 ft Auto horn at 3 ft	120		
Chain saw	110		
Lawn mower at 3 ft Noisy motorcycle at 50 ft	100	Very Loud	
Heavy truck at 50 ft, maximum	90		
Pneumatic drill at 50 ft Busy urban street, daytime	80	Loud	
Normal automobile at 50 mph Vacuum cleaner at 3 ft	70		Speech/Interference
Air conditioning unit at 20 ft Conversation at 3 ft	60	Moderate	
Quiet residential area Light auto traffic at 100 ft	50		Sleep/Interference
Library Quiet home	40	Faint	
Soft whisper at 15 ft	30		
Slight rustling of leaves	20	Very Faint	
Broadcasting Studio	10		
Threshold of Human Hearing	0		

Source: EPA 1974.

Washington Maximum Environmental Noise Levels (WAC 173-60)

WAC Maximum Environmental Noise Levels (173-60) were created pursuant to the Washington Noise Control Act of 1974 (Chapter 70.107 RCW). The rules establish maximum allowable noise levels for specific environments. WAC 173-60 categorizes noise sources and receiving properties into three environmental designations for noise abatement (EDNA) classes: A, B, and C (see Table 3.8-2). Class A EDNA is defined as land uses where people reside and sleep, including, but not limited to, residential areas, camps, resorts, and hospitals. Class B EDNA is defined as commercial land uses that require noise levels low enough not to interfere with speech. Such land uses include, but are not limited to, motor vehicle services, banks and office buildings, restaurants, and recreation property not used for sleep. Class C EDNA is defined as industrial land uses including, but not limited to, warehouse and distribution facilities, agricultural property, and manufacturing. Land uses in the general vicinity of the Project site are classified in Classes A and B.

Table 3.8-2: Statewide Maximum Permissible Environmental Noise Levels

EDNA of Noise Source	EDNA of Receiving Property		
	Class A	Class B	Class C
Class A	55 dBA	57 dBA	60 dBA
Class B	57	60	65
Class C	60	65	70

Source: WAC 173-60-040

Operational noise generated by the proposed alternatives would be governed by timing restrictions (between 7:00 a.m. and 10:00 p.m.) also established in WAC 173-60.

City of Burien Municipal Code

Title 9.105.400 of the BMC (2006) regulates sound that is considered a public disturbance. Section (2) of this title categorizes a number of sources of sound to be categorized as public disturbances. Sources relevant to the Project include the following:

- The frequent, repetitive, or continuous sounding of any horn or siren attached to a motor vehicle, except as a warning of danger or as specifically permitted or required by law.
- The creation of frequent, repetitive, or continuous sounds in connection with the starting, operation, repair, rebuilding, or testing of any motor vehicle, motorcycle, off-highway vehicle, or internal combustion engine within a residential district so as to unreasonably disturb or interfere with the peace and comfort of owners or possessors of real property.
- Sounds originating from construction sites, including but not limited to sounds from construction equipment, power tools, and hammering, between the hours of 10:00 p.m. and 7:00 a.m. on weekdays and 10:00 p.m. and 9:00 a.m. on weekends. However, the City Manager shall have the discretion to issue variances for City of Burien public works projects if the City Manager determines, after considering the relative interests of the applicant, other owners or possessors of property likely to be affected by the noise, and the general public, that the noise occurring or proposed to occur does not endanger health and safety of a substantial number of persons.

Title 12.30.100 of the BMC identifies parks of local or regional significance based on certain criteria. Title 12.30.110 outlines specific allowable noise levels and requirements for these designated facilities. Seahurst Park has been designated as a park of regional significance, and, as such, certain noise requirements apply, including:

- Except for outdoor amphitheaters and music shells, golf courses, ball fields, outdoor spectator sports areas, amusement areas, riding stables, nature trails, and wildlife refuges, park and recreation areas designated as being of local or regional significance as specified by the City shall not be subjected to adverse land uses which result in exterior noise level exposures which exceed 55 dBA Ldn.
- Proponents of projects which will increase noise levels to which park and recreation areas are exposed above those established in this section must submit a noise mitigation plan to the City for review and approval before the required permits may be issued to allow the project to proceed. The City Manager, with the assistance of the Director of the Department of Community Development, is authorized and directed to develop criteria for such review and approval. Such criteria shall be available in writing to applicants and shall, at minimum, require that the best available technology be employed to achieve no more than the maximum allowable noise standard set forth in this section (BMC Title 12.30.110).

Construction permits issued by the City of Burien may also be conditioned to place additional limits on production of noise, such as limited hours of operation or prohibitions on particular activities.

3.8.1.2 Noise Terminology and Descriptors

Noise is often defined as unwanted sound. Noise is characterized by two parameters: amplitude (loudness) and frequency (tone). Amplitude is the difference between ambient air pressure and the peak pressure of the sound wave. Amplitude is measured in decibels (dB) on a logarithmic scale. As a consequence, the pressure difference of a 10 dB sound is 10 times that of a 0 dB sound, a 20 dB sound is 100 times the pressure difference of a 0 dB sound, and so on. The ear interprets amplitude as different degrees of loudness. Frequency is the number of fluctuations of the pressure wave per second. The unit of frequency is the Hertz (abbreviated Hz; 1 Hz equals one cycle per second). The human ear is not equally sensitive to sound at different frequencies. Sound waves below 16 Hz or above 20,000 Hz cannot be heard at all by humans, and the ear is more sensitive to sound in the higher portion of this range than in the lower. To approximate this sensitivity, environmental sound is usually measured in A-weighted decibels (dBA). On this scale, the normal range of human hearing extends from about 0 dBA to about 140 dBA (EPA 1971; Lipscomb and Arthur 1978).

The human response to environmental noise, such as noise from airplanes, automobiles, and trains is subjective and varies considerably among individuals. The effects of noise on people can be listed in three general categories: 1) subjective effects of annoyance and dissatisfaction; 2) interference with activities such as speech, sleep, and learning; and 3) physiological effects such as headaches and hearing loss.

Currently, there is no standardized way of measuring the subjective effects of noise on humans. This is due primarily to the wide variation in individual thresholds of annoyance and habituation to noise associated with individual experiences. Therefore, an important way of determining a person's subjective reaction to a new noise is the comparison of the new noise to the existing environment to which one has adapted, commonly referred to as the "ambient" environment. In general, the more a new noise exceeds the ambient noise level, the less acceptable the new noise will be judged by the receptors. Factors affecting the sound transmission from a noise source to a receptor include distance from the source, frequency of the sound, absorbency of the ground surface, the presence or absence of obstructions and their absorbency or reflectivity, and the duration of the sound. The degree of impact on humans may also depend on existing sound levels. Typical sound levels and activities are presented in Table 3.8-1.

3.8.1.3 Existing Ambient Noise Levels

The existing environment surrounding the Project site consists primarily of residential uses, with some commercial development located along Ambaum Boulevard SW. As such, existing noise levels detectable in the study area are primarily associated with vehicle traffic on 12th Avenue SW and Ambaum Boulevard SW and with vehicles entering and leaving adjacent developments. Given the area's land use make-up, ambient noise levels would be generally categorized as moderate (see Table 3.8-1).

3.8.1.4 Noise Sensitive Receptors

Some land uses are considered more sensitive to ambient noise levels than others due to the amount of noise exposure (in terms of both exposure time and "insulation" from noise) and the types of activities typically involved. Residences, motels and hotels, schools, libraries, churches, hospitals, nursing homes, parks, and outdoor recreation areas are generally more sensitive to noise than are commercial and industrial land uses.

Existing sensitive receptors located in or near the Project area include residential dwellings, commercial development along Ambaum Boulevard SW, and nearby parks. Existing adjacent residential dwellings include Sound Vista Condominiums to the north, Vintage Park Apartments to the south, and a number of multi-family developments along 12th Avenue SW to the northeast. Seahurst Park, located directly west of the Project site, represents another prominent sensitive noise receptor, as recognized in the BMC (see discussion above).

3.8.2 Impacts

3.8.2.1 Alternative 1

Short-Term Impacts

Development of the Project site would result in the generation of noise during the construction phase. Noise during this phase would be intermittent and would vary considerably according to the nature of the construction activities. At this time, clearing and grading of the site is expected to last approximately 12 weeks. Chainsaws used in the removal of existing trees and use of heavy construction equipment, especially during grading

activities, would be sources of higher-than-normal temporary noise levels. During grading, it is estimates that hauling of soil from the site will require approximately 50 trips per day by trucks over a 12- to 16-week period, with a five-day work week. Use of larger trucks, a longer grading period, or a six-day work week would allow fewer daily trips. Noise generated by hauling would not be restricted to the site and would increase noise levels along the entire truck route.

During site preparation and construction of buildings, noise from power tools such as jackhammers, nail guns, and saws would also be created; driving of piles or blasting would not be carried out on site. Additional truck traffic associated with construction would also serve as a source of noise, as would heavy equipment such as excavators and front loaders. Vehicle safety back-up beepers are another significant source of noise. At the present time, construction of buildings will conducted in phases, starting in mid-2008 and ending in 2010 or 2011, with one or two buildings constructed each year. As construction-related noise is regulated under the City of Burien Municipal Code, it is not expected to have a significant impact.

Long-Term Impacts

After development is completed, the level of noise would increase from current levels, due to occupancy by residents. However, the scale and character of development under the proposed alternatives would be very similar to existing multifamily residential development. It is not expected to lead to a significant increase in noise levels.

In general, the site's location in a valley would assist in the attenuation of noise from the site in an easterly or southerly direction. The forest landscape of Seahurst Park also would provide some attenuation of noise in a westerly direction.

Cumulative Impacts

Elevated construction noise levels in the Project vicinity could persist longer with the redevelopment of the adjacent School District property. Scope and timing of this Project is currently undefined.

3.8.2.2 Alternative 2

Short-Term Impacts

Short-term impacts for Alternative 2 would be slightly less than those identified for Alternative 1, as Alternative 2 will require construction of 22 fewer residential units (approximately 11 percent fewer). This reduction would lead to a shorter construction schedule and/or fewer construction workers on site and an associated reduction in noise. However, noise associated with clearing and grading of the site is not expected to be significantly different, as the acreage of land to be cleared and scale of grading to be undertaken will be very similar for both alternatives.

Long-Term Impacts
Long-term impacts for Alternative 2 would be slightly less than those identified for Alternative 1, as Alternative 2 will include 22 fewer residential units (approximately 11% fewer) and therefore fewer residents who might serve as a source of noise.

Cumulative Impacts
Elevated construction noise levels in the Project vicinity could persist longer with the redevelopment of the adjacent School District property. Scope and timing of this Project is currently undefined.

3.8.2.3 No Action Alternative

Short-Term Impacts
Under the No Action Alternative no construction would take place on the Project site, and the site would remain undeveloped. No short-term noise impacts would be created.

Long-Term Impacts
Under the No Action Alternative no construction would take place on the Project site, and the site would remain undeveloped. No long-term noise impacts would be created.

Cumulative Impacts
No cumulative impacts would be expected from the implementation of the No Action Alternative.

3.8.3 Mitigation Measures

3.8.3.1 Alternative 1

Required mitigation measures for Alternative 1 include the following:

- Activities shall comply with the maximum noise levels and hours of operation identified in BMC 9.105.400(2)(h).

Additional recommended mitigation measures for Alternative 1 include the following:

- Regulations in Chapter 173-60 WAC should be used to provide guidance if quantitative analysis of noise is to be undertaken. However, the City of Burien reserves the right to determine the applicability of all regulations.
- Construction and forest harvesting contracts should specify that best practices specific to noise-producing activities such as logging, clearing, grading, and hauling be observed so as minimize noise levels. Measures should include limiting on-site vehicle idling and using the local power grid rather than temporary on-site generators for electrical power, as appropriate.
- Due to the density of residential occupancy surrounding the site, and the sensitive nature of adjacent Seahurst Park, with its wildlife populations and facilities for nature enjoyment, construction activities should be conditioned to take place only between the hours of 7 a.m. and 7 p.m., and never on Sundays.

3.8.3.2 Alternative 2

Mitigation measures for Alternative 2 would be the same as those identified for Alternative 1. Due to the decreased scale of development under Alternative 2, the scale of mitigation required would be somewhat less than for Alternative 1.

3.8.3.3 No Action Alternative

The Project site would remain undeveloped under the No Action Alternative. No mitigation measures would be necessary.

3.8.4 Significant Unavoidable Adverse Impacts

Noise that would result from development of the Project site would not represent long-term, significant, and unavoidable adverse impacts.

3.9 Parks & Recreation

This section describes the parks and recreation facilities in the vicinity of the Project site and, more generally, within the City of Burien. Potential impacts and regulatory conflicts associated with the two Action Alternatives and the No Action Alternative, as well as any appropriate mitigation measures to avoid or reduce those impacts, are discussed.

3.9.1 Affected Environment

This section describes park and recreation facilities available in the city of Burien, specifically focused on facilities near the Project site. Additionally, current city-wide park and recreation level-of-service standards and identified issues relating to the park lands are discussed.

3.9.1.1 Applicable Regulations

Park, recreation, and open space standards are considered land use regulations and are thus vested. At the time the Project was vested, King County did not employ specific requirements for multifamily developments. The City's parks and recreation LOS standards and policies help ensure adequate access to park and recreation resources for all Burien residents. As such, a number of current Burien regulations provided guidance for this analysis, including:

- Burien Comprehensive Plan – Parks, Recreation and Open Space Element, adopted in 2003, as amended (City of Burien 2006a);
- Burien Parks, Recreation, and Open Space Plan, adopted in 2006 (City of Burien Parks Department 2006a);
- Seahurst Park Master Plan, adopted in 2002 (Anchor Environmental 2002); and
- Burien Pedestrian and Bicycle Facilities Plan, adopted in 2004 (City of Burien 2004).

Of these documents, the Burien Comprehensive Plan and its park and recreation LOS standards serve as the guidance for this impact determination.

3.9.1.2 Burien Parks and Open Spaces

The City of Burien currently owns and operates a total of 15 parks within City boundaries and operates two additional parks located on Highline School District property (City of Burien 2006a). The City also owns three "mini-parks" (less than 1 acre) for use by nearby residents. Additionally, the City maintains two open-space areas, Salmon Creek Ravine and Walker Creek Wetland, and a 1-mile-long trail known as Indian Trail.

The City of Burien Parks and Recreation Department categorizes its various parks based on size. As stated above, parks less than 1 acre are classified as mini-parks. These parks have a service area of 0.25 miles (City of Burien 2006a). Somewhat larger parks (approximately 1 to 10 acres in size) that primarily serve the surrounding residences are categorized as Neighborhood Parks. The service area of Neighborhood Parks is one-half mile or less. The City operates seven of these park types. Community Parks are designed to serve several neighborhoods (up to a 3-mile radius) and may be as large as 20 acres. The City currently operates five community parks. Seahurst Park represents Burien's only Regional Park and provides approximately 185 acres of park and open space (City of Burien Parks, Recreation, and Cultural Services 2006b). Regional Parks provide recreational amenities that attract individuals from throughout the region (up to a 60-minute drive). Open spaces areas in the City ranges from 21 acres (Walker Creek Wetland) to over 87 acres (Salmon Creek Ravine) in size. Collectively, Burien parks and open spaces cover over 324 acres (City of Burien 2006a). Based on a 2005 population estimate of 31,040, this total acreage equates to approximately 10.4 acres per thousand persons (Washington Office of Financial Management [OFM] 2006). In addition to these traditional parks and open spaces, the City includes public areas on school grounds in its recreation inventory. A total of eight public schools in Burien provide approximately 27 acres of usable recreation and open space (City of Burien 2006a)[2].

3.9.1.3 Burien Parks and Recreation Level of Service

Local jurisdictions use LOS standards to establish a desired ratio between public service supply and demand. In the case of parks and recreation, one LOS standard is acreage of recreation lands per 1,000 residents (or some other measure of population).

Overall, the City currently aims to provide a minimum of 3.0 acres of active recreation land (excluding Seahurst Park and Salmon Creek) per 1,000 residents by 2020 (City of Burien 2003). The Comprehensive Plan (2003) also established LOS goals for three active park and recreation types: Neighborhood Parks, Community Parks, and Open Space. The desired LOS for each of these park types and open space is listed in Table 3.9-1. As demonstrated in Table 3.9-1, the City of Burien is not currently meeting its LOS goal in any of the three specific categories.

[2] The City estimates that school facilities are available to the public approximately 60 percent of the year and calculates the usable recreation and open space by multiplying the total recreation and open space acreage at school facilities by 0.6

Table 3.9-1: City of Burien Parks and Open Space LOS Goals

Facility Type	Existing LOS	Burien LOS Goal
Neighborhood Park/Playground	0.86 acres/1,000 pop.	2 acres / 1,000 pop.
Community Park	1.02 acres/1,000 pop.	2.5 acres / 1,000 pop.
Open Space	3.50 acres/1,000 pop	4 acres / 1,000 pop.

Source: City of Burien 2003.

Because Regional Parks serve a much larger population and mini-parks serve a very localized population, these park types have been excluded from citywide LOS goals and overall recreation LOS calculations.

Currently, the City provides approximately 2.0 acres of total active recreation land per thousand residents, when school facilities are included (City of Burien Parks, Recreation, and Cultural Services 2006a). This total falls short of the 2020 goal of 3.0 acres of park and recreation facilities established in the Burien Comprehensive Plan.

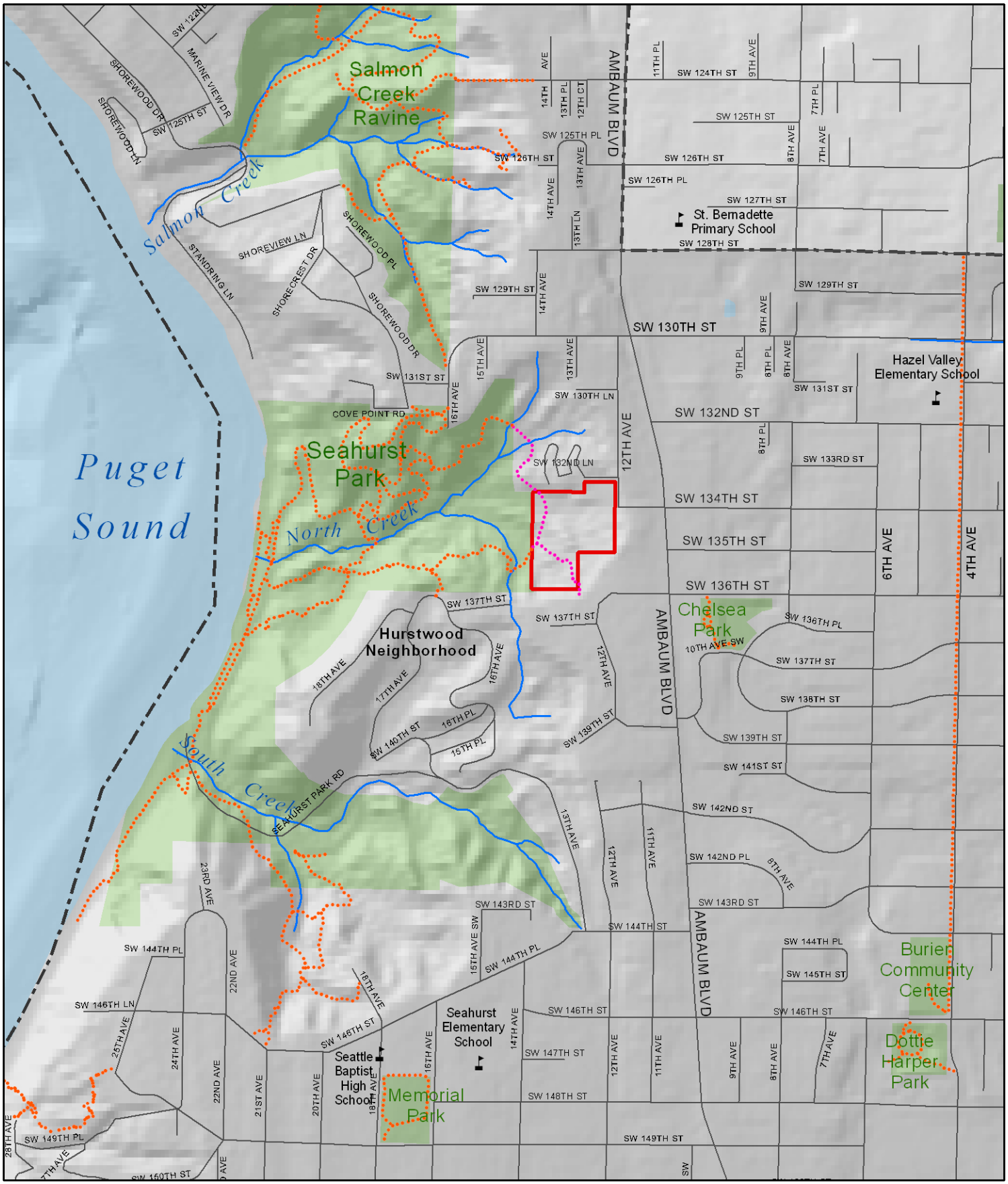
3.9.1.4 Project Site and Nearby Parks and Open Spaces

There are a number of parks and open space areas in the general vicinity (within ¾ of a mile) of the Project site, including a Regional Park, Community Park, and other facilities (see Figure 3.9-1 and Table 3.9-2 for a description of these parks and open space). The most prominent of these parks is Seahurst Park, the 185-acre Regional Park located directly west of the Project site. Seahurst Park is a regional attractor that provides direct access to the Puget Sound shoreline and is Burien's most popular park. Seahurst Park's existing facilities include hiking trails and rock paths, benches, picnic tables and shelters, a children's play area, a Marine Technology Lab and educational interpretive center, public restrooms, parking areas, and other facilities.

Other important park and open space areas near the Project site include Chelsea Park, with its various playfields; Burien Community Center and Dottie Harper Park, providing a range of indoor and outdoor recreational opportunities; and North Ambaum Park to the north in-development.

Additionally, the previous Burien Senior Center, which had been leased from the Highline School District, is located directly east of the Project site. Due to the poor building condition and other factors, senior activities and programs managed by the Burien Parks, Recreation, and Cultural Services have been recently relocated to the Burien Community Center (City of Burien 2005). Recreation space is also available at two nearby elementary schools: Hazel Valley Elementary and Seahurst Elementary. Both of these schools provide play areas and sport courts for children. A softball/baseball field is also available at Hazel Valley Elementary School. Overall, open space, park land, and school play areas near the Project site total over 311 acres.

In addition to established, formal park facilities in the Project area, a number of informal user-made trails traverse the Project site. As shown in Figure 3.9-2, these informal trails



Emerald Pointe EIS - Burien, WA

Figure 3.9-1 Parks, Recreation, and Open Space in the Project Vicinity

Recreational Trails
- Public Trail
- Informal Trail
- Parks/Open Space
- Emerald Pointe Site Location
- School Locations
- Roads
- Drainages
- Open Water
- City of Burien

N

0 0.1 0.2 Miles

0 400 800 Feet

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[BACK OF FIGURE 3.9-1]

Table 3.9-2: City of Burien Park Facilities and Open Space Near the Project Site[1]

Facility Type	Facility Name	Size (acres)[2]	Features
Neighborhood	Chelsea Park	3.7	• Softball/baseball fields • Soccer field • Children's play equipment • Public restrooms
	Lake Burien School Park	4.6	• Children's play area • Tennis courts • ¼-mile walking track
	Jacob Ambaum Park (in development)	1.0	Expected features: • Sport courts • Children's play area • Picnic areas • Public restrooms
Community	Dottie Harper Park & Burien Community Center	8.8	• Meeting rooms • Dance studio • Auditorium & Theater • Senior services/classes • Recreation classes • Skate park • Basketball court • Children's play area • Fire ring/amphitheater • Trails
	Burien Senior Center	3.5	None at this time (closed due to poor condition)
Regional / Open Space	Seahurst Park	185.0	• Hiking trails and rock paths • Benches and picnic tables/shelters • Children's play area • Marine Technology Lab and educational center • Public restrooms
	Salmon Creek Ravine & Waterway	87.6	• Hiking trails
Public Schools[1]	Hazel Valley Elementary	8.7	• Softball/baseball fields • Children's play equipment • Sport courts
	Seahurst Elementary	8.3	• Children's play equipment • Sport courts
	TOTAL ACREAGE	**311.2**	

Notes: [1]. Within approximately 2 miles of the Project site; [2]. Acreage represents estimated usable park and recreation space. Source: City of Burien 2003; City of Burien 2006a, b.

connect to the existing Project trail network of Seahurst Park, with the primary user-made trail traversing the western end of the site (from north to south) (City of Burien 2005). An informal user-made spur trail that extends from the western portion of the Project site (where it links to the Seahurst Park trails) to the southern portion of the site (just west of the Senior Center) currently provides access from SW 136th Street and the Vintage Park Apartment complex to the south.

3.9.2 Impacts

This section describes the potential impacts of the two Action Alternatives and the No Action Alternative on parks, recreation, and open space. The following impact discussion is divided into short-term impacts, which would occur as the result of construction activities, and long-term impacts, which would occur once construction is completed. Mitigation measures to address any potential impacts are found in Section 3.10.3.

3.9.2.1 Alternative 1

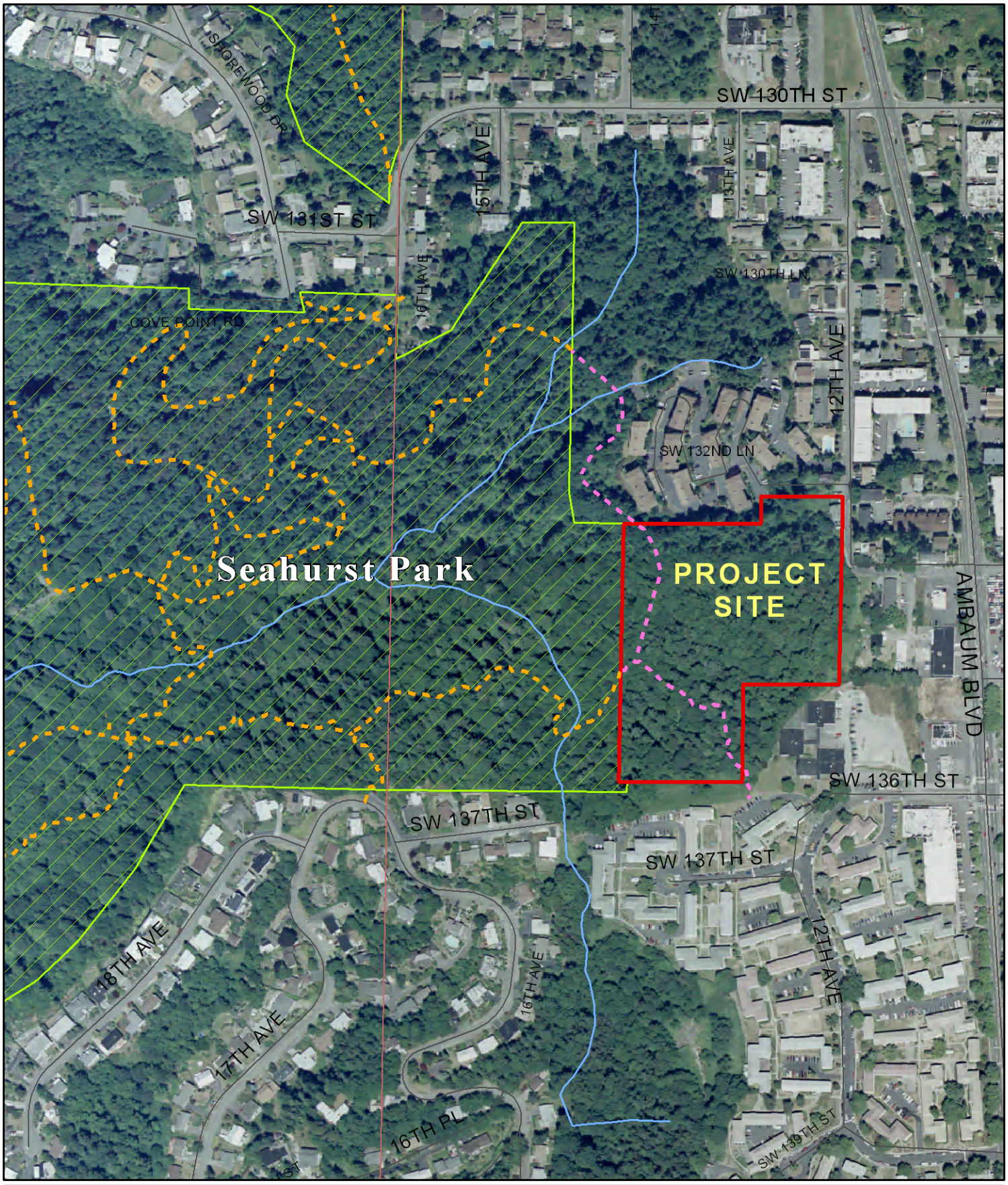
Short-Term Impacts

As a result of construction activities related to Alternative 1, the informal user-made trail system currently established at the Project site would be removed. Once grading and site work starts, the informal trails would no longer provide a connection to Seahurst Park from 12th Avenue SW. Since these trails are not official City of Burien trails and have been informally established on private property without the approval of the land owner, the removal of these trails would not be considered a significant short-term impact. Therefore, no short-term impacts would result from implementation of Alternative 1. (Additional discussion of noise impacts on Seahurst Park and other surrounding land uses can be found in Section 3.8.2.)

Long-Term Impacts

In the long-term, the implementation of Alternative 1 would convert the currently undeveloped, vegetated site into a 201-unit multi-family development (including the manager's unit), including a clubhouse and pool facility. With the addition of a 201-unit development, approximately 450 new residents would locate to Emerald Pointe (based on an average multi-family household of 2.25 persons), resulting in an increase in parks and recreation demand on parks near the Project site and in the city as a whole.

An estimate of increased demand can be calculated using the projected population increase and the Burien LOS standard goals for the three park types (by multiplying population increase by the LOS standard). Using this formula, Alternative 1's 450 residents would create a demand for approximately 0.9 acres of new neighborhood park/playground facilities, 1.1 acres of community park land, and 1.8 acres of open space. Alternative 1 would include the construction of an on-site clubhouse and swimming pool for new residents. The clubhouse facility would provide residents with a workout area and other recreation equipment. Additionally, the Applicant has agreed to provide a public pedestrian connection to Seahurst Park through the new development. (This pedestrian connection would serve a similar function to existing informal trails at the Project site.)



Emerald Pointe EIS - Burien, WA

Figure 3.9-2 Parks, Recreation, and Open Space - Site Level

N

Trails

- Adopted Public Trail
- Informal Trail on Private Lands
- Parks/Open Space
- Emerald Pointe Site Location
- Roads
- Drainages

0 0.05 0.1
Miles
0 100 200 300 400
Feet

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[**BACK OF FIGURE 3.9-2**]

With the combination of on-site recreation facilities and increased access to Seahurst Park provided in Alternative 1, the estimated increase in parks and recreation demand would likely be met.

Cumulative Impacts

No cumulative land use impacts would be expected from the implementation of Alternative 1.

3.9.2.2 Alternative 2

Short-Term Impacts Short-term impacts associated with Alternative 2 would be similar to those identified in Alternative 1.

Long-Term Impacts

Long-term impacts associated with Alternative 2 would be similar, but slightly less, than those identified in Alternative 1. As a result of the smaller residential population in Alternative 2, the demand for additional park and open space would be reduced. Based on the approximately 400 new residents proposed in Alternative 2, demand for approximately 0.8 acres of new neighborhood park/playground facilities, 1.0 acre of community park land, and 1.6 acres of open space would be created. As in Alternative 1, the combination of on-site recreation facilities and increased access to Seahurst Park provided in Alternative 2 would likely offset demand.

Cumulative Impacts

Cumulative impacts in Alternative 2 would be similar to those in Alternative 1.

3.9.2.3 No Action Alternative

Short-Term Impacts

No short-term impacts would be expected to result from the No Action Alternative. The Project site would remain undeveloped, and no construction would occur on the site.

Long-Term Impacts

No long-term impacts would be expected to result from the No Action Alternative. The Project site would remain undeveloped, and the informal user-made trail system on the site would remain. These trails would continue to provide unofficial access to Seahurst Park from 12th Avenue SW.

3.9.3 Mitigation Measures

This section describes mitigation measures necessary to avoid potential impacts on City parkland and open space resulting from the action alternatives.

3.9.3.1 Alternative 1

Given that the development would not be expected to create a significant impact on parks, recreation, and open space in the area, no mitigation measures would be required upon implementation of Alternative 1.

3.9.3.2 Alternative 2

Mitigation measures for Alternative 2 would be the same as those proposed for Alternative 1.

3.9.4 Significant Unavoidable Adverse Impacts

The Project would not cause any significant unavoidable adverse impacts on parks, recreation, and open space.

3.10 Public Services

This section describes the existing capacity and characteristics of local agencies that would provide public safety and educational services to residents of the proposed Project. Additionally, it identifies the potential impacts of the two Action Alternatives and the No Action Alternative on LOS and existing service capacities, as well as mitigation measures designed to avoid or reduce undesirable impacts, when appropriate. Public services that were reviewed include fire protection, police, and public schools.

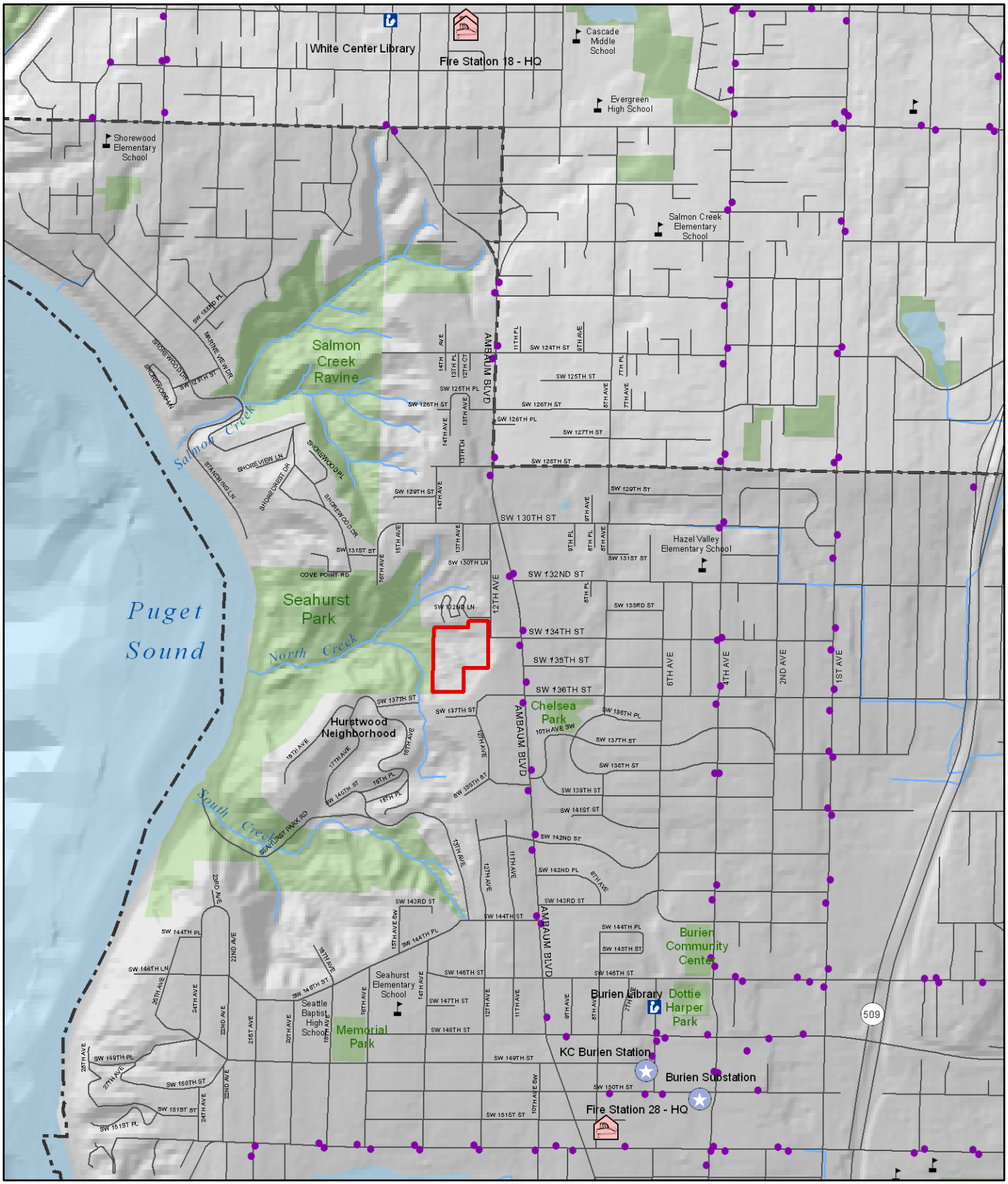
3.10.1 Affected Environment

This section describes the existing conditions, characteristics, and capacities of public service agencies that would serve the proposed Project. When relevant, existing apparatus and equipment and LOS standards are described. This description serves as the foundation for the impact analysis contained in Section 3.10.2.

3.10.1.1 Fire Protection and EMS

King County Fire District #2 has the primary responsibility for fire services in the Project area. Fire District #2 serves the cities of Burien and Normandy Park (south of Burien) and maintains two fire stations within the District. Station 28, the District's northern-most station, is located at 15100 8th Avenue SW, and Station 29 is located at 135 S. Normandy Road (see Figure 3.10-1). Station 28 would be primarily responsible for providing fire protection to the Project site. The District provides fire suppression and prevention, hazardous materials response, and emergency medical services (EMS) to its residents, as well as mutual aid response to other fire districts (King County Fire District #2 2006). Fire District #2 receives additional assistance from the North Highline Fire District (previously known as Fire District #11) to the north. The North Highline Fire District serves its populations from two stations, the closest of which is Station 18, located at 1243 SW 112th Street in Seattle (see Figure 3.10-1).

Within its two stations, Fire District #2 maintains permanent and volunteer staff and a range of apparatus to provide services to District residents. The District employs a total of 38 paid employees and utilizes approximately 20 volunteer staff (King County Fire District #2 2006). Three teams of 10 firefighters are available at all times, along with a Battalion Chief and three engines or aid cars. This represents an increase from the three teams of eight firefighters and two fire engines used five years ago (pers. comm. Luedeman, 2006).



Emerald Pointe EIS - Burien, WA

Figure 3.10-1 Existing Public Services

- Emerald Pointe Site Location
- School Locations
- Libraries
- Bus Stops
- Police Stations
- Fire Stations
- Parks/Open Space
- Roads
- Drainages
- Open Water
- City of Burien

N

0 0.1 0.2 Miles

0 400 800 1,200 Feet

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[BACK OF FIGURE 3.10-1]

King County Medic One, a public service organization providing EMS to King County, provides Advanced Life Support (ALS) for the District. Private ambulance companies are used to transport non-ALS patients to local hospitals (King County Fire District #2 2006).

Table 3.10-1 summarizes the types and total calls dispatched by King County Fire District #2 each year since 2001. As illustrated in the table, EMS calls make up the large majority of total calls received by the District. For every year between 2001 and 2005, EMS calls made up more than 75 percent of all calls received. Total call volume from year to year has varied slightly, but increased by 2.6 percent overall in the five-year period (see Table 3.10-1).

Table 3.10-1: King County Fire District #2 Dispatched Calls, 2001-2005

Call Type	2001	2002	2003	2004	2005
EMS	3,089	3,051	3,024	2,821	3,146
Fire	727	746	841	823	771
Other (non-life threatening)	181	94	104	376	331
Total	3,997	3,891	3,969	4,020	4,248
% change, from previous year	N/A	-2.7	2.0	1.3	5.7

Source: King County Fire District #2 2006; Pers. Comm. Marrs 2006.

Response time is a frequently used LOS measure for fire protection agencies. At this time, the District does not closely monitor call response times because call response is managed by a separate organization (pers. comm. Luedeman, 2006). Currently, the District has not established a response time or staffing (i.e. number of personnel per 1,000 residents) LOS standard. The District hires staff and adds capital facilities when circumstances and/or growth warrant. However, based on recently-passed statewide regulations, all fire districts will be required to set an LOS standard response time and monitor response time performance for all calls beginning in 2007 (pers. comm. Luedeman, 2006). The District expects to establish LOS standards in the coming year.

The District's predominant development-related concerns are easy access to and within the site and adequate fire flow, especially for multi-story buildings. To ensure access to gated communities, such as proposed in the action alternatives, the District requires that entry codes be provided. This ensures that fire trucks and other equipment can enter the property with no delay. The District has also established a maximum road grade of 15 percent and a 20-foot turning radius to allow equipment to effectively access structures. In addition to access, the provision of fire flow to ensure the District would be able to extinguish fires on all floors of the building is a critical concern. Multi-story buildings require a minimum of 8-inch piping to provide adequate pressure from nearby fire hydrants.

3.10.1.2 Police Services

Since its incorporation in 1993, the City of Burien has contracted with the King County Sheriff's Office for police services. Generally, the City of Burien Police Department functions as other city police departments do, with a Police Chief, Detectives, and other

support personnel. To emphasize community identity, City of Burien police officers wear City-marked uniforms and drive City-marked cars (King County Sheriff's Department 2007).

Currently, the Burien Police Department employs a total staff of 47.3 full-time equivalent (FTE) personnel. Of these positions, 39.6 FTE are commissioned officers and the remainder is non-commissioned personnel (King County Sheriff's Office 2007). Based on the City's total commissioned personnel, the Burien Police Department provides an average of 1.3 commissioned personnel per 1,000 residents. In 2006, the Burien Police Department answered 12,476 calls for service (down from 12,674 calls in 2005) (King County Sheriff Office 2006; King County Sheriff's Office 2007). These calls resulted in a total of 5,387 offenses, down from 5,715 in 2005. One police station, located in downtown Burien, serves the City of Burien (see Figure 3.10-1).

The Burien Police Department monitors response times based on the call type. Calls are classified as Priority X (highest priority), Priority 1, Priority 2, and Priority 3[3]. Average response times for each of these call types varied substantially in 2006. The Department's average response was 2.75 minutes for Priority X (critical) calls, 7.51 minutes of Priority 1 calls, 16.67 for Priority 2 calls, and 59.29 minutes for Priority 3 calls (King County Sheriff's Office 2007). The Burien Police Department does not currently have a response-time or staffing (i.e. number of personnel per 1,000 residents) LOS standard. Similar to Fire District #2, the Burien Police Department hires additional staff as conditions and growth warrant.

The Burien Police Department divides its jurisdiction into six patrol districts, designated N1 through N6. This allows the Department to better monitor criminal activity within specific geographic areas. The Department records criminal offenses broken down by specific incident type in each of these six patrol districts and for the jurisdiction as a whole. The Project site is located within the Department's N1 district (its northernmost district). In 2006, a total of 2,472 calls were dispatched from the Burien Police Department to District N1, representing an increase of 6.1 percent over 2005 N1 calls (2,330) (King County Sheriff's Office 2007).

3.10.1.3 Public Schools

The Highline Public School District provides educational services to the City of Burien and surrounding areas. Overall, the District manages a total of 19 elementary schools, four middle schools, three broadly-focused high schools (Mount Rainier, Highline, and Evergreen) and five specialized high schools (Academy of Citizenship & Empowerment, Aviation High School, Big Picture High School, Global Connections, and Odyssey, the Essential School). The School District also has a number of other miscellaneous sites and facilities (Highline School District 2006b). A total of 17,614 students were estimated within

[3] Priority X (Critical Dispatch) calls involve an obvious threat to safety of humans, including robberies, stabbings, etc.; Priority 1 (Immediate Dispatch) calls require immediate police action, such as response to injury traffic accidents, in-progress crimes, etc.; Priority 2 (Prompt Dispatch) calls involve calls that could escalate to more serious issues if not policed quickly; and Priority 3 (Routine Dispatch) includes all others (time not a critical factor).

the District's 31 schools in October of 2005 (Highline School District 2006d). Of this student population, 4,696 were located in schools within the City of Burien.

There are a number of Highline School District educational facilities in the general vicinity of the Project site that would serve future Emerald Pointe residents. Two elementary schools near the Project site (Seahurst Elementary School to the south and Hazel Valley Elementary School to the northeast) would educate elementary school-age children living in the Emerald Pointe development (see Figure 3.10-1). The Project site is located within the Seahurst Elementary School service boundary, but the site is very near the northern boundary of the Seahurst Elementary service area (also the southern border of the Hazel Valley Elementary service area). Although the Project site is within the Seahurst Elementary service area, the Hazel Valley Elementary School would be slightly closer for Emerald Pointe residents. Middle school-aged children would attend Sylvester Middle School, located south of the Project site at 16222 Sylvester Road SW. High school-age students living in Emerald Pointe would attend Highline High School, located southeast of the Project site and east of Highway 509 at 225 South 152nd Street (see Figure 3.10-1).

Two additional educational facilities, the Burien Heights property and the Seahurst Park Marine Technology and Environmental Science Center, are also located near the Project site. The Burien Heights property, owned by the Highline School District and located directly adjacent to the Project site (to the east), is currently unused due to the poor condition of the building (this building previously housed the Burien Senior Center) (City of Burien Parks, Recreation, and Cultural Services 2006a). The Seahurst Park Marine Technology and Environmental Science Center, located just west of the Project site in Seahurst Park, provides outdoor educational activities and classes for children and adults on an on-going basis (Seahurst Park Environmental Science Center 2006).

Current capacity and 2006 enrollment estimates of the four schools mentioned above are presented in Table 3.10-2. According to Highline School District staff, enrollment at each of the four schools that will potentially serve Emerald Pointe residents is currently below capacity. Of the four, Seahurst Elementary School and Highline High School are closest to capacity, at 95 percent and 92 percent of capacity, respectively (see Table 3.10-2).

Table 3.10-2: 2006 Student Capacity and Enrollment at Schools Serving the Project Site

HIGHLINE SCHOOL DISTRICT	Regular Capacity	Special Capacity	Portable Capacity	Total Capacity	2006 Student Enrollment	Enrollment as Percent of Capacity
Elementary Schools						
Hazel Valley	330	44	88	462	362	78%
Seahurst Elementary	594	0	0	594	563	95%
Middle Schools						
Sylvester Middle School	814	22	88	924	739	80%
High Schools						
Highline High School	1,496	22	0	1,518	1,391	92%
TOTAL	**5,434**	**110**	**242**	**5,786**	**5,180**	**90%**

Note: Capacity based on average of 22 students per classroom.
Source: Pers. comm. Johnson 2006; City of Burien 2006.

Although 2006 enrollment is below capacity, enrollment numbers have fluctuated considerably from year to year. In recent years, Seahurst Elementary, Sylvester Middle, and Highline High generally have been operating at or near capacity.

According to the Burien Comprehensive Plan, the Highline School District student population is predicted to be relatively stable District-wide, with anticipated increases projected for the White Center and the Highway 99 corridor areas. The District's assumptions for student population growth include: 1) new single and multifamily housing development will continue at the current rate; 2) there will be no unexpected, major land use changes in the Highline School District; 3) the residential in/out-migration patterns of students will remain relatively constant; 4) no dramatic changes in present ratios of private to public school enrollments will occur, and 5) existing and foreseeable educational programs will approximate those currently operating within the District.

When projecting future student populations, school districts utilize a "student generation factor" to estimate the number of school-age children that will be generated by an average household within the community. These factors are often split into single-family and multi-family households, as the two household types frequently vary in the average number of children per household. Highline School District utilizes a student generation factor between 0.10 and 0.30 students per multi-family household (pers. comm., Skoog, 2007).

3.10.2 Impacts

This section addresses the potential impacts of the two Action Alternatives and No Action Alternative on fire and EMS, police, and school services. The following impact discussion is divided into short-term impacts, which could occur as a result of construction activities, and long-term impacts, which could occur once construction is complete. Mitigation measures to address any potential impacts are presented in Section 3.11.3.

3.10.2.1 Alternative 1

Short-Term Impacts

No significant short-term impacts would be expected from the implementation of Alternative 1. Minor legal infractions, such as vandalism and theft, may occur at the Project site, but they are not expected to create a significant impact on police or fire protection/EMS resources.

Long-Term Impacts

Implementation of Alternative 1 would result in the establishment of 201 new multi-family households at the Project site. Based on the multi-family household student generation factor used by Highline School District, these 201 units would be expected to include a total of between 20 and 60 school-age children. Based on the available capacity of nearby schools identified in Table 3.10-2 and discussions with Highline School District staff, it is expected that the School District would be able to adequately accommodate the increase in student population created by Alternative 1 (pers. comm. Johnson 2006).

Similarly, no significant impact on police resources would be expected by implementation of Alternative 1. Based on past experience with similar projects and a qualitative review of available capacity (due to the lack of an established LOS standard), the Burien Police Department has determined that they would be able to serve the development proposed in Alternative 1 (pers. comm. McLauchlan 2007). No additional staff would be required to meet the demand created by implementation of Alternative 1.

In contrast to other public services, Alternative 1 would be expected to create a significant adverse impact on Fire District #2. The site layout of Alternative 1 does not provide an adequate turning radius at most corners of the internal roadway network. Specifically, the intersection of the site access driveway and the internal road network represents a significant issue and the grade proposed for the entry access driveway exceeds the District's maximum grade standard of 15 percent (see Figure 2.2-1). Grades and turning radii proposed in Alternative 1 would not allow for District personnel to adequately reach emergencies at the Project site. However, fire flow resulting from the proposed water infrastructure would be expected to adequately meet District requirements.

Cumulative Impacts

No cumulative impacts to public services would be expected from the implementation of Alternative 1. Burien is a developed city with a well-managed system of public services, and development has been occurring in an orderly, well-managed fashion.

3.10.2.2 Alternative 2

Short-Term Impacts

Short-term impacts associated with Alternative 2 would be similar to those identified for Alternative 1.

Long-Term Impacts

Long-term impacts on public schools and police services associated with Alternative 2 would be similar to those identified in Alternative 1, but with a slightly reduced demand due to a smaller population. Implementation of Alternative 2 would result in the establishment of 179 new multi-family households at the Project site. Based on the multi-family household student generation factor used by Highline School District, these 179 units would be expected to include a total of between 18 and 53 school-age children. Based on the available capacity of nearby schools identified in Table 3.10-2 and discussions with Highline School District staff, the School District would be able to adequately accommodate the increase in student population created by Alternative 2 (pers. comm. Johnson 2006).

The concern regarding fire protection/EMS resources identified in Alternative 1 would not be expected in Alternative 2. The Alternative 2 site plan includes an internal road network that provides the minimum 20-foot turning radius established by Fire District #2. Additionally, the entry access road in Alternative 2 does not exceed the 15 percent road grade standard established by the District. District staff have reviewed the site plan and provided a verbal approval of the proposed layout (pers. comm. Harm 2007). All other District requirements would be met and no significant long-term impact would be expected.

Cumulative Impacts
Cumulative impacts in Alternative 2 would be similar to those in Alternative 1.

3.10.2.3 No Action Alternative

Short-Term Impacts
No short-term impacts would be expected to result from the No Action Alternative. The Project site would remain undeveloped and no construction would occur on the site.

Long-Term Impacts
No long-term impacts would be expected to result from the No Action Alternative. The Project site would remain undeveloped and no increased demand on public services would be expected.

Cumulative Impacts
No cumulative impacts would be expected from the No Action Alternative.

3.10.3 Mitigation Measures

This section describes mitigation measures necessary to avoid potential impacts on public services resulting from the Action Alternatives.

3.10.3.1 Alternative 1

To offset the identified significant impact of Alternative 1 on fire protection/EMS resources, the Applicant would need to work with Fire District #2 staff to address the issues identified in Section 3.11.2.1. A modification of the site layout of the internal road network would likely be needed. This modification may require a re-evaluation of the site plan and distribution of buildings on the site. The extent of modifications needed to meet District requirements is, at this point, undetermined.

Once Fire District #2 standards are addressed, implementation of Alternative 1 would require that the entry code for the development be provided to the District when construction is complete. This would ensure adequate access by the District in the case of emergency.

3.10.3.2 Alternative 2

Mitigation measures in Alternative 2 would be the same as those identified for Alternative 1.

3.10.4 Significant Unavoidable Adverse Impacts

With mitigation measures identified above, the Project would not cause any significant unavoidable adverse impacts on available public services.

3.11 Public Utilities

This section describes the existing conditions of utilities relevant to the Project, including solid waste disposal, sewer and wastewater management, stormwater conveyance, and drinking water. The potential impacts of the two Action Alternatives and the No Action

Alternative on utilities and their effective provision are also identified. In cases where appropriate measures may offset utilities impacts, mitigation measures are identified.

3.11.1 Affected Environment

This section identifies the local utility providers for the Project site and the available capacities of the utility systems that would serve the Project. The development will require all standard utility services, including solid waste, water, sewer, electric power, and natural gas.

3.11.1.1 Solid Waste

The City of Burien contracts with Waste Management for waste collection services, including garbage, recycling, and yard waste. Residential/curbside garbage, recycling, and yard waste are picked up on a bi-weekly basis, with all three waste types collected at the same time. Adjacent developments currently have garbage and recycling service and the Project site would be serviced once construction is complete.

During construction, management of garbage and recycling of construction materials/debris would be coordinated by the construction team. If needed, Waste Management does provide construction and demolition debris service for the city of Burien. However, the contractor for garbage and recycling services during construction would be chosen according to the needs of the construction team.

3.11.1.2 Sewer

Southwest Suburban Sewer District (SWSSD) provides sewer service to the Project site. SWSSD is the primary sewer service provider within the city of Burien. SWSSD maintains a system of collector and interceptor pipelines that conveys wastewater to its Salmon Creek and Miller Creek wastewater treatment plants (WWTPs). Eight-inch diameter pipe is primarily used within the system, but larger trunk and interceptor pipes of up to 30 inches diameter are used in areas of higher densities and land use intensities (City of Burien 2006).

The design capacity of the Salmon Creek WWTP is approximately 3.6 million gallons per day (MGD), while peak flow capacity is approximately 9.1 MGD. The Miller Creek WWTP provides a design capacity of 3.9 MGD, with a peak flow capacity of approximately 13.3 MGD. Miller Creek WWTP also has a compost facility that is able to handle all of the solids from both treatment plants. Both WWTPs provide secondary treatment of wastewater.

The utility plan, depicting the proposed layout for sewer, water, and stormwater infrastructure, is shown in Figure 3.11-1.

3.11.1.3 Drinking Water

Seattle Public Utilities (SPU) provides drinking water to the northwestern portion of the city of Burien, including the Project site. SPU is the largest purveyor of water in the state. Almost 40 percent of SPU's available water is purchased by other water purveyors. SPU maintains three sources of water supply: the Cedar River watershed, the Tolt River watershed, and three wells in the Highline Well Field. These water sources provide a total

capacity of approximately 175 MGD. The Cedar and Tolt River watersheds are located in the Cascade Mountains, while the Highline Well Field lies in the area north of Sea-Tac Airport. The Highline Well Field recharge area spans a portion of northeastern Burien. The well field is used as a water source only during the summer months when supplies in the other two sources are not adequate.

Overall, SPU's water distribution system includes 13 reservoirs (open and covered) and 39 pumping stations. SPU pipe diameters in Burien range between 4 and 12 inches, with the majority of the distribution system comprised of 6- to 8-inch diameter pipes. According to the Burien Comprehensive Plan (2006), there are no current issues with water supply in the city. An existing 6-inch water line is located on the Project site and runs underneath the wetland.

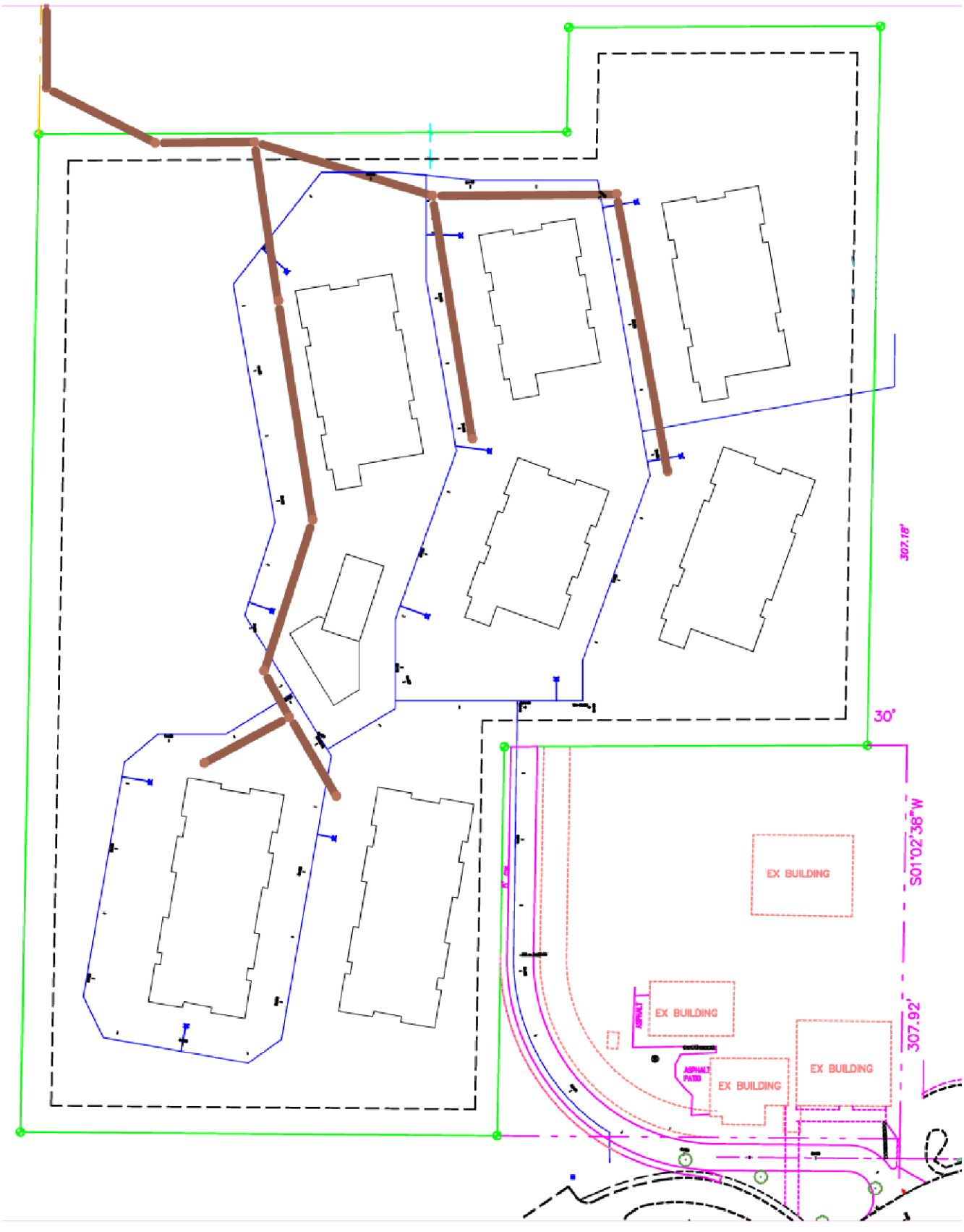
3.11.1.4 Electricity

Seattle City Light (SCL) provides electrical service to a large majority of the city of Burien, including the Project site. SCL is a City of Seattle-owned public electric utility serving approximately 131 square miles within the larger Puget Sound area. SCL owns and maintains approximately 649 miles of transmission lines, which carry power from the Skagit, Tolt, and Cedar Falls generating facilities to 14 principle substations. Power is distributed from these principal substations via high voltage feeder lines to numerous smaller distribution stations and pole transformers that reduce voltage to required levels for customers. Burien is served by the Duwamish substation which currently has sufficient capacity. Feeder lines serving Burien are slightly under capacity, and SCL expects to reconfigure this portion of the system once use approaches full capacity. SCL makes capacity improvements based on market demand.

3.11.1.5 Natural Gas

Puget Sound Energy (PSE) provides natural gas services to the city of Burien. Generally, natural gas is supplied to the Puget Sound area via the Northwest Pipeline. Its system within the state of Washington consists of primarily two large pipelines, 26 and 30 inches in diameter. Natural gas is supplied to the city of Burien through gate stations along the Northwest Pipeline. A gate station is the delivery point of natural gas from the high pressure Northwest Pipeline to PSE's more localized system network. At the gate station, the natural gas is metered and becomes the responsibility of PSE. Burien is served by the South Seattle Gate Station, where gas from the pipeline is reduced to 250 psi. Capacity at this station is about 6 million cubic feet per hour.

The area surrounding the Project site is currently supplied with natural gas by PSE. It is expected that PSE would serve the Project, if needed. PSE has an active policy of expanding its supply system to serve additional natural gas customers as needed.



Emerald Pointe EIS - Burien, WA

Figure 3.11-1 Utilities

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Proposed Water Line

Proposed Sewer Line

Property Boundary

Source: Touma Engineers

[BACK OF FIGURE 3.11-1

3.11.2 Impacts

This section addresses the potential impacts of the two Action Alternatives and the No Action Alternative on the five utility systems identified above. The following impact discussion is divided into short-term impacts which could occur as the result of construction period activities and long-term impacts which will occur once construction is complete. Mitigation measures to address any potential impacts can be found in Section 3.11.3.

3.11.2.1 Alternative 1

Short-Term Impacts

Short-term impacts produced by Alternative 1 construction activities related to water and sewer systems would occur outside the site property limits. Excavation and installation of onsite lines would occur according to the requirements of the TESC measures and would not cause short-term impacts. The existing manhole for connection to the sewer system is located within approximately 25 feet of the wetland and would require care and approved plan sequencing to successfully connect to the existing manhole without affecting the wetland. Construction continuing uphill to the first proposed manhole in the paved drive would require similar care. The remainder of the lines would be constructed after major walls have been installed. No short-term impacts to solid waste, water, electric power, or gas would occur.

Long-Term Impacts

Initial contacts have been made to the appropriate sewer and water providers related to the Alternative 2. On April 2, 2007, the Applicant received a Certificate of Sewer Availability from the SWSSD. This Certificate of Sewer Availability is provided in Appendix E. A sewer line easement would be required for construction and future access, including possible vehicular access to the connection manhole for maintenance.

On March 8, 2007, the Applicant submitted a Water Availability Inquiry to SPU for the proposed Project. SPU's response letter, presented in Appendix F, stated that water service is denied at this time and identified a number of requirements to be met to ensure adequate water provision to the site. Requirements for the water system include the following: 1) construction of a new 12-inch water main, served by a master meter at the end of the entry drive, extending from Ambaum Boulevard SW along SW 136th Street and, in an S-configuration along the east boundary of 1410 SW 137th Street, traveling along SW 137th Street to connect with the 6-inch main at SW 137th Street (see Figure 3.11-1), and 2) abandonment of the existing 6-inch water main under the Project site. Currently, the Utility Plan includes 8-inch pipe for the internal water system, but this pipe size may need to be increased to 10-inches in diameter to provide adequate fire flow.

SPU's comments contained in the response letter were incorporated into the utility plan design and represent an important step in the design of the water system. At the same time, no permit or guarantee of water availability has been officially issued by SPU. Further discussions with SPU would be needed to finalize the water system design and receive the necessary permits. SPU would require water line easements for construction and future maintenance access. Waterline construction plans would require submittal to SPU and the

fire marshal for approval. This approval process includes domestic service, fire flow needs, and confirmation that site roads meet emergency vehicle access criteria.

No additional long-term impacts on electrical power, solid waste, or gas would be expected as a result of Alternative 1. Specifically, as market-driven companies, it is assumed that SCL and Waste Management would be able to adequately serve the Project site, when needed.

Cumulative Impacts
No cumulative impacts on utilities would be expected from the implementation of Alternative 1.

3.11.2.2 Alternative 2

Short-Term Impacts
Short-term impacts associated with Alternative 2 would be similar to those identified in Alternative 1.

Long-Term Impacts
Long-term impacts associated with Alternative 2 would be similar to those identified in Alternative 1.

Cumulative Impacts
Cumulative impacts in Alternative 2 would be similar to those in Alternative 1.

3.11.2.3 No Action Alternative

Short-Term Impacts
No short-term impacts would be expected to result from the No Action Alternative. The Project site would remain undeveloped and no construction would occur on the site.

Long-Term Impacts
No long-term impacts would be expected to result from the No Action Alternative. The Project site would remain undeveloped and existing utilities would continue to adequately serve the Project vicinity.

Cumulative Impacts
No cumulative impacts would result from the No Action Alternative.

3.11.3 Mitigation Measures

This section describes mitigation measures necessary to avoid potential impacts on utilities resulting from the action alternatives.

3.11.3.1 Alternative 1

Mitigation measures required for Alternative 1 include:

- Approved TESC plans and construction sequencing plans would require approval by the City of Burien, SPU, and SWSSD;

- Construction permits and on-site inspections would be needed to ensure compliance with the intent of these plans during construction;
- Completed systems and surface treatments would require monitoring until vegetation is established;.
- Any work related to the establishment of the sewer connection shall be monitored by a certified wetland biologist; and
- Formal approval of sewer and water plans shall be received from the appropriate service agencies. (Specifically, final sewer plans would require submittal to the sewer district for approval, based on current codes.)

3.11.3.2 Alternative 2

Mitigation measures for Alternative 2 would be the same as those proposed for Alternative 1.

3.11.4 Significant Unavoidable Adverse Impacts

The Project would not cause any significant unavoidable adverse impacts on utility systems.