Environmental Consequences

Introduction

This chapter outlines the potential environmental consequences associated with the implementation of the No Action and the Preferred Alternative at the Snohomish County Airport/Paine Field. The Project Area in this chapter is considered the actual construction footprint of the proposed modular terminal expansion and the 65 DNL noise contour. The Alternatives chapter describes these options in detail and these alternatives are summarized as follows:

No Action Alternative

This alternative includes the continuation of the normal operation of the Snohomish County Airport/Paine Field without the provision of scheduled commercial service or any changes to the existing passenger terminal building.

Preferred Alternative

The Preferred Alternative includes the Federal Aviation Administration (FAA) issuance of operations specifications to allow scheduled commercial air service and approval of an Amendment to the Airport's CFR Part 139 operating certificate. In addition, the Preferred Alternative includes the addition of a modular terminal building to accommodate the proposed scheduled commercial air service.

The possible environmental impacts from these specific alternatives are described in the following sections per FAA Order 1050.1E, Change 1, Environmental Impacts: Policies and Procedures, and in accordance with FAA Order 5050.4B, National Environmental Policy Act Implementing Instructions for Airport Actions.

Since there are no Farmlands or Wild and Scenic Rivers in the project area, no further evaluation will be provided for these resources.
Air Quality

Summary

An emissions inventory was prepared for the proposed action. The implementation of the Preferred Alternative would increase emissions relative to the No Action. However, the anticipated increase in emissions would be de-minimis. A General Conformity Applicability Analysis was conducted in accordance with the requirements of the Clean Air Act Amendments, which indicates that the Preferred Alternative’s project-related emissions would be below the Clean Air Act defined de-minimis threshold, and thus the proposed action would not require a conformity determination. No significant adverse air quality impacts would be expected from the proposed project. The FAA and Snohomish County have coordinated with the Puget Sound Clean Air Agency (PSCAA) throughout preparation of the Draft and Final EA (Appendix T). This coordination included meetings on July 31, 2009 to discuss the approach to considering air quality in the Draft EA, on July 30, 2010 to update the agency on a change in approach to the air quality and traffic evaluations, on April 21, 2011 to review preliminary results based on the draft response to comments; and on August 24, 2012 to review the Draft Final EA results associated with the revised forecast.

PSCAA reaffirmed what had been communicated in the above meetings as general support for the air quality analysis approach, Please see Appendix T.

Environmental Consequences of the Alternatives

The following sections discuss the air quality implications of the No Action and the Preferred Alternative at the Airport.

Methodology. FAA Order 1050.1E, Change 1, Environmental Impacts: Policies and Procedures identifies the analysis requirements for air quality. That approach relies on the FAA’s Air Quality Procedures for Civilian Airports and Air Force to provide guidance concerning the breadth of air quality review required under NEPA. That document indicates:

… not all of the steps are required for every action. Many projects at airports and air bases are too small to require detailed air quality analysis and only a few projects are both broad enough in scope and located in nonattainment or maintenance areas such that the full complement of analyses described in this handbook would be required. Screening techniques that streamline the process for many air quality assessment actions are available… (page 7)

Actions that would not increase airport capacity, lead to increased congestion of roadways or airfields, or relocate aircraft or vehicular activity closer to sensitive receptors are not likely to exceed the NAAQS [National Ambient Air Quality Standards]for CO [Carbon Monoxide]. For deciding whether or not a NAAQS assessment should be considered, the total number of airport passengers and general aviation/air taxi operations should be evaluated. If the level of annual enplanements exceeds 1,300,000 (or 2.6 MAP [MAP, or Million Annual
Passengers, refers to the enplanements and deplanements combined), the level of general aviation and air taxi activity exceeds 180,000 operations per year or a combination thereof, a NAAQS assessment should be considered. (page 19-20)

**Existing Emissions.** Current (143,722 operations 2008) and forecast (117,321 operations in 2013, 119,197 operations in 2016, and 122,127 operations in 2018 with the Proposed Project) at Paine Field are listed in Appendix G. While the level of activity by itself may not warrant an air quality evaluation, the Airport is located in a maintenance area for carbon monoxide (CO), and therefore existing and future emissions were inventoried and a General Conformity Applicability Analysis was prepared. **Table D1** lists the existing (2008) emissions for sources that could be affected by the proposed actions.

**Table D1**

**CURRENT EMISSIONS (2008) OF SOURCES THAT MAY BE AFFECTED BY THE PROPOSED PROJECT (TONS/YEAR)**

*Snohomish County Airport Environmental Assessment*

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Aircraft/ APU</th>
<th>Ground Support Equip</th>
<th>Surface Travel VMT</th>
<th>Construction</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon Monoxide (CO)</td>
<td>1,076.33</td>
<td>44.77</td>
<td>NA</td>
<td>NA</td>
<td>1,121.10</td>
</tr>
<tr>
<td>Volatile Organic Compounds (VOC)</td>
<td>37.80</td>
<td>1.69</td>
<td>NA</td>
<td>NA</td>
<td>39.50</td>
</tr>
<tr>
<td>Nitrogen Oxides (NOx)</td>
<td>63.51</td>
<td>6.44</td>
<td>NA</td>
<td>NA</td>
<td>69.94</td>
</tr>
<tr>
<td>Sulfur Oxides (SOx)</td>
<td>7.19</td>
<td>0.18</td>
<td>NA</td>
<td>NA</td>
<td>7.36</td>
</tr>
<tr>
<td>Particulate Matter (PM$_{10}$)</td>
<td>1.19</td>
<td>0.21</td>
<td>NA</td>
<td>NA</td>
<td>1.40</td>
</tr>
<tr>
<td>Particulate Matter (PM$_{2.5}$)</td>
<td>1.19</td>
<td>0.20</td>
<td>NA</td>
<td>NA</td>
<td>1.39</td>
</tr>
</tbody>
</table>

*Note:* Paine Field does not currently have commercial air service, and thus, no passenger related VMT occurs. Similarly, there was no construction for the proposed actions in 2008. NA = No project-related construction or passenger VMT occurred in 2008. APU = Auxiliary Power Unit

*Note:* Totals may not add due to rounding. EDMS 5.1.3 outputs include emissions to the nearest ten-thousandth and these numbers are rounded to the nearest hundredth.

*Source:* BridgeNet Consulting Services using EDMS 5.1.3

**Future Conditions.** To evaluate the effect of the proposed actions on air quality, emissions inventories for the No Action and Preferred Alternatives were prepared for the years 2013, 2016, and 2018. Construction emissions were also evaluated, and are assumed to be completed in 2013. Operational emissions, the emissions once construction is complete and the project is operating, were evaluated for the first full year of operation (2013), as well as for 2016, and 2018. **Table D2** summarizes the operational emissions of the proposed project. **Table D3** summarizes the construction-related emissions.
### Table D2
**SUMMARY OF PROJECT-RELATED OPERATIONAL EMISSIONS**

*Snohomish County Airport Environmental Assessment*

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Operational Emissions (Tons)</th>
<th>No Action</th>
<th>Preferred Alternative</th>
<th>Project-Related Emissions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Year 2013</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carbon Monoxide (CO)</td>
<td>946.88</td>
<td>996.86</td>
<td>49.98</td>
<td></td>
</tr>
<tr>
<td>Volatile Organic Compounds (VOC)</td>
<td>43.82</td>
<td>46.21</td>
<td>2.39</td>
<td></td>
</tr>
<tr>
<td>Nitrogen Oxides (NOx)</td>
<td>95.21</td>
<td>103.69</td>
<td>8.48</td>
<td></td>
</tr>
<tr>
<td>Sulfur Oxides (SOx)</td>
<td>9.94</td>
<td>10.78</td>
<td>0.84</td>
<td></td>
</tr>
<tr>
<td>Particulate Matter (PM$_{10}$)</td>
<td>1.67</td>
<td>2.02</td>
<td>0.35</td>
<td></td>
</tr>
<tr>
<td>Particulate Matter (PM$_{2.5}$)</td>
<td>1.66</td>
<td>1.96</td>
<td>0.30</td>
<td></td>
</tr>
<tr>
<td><strong>Year 2016</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carbon Monoxide (CO)</td>
<td>937.95</td>
<td>1,005.05</td>
<td>67.10</td>
<td></td>
</tr>
<tr>
<td>Volatile Organic Compounds (VOC)</td>
<td>43.66</td>
<td>46.48</td>
<td>2.82</td>
<td></td>
</tr>
<tr>
<td>Nitrogen Oxides (NOx)</td>
<td>93.62</td>
<td>107.14</td>
<td>13.52</td>
<td></td>
</tr>
<tr>
<td>Sulfur Oxides (SOx)</td>
<td>10.00</td>
<td>11.69</td>
<td>1.65</td>
<td></td>
</tr>
<tr>
<td>Particulate Matter (PM$_{10}$)</td>
<td>1.78</td>
<td>2.07</td>
<td>0.29</td>
<td></td>
</tr>
<tr>
<td>Particulate Matter (PM$_{2.5}$)</td>
<td>1.78</td>
<td>1.99</td>
<td>0.21</td>
<td></td>
</tr>
<tr>
<td><strong>Year 2018</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carbon Monoxide (CO)</td>
<td>935.25</td>
<td>1,008.54</td>
<td>73.29</td>
<td></td>
</tr>
<tr>
<td>Volatile Organic Compounds (VOC)</td>
<td>43.52</td>
<td>46.60</td>
<td>3.03</td>
<td></td>
</tr>
<tr>
<td>Nitrogen Oxides (NOx)</td>
<td>92.83</td>
<td>106.23</td>
<td>13.40</td>
<td></td>
</tr>
<tr>
<td>Sulfur Oxides (SOx)</td>
<td>10.00</td>
<td>11.70</td>
<td>1.70</td>
<td></td>
</tr>
<tr>
<td>Particulate Matter (PM$_{10}$)</td>
<td>1.76</td>
<td>2.06</td>
<td>0.30</td>
<td></td>
</tr>
<tr>
<td>Particulate Matter (PM$_{2.5}$)</td>
<td>1.75</td>
<td>1.96</td>
<td>0.21</td>
<td></td>
</tr>
</tbody>
</table>

**Note:** Totals may not add due to rounding. EDMS 5.1.3 outputs include emissions to the nearest ten-thousandth and these numbers are rounded to the nearest hundredth.

**Source:** BridgeNet Consulting Services, July 2012 Using EDMS 5.1.3; Surface emissions: Synergy Consultants, July 2012.
Table D3
CONSTRUCTION EMISSIONS – PREFERRED ALTERNATIVE (90 DAYS IN 2013)
Snohomish County Airport Environmental Assessment

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Construction Emissions (Tons)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon Monoxide (CO)</td>
<td>1.5</td>
</tr>
<tr>
<td>Volatile Organic Compounds (VOC)</td>
<td>0.2</td>
</tr>
<tr>
<td>Nitrogen Oxides (NOx)</td>
<td>2.4</td>
</tr>
<tr>
<td>Sulfur Oxides (SOx)</td>
<td>0.1</td>
</tr>
<tr>
<td>Particulate Matter (PM(_{10}))</td>
<td>2.6</td>
</tr>
<tr>
<td>Particulate Matter (PM(_{2.5}))</td>
<td>2.6</td>
</tr>
</tbody>
</table>

Notes: Totals may not add due to rounding to the nearest tenth. PM10 and PM2.5 assume that all fugitive dust is PM10 and PM2.5.

Source: Synergy Consultants, Inc.

No Action Alternative. With the No Action Alternative, commercial service as proposed would not occur; existing ongoing activity would occur, but there would be no service by Horizon or Allegiant. Therefore, no project-related construction would occur, and thus, there would be no construction emissions.

As is shown by comparing Table D4 and Table D1, emissions of carbon monoxide are expected to decrease between 2008 and 2013 regardless of whether or not the proposed commercial air service is initiated, because aircraft operations have decreased over the timeframe and are expected to remain below 2008 levels. Emissions of all other pollutants are expected to increase over the period. Ongoing operational CO emissions would decrease about 16% (from 1,121.1 tons in 2008 to 946.88 tons per year in 2013); VOC emissions would increase 11% (from 39.5 tons to 43.82 tons per year in 2013); and NOx emissions would increase 36% (from 69.94 tons in 2008 to 95.21 tons per year in 2013). SOx emissions would be expected to increase about 35% (from 7.36 tons to 9.94 tons per year), and PM (both PM\(_{10}\) and PM\(_{2.5}\)) would increase about 20% (from 1.4 tons to nearly 1.7 tons per year).

For those pollutants increasing, much of the increase is associated with a change in aircraft fleet mix that has occurred between 2008 and 2011. GSE (Ground Support Equipment) emissions are expected to decrease for all pollutants between 2008 and 2013. Surface traffic vehicle miles traveled (VMT) included in Tables D4 and D5 refers to vehicle trips due to the introduction of commercial service at the Airport. In the case of the No Action, there would be no passenger travel, no VMT, and thus, no emissions from surface travel VMT.
Table D4
NO ACTION EMISSIONS – 2013, 2016, AND 2018 (TONS/YEAR)
Snohomish County Airport Environmental Assessment

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Aircraft and APU</th>
<th>Ground Support Equip</th>
<th>Surface Travel VMT</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon Monoxide (CO)</td>
<td>912.94</td>
<td>33.94</td>
<td>0.00</td>
<td>946.88</td>
</tr>
<tr>
<td>Volatile Organic Compounds (VOC)</td>
<td>42.53</td>
<td>1.29</td>
<td>0.00</td>
<td>43.82</td>
</tr>
<tr>
<td>Nitrogen Oxides (NOx)</td>
<td>90.55</td>
<td>4.66</td>
<td>0.00</td>
<td>95.21</td>
</tr>
<tr>
<td>Sulfur Oxides (SOx)</td>
<td>9.84</td>
<td>0.10</td>
<td>0.00</td>
<td>9.94</td>
</tr>
<tr>
<td>Particulate Matter (PM10)</td>
<td>1.48</td>
<td>0.19</td>
<td>0.00</td>
<td>1.67</td>
</tr>
<tr>
<td>Particulate Matter (PM2.5)</td>
<td>1.48</td>
<td>0.19</td>
<td>0.00</td>
<td>1.66</td>
</tr>
<tr>
<td>Carbon Monoxide (CO)</td>
<td>917.16</td>
<td>20.79</td>
<td>0.00</td>
<td>937.95</td>
</tr>
<tr>
<td>Volatile Organic Compounds (VOC)</td>
<td>42.83</td>
<td>0.83</td>
<td>0.00</td>
<td>43.66</td>
</tr>
<tr>
<td>Nitrogen Oxides (NOx)</td>
<td>90.75</td>
<td>2.87</td>
<td>0.00</td>
<td>93.62</td>
</tr>
<tr>
<td>Sulfur Oxides (SOx)</td>
<td>9.91</td>
<td>0.09</td>
<td>0.00</td>
<td>10.00</td>
</tr>
<tr>
<td>Particulate Matter (PM10)</td>
<td>1.65</td>
<td>0.14</td>
<td>0.00</td>
<td>1.79</td>
</tr>
<tr>
<td>Particulate Matter (PM2.5)</td>
<td>1.65</td>
<td>0.13</td>
<td>0.00</td>
<td>1.78</td>
</tr>
<tr>
<td>Carbon Monoxide (CO)</td>
<td>920.00</td>
<td>15.25</td>
<td>0.00</td>
<td>935.25</td>
</tr>
<tr>
<td>Volatile Organic Compounds (VOC)</td>
<td>42.88</td>
<td>0.64</td>
<td>0.00</td>
<td>43.52</td>
</tr>
<tr>
<td>Nitrogen Oxides (NOx)</td>
<td>90.76</td>
<td>2.07</td>
<td>0.00</td>
<td>92.83</td>
</tr>
<tr>
<td>Sulfur Oxides (SOx)</td>
<td>9.91</td>
<td>0.09</td>
<td>0.00</td>
<td>10.00</td>
</tr>
<tr>
<td>Particulate Matter (PM10)</td>
<td>1.65</td>
<td>0.11</td>
<td>0.00</td>
<td>1.76</td>
</tr>
<tr>
<td>Particulate Matter (PM2.5)</td>
<td>1.65</td>
<td>0.11</td>
<td>0.00</td>
<td>1.76</td>
</tr>
</tbody>
</table>

Note: Totals may not add due to rounding. EDMS 5.1.3 outputs include emissions to the nearest ten-thousandth and these numbers are rounded to the nearest hundredth.
Source: BridgeNet Consulting Services, July 2012 Using EDMS 5.1.3; Surface emissions: Synergy Consultants, August, 2012.

By 2016, emissions of the No Action Alternative are expected to increase slightly over 2013 levels as activity levels are expected to increase over that period regardless of the proposed project. Similarly, emissions in 2018 are expected to be slightly greater than 2016 levels due to the expected continual increase in airport activity levels in the No Action.

Preferred Alternative. With the proposed action, temporary emissions would occur during construction of the modular terminal expansion. In addition, the proposed actions would enable commercial air service at Paine Field as well as result in changes in surface traffic patterns for air travelers that would now use Paine Field. The following sections discuss the emissions associated with the proposed actions.
**Construction:** Before air service can be initiated, it is assumed under the Preferred Alternative that a terminal expansion would be constructed. The County anticipates that the construction process on-site would be completed in about 90-days. The first 30-days would be delivery, and assembly of the modular units and connection to the existing utilities and infrastructure. During the remaining 60-days, interior finishing would be completed. This modular terminal would be constructed off-site and delivered to the Airport for assembly. Construction is expected to occur in early 2013.

The emissions associated with construction employee work commute, material delivery, building assembly on-site, interior finishing, and connection to utilities would result in emissions. It is anticipated that material delivery would involve heavy duty diesel vehicles traveling an average of 30 miles round trip. Construction employee travel, in light duty gas trucks, would be expected to travel an average of 20 miles round trip. **Table D3** lists the emissions associated with construction.

**Operational Emissions:** Once construction is completed, Horizon and Allegiant anticipate immediately starting commercial air service. The air service would generate additional aircraft operations at the Airport. These additional operations would require ground support using GSE. Although the proposed service may decrease vehicular travel for residents of Snohomish County who would otherwise travel to/from either Sea-Tac International Airport or Bellingham International Airport, an analysis was performed assuming that the project generated all new passengers and that all travel would be project-based to be conservative. Based on those surface traffic assumptions derived from information in the airline letters included in Appendix A, the surface traffic analysis showed that the 2013 vehicle miles traveled (VMT) of project-related travel would be 3,193,775 VMT. By 2016, the project would then expect to generate 4,343,165 VMT miles (Traffic VMT Report in Appendix I) and by 2018 there could be 5,492,570 VMT. **Table D5** shows the With Project operational emissions for 2013, 2016, and 2018. As can be seen in **Table D5**, the total Preferred Alternative emissions are greater than the No Action emissions in **Table D4**.

Project-related emissions, those emissions that would occur beyond the No Action, are identified in **Table D2**. The information in **Table D2** shows aircraft operations associated with the proposed project would generate increases in aircraft-related emissions relative to the No Action. However, the greatest source of project-related emissions would be due to assumptions concerning on-road vehicular travel. Total project-related CO emissions would be 49.98 tons in 2013, 67.10 tons in 2016 and nearly 73.29 tons in 2018. Of the 2013 project-related emissions, 33.14 tons would occur due to passenger surface travel while 16.85 tons would occur by aircraft-related emissions (aircraft, APU, and GSE). In 2016, the project-related emissions would consist of 41.36 tons of CO from on-road surface travel, and 25.74 tons from aircraft and related sources. By 2018, the project-related emissions would consist of 50.00 tons CO from on-road surface travel, and 23.29 tons from aircraft and related sources.
Table D5
PREFERRED ALTERNATIVE OPERATIONAL EMISSIONS – 2013, 2016, AND 2018 (TONS/YEAR)
Snobomish County Airport Environmental Assessment

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Aircraft/APU</th>
<th>Ground Support Equip</th>
<th>Surface Travel VMT</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>2013</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carbon Monoxide</td>
<td>921.42</td>
<td>42.30</td>
<td>33.14</td>
<td>996.86</td>
</tr>
<tr>
<td>Volatile Organic Compounds</td>
<td>42.72</td>
<td>1.57</td>
<td>1.92</td>
<td>46.21</td>
</tr>
<tr>
<td>Nitrogen Oxides</td>
<td>95.06</td>
<td>5.57</td>
<td>3.05</td>
<td>103.68</td>
</tr>
<tr>
<td>Sulfur Oxides</td>
<td>10.63</td>
<td>0.12</td>
<td>0.03</td>
<td>10.78</td>
</tr>
<tr>
<td>Particulate Matter (PM10)</td>
<td>1.67</td>
<td>0.23</td>
<td>0.13</td>
<td>2.03</td>
</tr>
<tr>
<td>Particulate Matter (PM2.5)</td>
<td>1.67</td>
<td>0.22</td>
<td>0.07</td>
<td>1.96</td>
</tr>
<tr>
<td><strong>2016</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carbon Monoxide</td>
<td>933.52</td>
<td>30.17</td>
<td>41.36</td>
<td>1,005.05</td>
</tr>
<tr>
<td>Volatile Organic Compounds</td>
<td>43.11</td>
<td>1.16</td>
<td>2.22</td>
<td>46.49</td>
</tr>
<tr>
<td>Nitrogen Oxides</td>
<td>100.14</td>
<td>3.92</td>
<td>3.09</td>
<td>107.15</td>
</tr>
<tr>
<td>Sulfur Oxides</td>
<td>11.51</td>
<td>0.13</td>
<td>0.04</td>
<td>11.68</td>
</tr>
<tr>
<td>Particulate Matter (PM10)</td>
<td>1.73</td>
<td>0.19</td>
<td>0.15</td>
<td>2.07</td>
</tr>
<tr>
<td>Particulate Matter (PM2.5)</td>
<td>1.73</td>
<td>0.18</td>
<td>0.08</td>
<td>1.99</td>
</tr>
<tr>
<td><strong>2018</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carbon Monoxide</td>
<td>936.36</td>
<td>22.18</td>
<td>50.00</td>
<td>1,008.54</td>
</tr>
<tr>
<td>Volatile Organic Compounds</td>
<td>43.15</td>
<td>0.89</td>
<td>2.56</td>
<td>46.60</td>
</tr>
<tr>
<td>Nitrogen Oxides</td>
<td>100.14</td>
<td>2.82</td>
<td>3.27</td>
<td>106.23</td>
</tr>
<tr>
<td>Sulfur Oxides</td>
<td>11.52</td>
<td>0.13</td>
<td>0.05</td>
<td>11.70</td>
</tr>
<tr>
<td>Particulate Matter (PM10)</td>
<td>1.73</td>
<td>0.15</td>
<td>0.18</td>
<td>2.06</td>
</tr>
<tr>
<td>Particulate Matter (PM2.5)</td>
<td>1.73</td>
<td>0.14</td>
<td>0.09</td>
<td>1.96</td>
</tr>
</tbody>
</table>

Note: Totals may not add due to rounding. EDMS 5.1.3 outputs include emissions to the nearest ten-thousandth and these numbers are rounded to the nearest hundredth.

Source: BridgeNet Consulting Services, July 2012 Using EDMS 5.1.3; Surface emissions: Synergy Consultants, August 2012.

Mitigation and Best Management Practice. While the project results in an increase in emissions, mitigation is technically not required as the project emissions are below de-minimis thresholds as described in the following section and in Table D6. Short-term construction-related emissions would occur. These construction-related emissions will be minimized through the following Snohomish County standard construction-related best management practices:

- Odors from vehicle emissions during construction will be controlled by muffler systems on the vehicles.
- Dust from construction activities will be controlled by the use of a water truck.
- The work will comply with the requirements of the Puget Sound Clean Air Agency and will use industry standard best management practices.
- Equipment will be turned off when idling.
**General Conformity.** Because a Federal approval is required for the proposed actions and the project is located in a maintenance area for carbon monoxide, the Federal approval must be preceded by a Clean Air Act general conformity evaluation. To identify potential air emissions from the proposed actions, the previously described emissions inventory was summarized and contrasted with the de-minimis levels for a maintenance area for carbon monoxide. Table D6 shows that the project-related emissions would be below the Clean Air Act defined de-minimis threshold, and thus the planned actions do not require a conformity determination.

Table D6

**TOTAL PROJECT-RELATED IMPACTS**

*Snobomish County Airport Environmental Assessment*

<table>
<thead>
<tr>
<th>Year</th>
<th>CO (tons/year)</th>
<th>Are Project-Related Emissions Below De-Minimis?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 2013</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Construction</td>
<td>1.5</td>
<td></td>
</tr>
<tr>
<td>Operational Emissions (project-related)</td>
<td>50.0</td>
<td>Yes</td>
</tr>
<tr>
<td>Total</td>
<td>51.5</td>
<td></td>
</tr>
<tr>
<td>Year 2016 (operational emissions)</td>
<td>67.1</td>
<td>Yes</td>
</tr>
<tr>
<td>De-minimis (maintenance area)</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

*Notes:* Year 2016 was evaluated as it is the current end of the horizon considered in the Maintenance Plan. Construction equipment emissions tables are included in Appendix E. Giving the timing of when the analysis was prepared, it was not clear if construction would occur in 2013. Therefore, to show conservative condition, all construction emissions were added to a full year of operational emissions (2013).

Climate

Summary

Changes to resource categories such as air quality and natural resources and energy supply can potentially affect climate change (e.g., by increasing the amount of greenhouse gases emitted), and projects can also be impacted by climate change (e.g., rising sea levels). At this point, there is no consistent scientific indication of when and how the climate will change.

Environmental Consequences of the Alternatives

In January 2012, the FAA issued FAA Order 1050.1E, Change 1 Guidance Memo #3 titled "Considering Greenhouse Gases and Climate Change under the National Environmental Policy Act (NEPA): Interim Guidance." This section addresses the effects of the proposed actions at Paine Field in accordance with the FAA guidance.

Of growing concern is the impact of proposed projects on climate change. Greenhouse gases are those that trap heat in the earth’s atmosphere. Both naturally occurring and anthropogenic (man-made) greenhouse gases include water vapor (H$_2$O), carbon dioxide (CO$_2$), methane (CH$_4$), nitrous oxide (N$_2$O), and ozone (O$_3$).

Research has shown that there is a direct link between fuel combustion and greenhouse gas emissions. Therefore, sources that require fuel or power at an airport are the primary sources that would generate greenhouse gases. Aircraft are probably the most often cited air pollutant source, but they produce the same types of emissions as cars. Aircraft jet engines, like many other vehicle engines, produce CO$_2$, water vapor, nitrogen oxides, carbon monoxide, oxides of sulfur, unburned or partially combusted hydrocarbons [also known as volatile organic compounds (VOCs)], particulates, and other trace compounds.

According to most international reviews, aviation emissions comprise a small but potentially important percentage of human-made greenhouse gases and other emissions that contribute to global warming. The Intergovernmental Panel on Climate Change (IPCC) estimates that global aircraft emissions account for about...
3.5% of the total quantity of greenhouse gas from human activities.\(^4\) In terms of relative U.S. contribution, the U.S. General Accounting Office (GAO) reports that aviation accounts “for about 3% of total U.S. greenhouse gas emissions from human sources” compared with other industrial sources, including the remainder of the transportation sector (23%) and industry (41%).\(^5\) The 2012 USEPA nationwide inventory of greenhouse gas emissions, notes that aviation-related emissions represented about 2.1% of emissions. That report also found "Across all categories of aviation, CO\(_2\) emissions decreased by 20.6 percent (36.9 Tg) between 1990 and 2010." \(^6\)

The scientific community is developing areas of further study to enable them to more precisely estimate aviation's effects on the global atmosphere. The FAA is currently leading and participating in several efforts intended to clarify the role that commercial aviation plays in greenhouse gas emissions and climate change. The most comprehensive and multi-year program geared towards quantifying climate change effects of aviation is the Aviation Climate Change Research Initiative (ACCRI) funded by FAA and NASA. ACCRI will reduce key scientific uncertainties in quantifying aviation-related climate impacts and provide timely scientific input to inform policy-making decisions. FAA also funds Project 12 of the Partnership for AiR Transportation Noise & Emissions Reduction (PARTNER) Center of Excellence research initiative to quantify the effects of aircraft exhaust and contrails on global and U.S. climate and atmospheric composition.

Aviation activity levels and airport development projects have the potential to both affect climate change and be affected by climate change. Changes to generation and/or use of natural resources such as air quality and energy supply can potentially affect climate change (e.g., by increasing the amount of green house gases emitted), but projects can also be impacted by climate change (e.g., rising sea levels). At this point, there is no consistent scientific indication of when and how the climate will change.

Research has shown that there is a direct link between fuel combustion and greenhouse gas emissions. Therefore, sources that require power/fuel at an airport are the primary sources that would generate greenhouse gases. Aircraft are probably the most often cited air pollutant source, but they produce the same types of emissions as cars. Based on FAA data, operations activity at Snohomish County Airport, relative to aviation throughout the United States, represents less than 1% of U.S. aviation activity. Therefore, assuming that greenhouse gases occur in proportion to the level of activity, greenhouse gas emissions associated with existing and future aviation activity at the Airport would be expected to represent less than 0.03% of

\(^6\) Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2010, United States Environmental Protection Agency, Report EPA 430-R-12-001, April 15, 2012; page 3-13/
U.S.-based greenhouse gases. Therefore, emissions of greenhouse gases from this project are not expected to be significant.

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**Coastal Resources**

**Summary**

The Snohomish County Airport/Paine Field is located approximately two miles east and three miles south of Possession Sound. All of Snohomish County is included in the Washington State Coastal Zone Management Program. According to FAA Order 1050.1E, Change 1, “When a proposed action affects (changes the manner of use or quality of land, water, or other coastal resources, or limits the range of their uses) the coastal zone in a State with an approved Coastal Zone Management (CZM) program, the EA shall include the following:

1. For Federally assisted activities or for other activities FAA itself undertakes, the views of the appropriate State or local agency as to the relationship of such activities with the approved State coastal zone management program, and the determination of the State as to whether the proposal is consistent with the approved State Coastal Zone Management program.

2. For issuance of a Federal license or permit, the applicant’s certification that the proposed action complies with the State’s approved Coastal Zone Management program and that such activity will be conducted in a manner consistent with the program, and the State’s concurrence with the applicant’s certification. (Approval of an airport layout plan approval could by definition be a Federal license or permitting action.) The State’s concurrence may be presumed if the State does not act within six months after receipt of the applicant’s certification, provided the State did not require additional information regarding that certification.”

The No Action Alternative will not affect coastal resources. The Airport is not located within a shoreline of the state, and therefore, development on the Airport is not subject to the requirement for a shoreline substantial development permit (see email from Tom Barnett, Principal Economic Development Officer for Snohomish County in Appendix C). Discussions with personnel of the Department of Ecology-SEA Program indicate that upon completion of the EA and an environmental determination, a Certification of Consistency with the Washington State Coastal Zone Management Program will be applied for by the County (see application in Appendix M). The checklist and a copy of the EA will be forwarded to the Department for a determination of consistency.
Compatible Land Use

Summary

Neither the No Action Alternative nor the Preferred Alternative include the acquisition of land in vicinity of Snohomish County Airport/Paine Field and there are no anticipated impacts or changes to land use as a result of either alternative. A more detailed analysis of land use is included later in the section entitled Noise.

As described in a following section entitled Noise, the 65 DNL noise contours for both the No Action Alternative and the Preferred Alternative remain primarily on airport property and no noise sensitive uses or noise sensitive areas are within the 65 DNL noise contour for any alternative. Consequently, no incompatible land use impacts are anticipated.

Construction Impacts

Summary

There are no permanent construction impacts expected as a result of the No Action Alternative. The construction impacts related to the Preferred Alternative are temporary and are not expected to exceed the thresholds of significance. Traffic patterns may be temporarily altered due to the additional vehicular traffic related to the construction of the modular terminal building. Any additional potential temporary construction impacts would be minimized by the contractor through the use of the Best Management Practices (BMPs).

Environmental Consequences of the Alternatives

The County anticipates that the construction process on-site would be completed in less than 90-days. The first 30-days would be delivery, and assembly of the modular terminal units and connection to the existing utilities and infrastructure. During the remaining 60-days, interior finishing would be completed.

Construction activities are regulated by Local, State, or Federal Ordinances. Typical construction impacts include air, water and noise pollution, along with the potential change in traffic patterns during construction. Contractors are required to comply with all regulations including, FAA guidance contained in FAA AC 150/5370-10A, Standards for Specifying Construction of Airports, AC 150/5320-15 (including Change #1) Management of Airport Industrial Waste, AC 150/5320-5B, Airport Drainage, and Item P-156, Temporary Air and Water Pollution, Soil Erosion and Siltation Control.

Final plans and provisions for the construction phase of the modular terminal building have not yet been developed. However, these plans would include guidelines to help minimize impacts due to erosion, air and water pollution, sanitary
waste, waste disposal and traffic alterations, caused by the construction work. The construction contractor would implement control measures for the fugitive dust from construction related activities. These measures could include covering or wetting the dry material, cleaning vehicles before exiting the construction site, and potentially using bump strips or grates to shake dust from the vehicles. Construction impacts related to air emissions were considered in the previous section entitled Air Quality.

Construction activities can generate hazardous wastes and some construction materials constitute hazardous substances. These materials could include fuel, oil, lubricants, paints, solvents, concrete-curing compounds, fertilizers, herbicides, and pesticides. The contractor would be required to implement proper practices to prevent or minimize the potential for these hazardous substances to be released into the environment. Chemicals, petroleum-based products, and waste materials, including solid and liquid waste, would be stored in areas specifically designed to prevent discharge into stormwater runoff. Areas used for storage of toxic materials should be designed with full enclosure in mind, such as the establishment of a dike around the perimeter of the storage area.

The construction contractor would also have to comply with temporary erosion and sedimentation control requirements of Snohomish County, requiring that the crew follow the Best Management Practices to prevent storm water pollution and erosion. These preventative measures might include sedimentation basins, silt traps, catch basins, and drip pans.

Construction equipment maintenance would be performed in a designated area and include control measures, such as drip pans to contain petroleum products. Any hazardous materials utilized during construction or operation of the proposed modular terminal expansion would be done according to applicable regulations and the person or entity responsible for handling the hazardous material will take immediate corrective action, including notifying the National Response Center, if there is an accidental release or other incident that could endanger people or environmental resources.

Any construction projects requiring construction related earthwork have the potential for both erosion and sedimentation. Under the Preferred Alternative, the contractor would be required to follow guidelines outlined by the Federal Aviation Administration's Advisory Circular 150/5370-10A, Standards for Specifying Construction of Airports. This includes FAA guidance to airport sponsors to help protect the environment during the construction phase. Final plans for any project would incorporate the provisions of AC 150/5370-10A to ensure minimal impact due to erosion, pollution, sanitary waste, and chemical use. All construction activities at the Airport are covered by the current NPDES stormwater permit. The contractor would be required to follow the Best Management Practices to prevent water pollution due to any construction work. The No Action Alternative, which includes no construction plans, would not have any impact on the surrounding area.
Department of Transportation Action: Section 4(f)

Summary

None of the alternatives would result in any impacts to properties protected under Section 4(f).

Environmental Consequences of the Alternatives

Section 4(f) of DOT Act of 1966 (recodified and renumbered as section 303(c) of 49 U.S.C.), provides that the Secretary of Transportation shall not approve any program or project that requires the use of any publicly owned land from a public park, recreation area or wildlife and waterfowl refuge of National, State or Local significance or land from a historic site of National, State or Local significance, as determined by the officials having jurisdiction thereof, unless there is no feasible and prudent alternative to the use of such land and such project includes all possible planning to minimize impact. There are no known Section 4(f) resources within the project area.

Special procedures are also required when development would affect lands purchased or developed using the Land and Water Conservation Fund Program (LAWCON) monies. Section 6(f) of the LAWCON Act of 1965 (Public Law 88-578), codified at Title 16 U.S. Code, Section 4601-8(f)(3), commonly referred to as Section 6(f), requires:

> No property acquired or developed with assistance under this section shall, without the approval of the Secretary [of the Interior], be converted to other than public outdoor recreation uses. The Secretary shall approve such conversion only if he finds it to be in accord with the then existing comprehensive statewide outdoor recreation plan and only upon such conditions as he deems necessary to assure the substitution of other recreation properties of at least equal fair market value and of reasonably equivalent usefulness and location.

The authority to approve Section 6(f) conversions has been delegated to the Regional Directors of the National Park Service (NPS). In the state of Washington, this program is administered in partnership with the state Recreation and Conservation Office (RCO). Agency coordination letters were sent to the National Parks Service and Washington State Parks (Appendix B). The NPS replied (see letter in Appendix C) stating that while there are Land and Water Conservation Fund (LWCF) program lands in the vicinity of the Preferred Alternative, that none of these lands would be impacted by expansion of the terminal building. The NPS also requested clarification that no easements would be required and that noise levels are not expected to significantly increase over any parks. No response was received from Washington State Parks; however, a response was received from RCO requesting the opportunity to review the Preferred Alternative and evaluate any potential affects to
two LWCF parks located east of the Airport (Kasch Park and Walter E. Hall Park). RCO was provided with a copy of the Draft EA for review and comment.

Additionally, the proposed project would take place entirely on previously disturbed ground and entirely on airport property. The 65 DNL noise contour does not encompass Kasch Park or Walter E. Hall Park or any recreation areas or other such properties for any alternative. None of the alternatives would result in any impacts to properties or uses protected under Section 4(f) or Section 6(f).

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**Fish, Wildlife, and Plants**

**Summary**

Both the No Action and the Preferred Alternatives are expected to have no effect on fish, wildlife, or plants because no protected species are known to be permanent residents on the Airport and no critical habitat or state listed priority habitats occur on the Airport.

Neither the No Action nor the Preferred Alternative would result in significant adverse environmental impacts to fish, wildlife, and plants.

**Environmental Consequences of the Alternatives**

The Endangered Species Act (ESA) requires federal agencies to examine if proposed projects may have an adverse impact on federally listed endangered or threatened species. The agency must ensure that the Preferred Alternative is not likely to jeopardize the continued existence of a federally listed species or significantly alter or destroy key habitat for these species. The U.S. Fish and Wildlife Service (USFWS) was contacted in order to identify if any endangered or threatened species are present or likely to be present on the proposed project site. The USFWS did not provide project specific information, but rather referred to the species list for Snohomish County and the Washington Department of Fish and Wildlife Priority Habitat and Species Program for use in making an effect determination. Data from the Priority Habitat and Species Programs was then reviewed and the closest Priority Habitat to the project area is the “Paine Field Open Space” located off airport property, approximately 2,100 feet north from the terminal and adjacent to the Boeing ramp. Construction of the modular terminal building will not impact this open space in any way. The Preferred Alternative would result in a slight increase in impervious surface at the Airport (approximately 1,000 square feet), however, this increase would be minor and would be accommodated in the Airport’s existing regional detention pond. Furthermore, this increase would be covered under the Airport’s existing stormwater discharge permit. The majority of the terminal expansion included in the Preferred Alternative will take place on existing aircraft parking apron.
The list of endangered, threatened and candidate species, along with the species of concern for Snohomish County was reviewed by airport personnel in consultation with the fulltime on-site USDA Wildlife Services Biologist who has been conducting weekly wildlife surveys on the Airport since 2001 (Appendix H). Of all the species on the list, only the Peregrine Falcon and Bald Eagle have been observed during the weekly surveys. The Peregrine Falcon was only observed once in 2004 and the Bald Eagle observations are infrequent. Neither species is a permanent resident at the Airport. Due to the absence of permanent threatened, or endangered species or critical or priority habitat on the Airport, both the No Action and the Preferred Alternatives are expected to have no effect on fish, wildlife, or plants.

The Migratory Bird Treaty Act (MBTA), enacted in 1918, prohibits the taking of any migratory birds, their parts, nests, or eggs, except as permitted by regulations, and does not require intent to be proven. There is no critical or priority habitat on the Airport or in the vicinity of the proposed modular terminal expansion so it is not anticipated that that any migratory birds, their parts, nest, or eggs will be impacted.

### Floodplains

**Summary**

The No Action Alternative and the Preferred Alternative are not expected to adversely impact any floodplains.

**Environmental Consequences of the Alternatives**

Executive Order 11988 guides Federal agencies to take action in order to reduce the risk of flood loss, minimize the impact of floods on human safety, health, and welfare, and restore and preserve the natural and beneficial values served by floodplains. A floodplain (100-year floodplain) is defined as an area with a one percent or greater chance of flooding in a given year.

According to published Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps, the majority of the Airport is located within Zone X, or areas determined to be outside of the 500-year floodplain. The closest 100-year floodplains are the floodplain associated with Possession Sound approximately two miles northwest and the floodplains associated with Stickney Lake located slightly more than two miles southeast of the project area. No floodplains will be impacted by the Preferred Alternative.
Hazardous Materials, Pollution Prevention, and Solid Waste

Summary

The No Action Alternative and the Preferred Alternative would not result in any significant impacts regarding hazardous waste, pollution prevention or solid waste.

Environmental Consequences of the Alternatives

**Hazardous Materials.** The Preferred Alternative would not result in significant changes to the handling, use, or disposal of hazardous materials at the Snohomish County Airport/Paine Field. An increase in aircraft fueling is expected as a result of the Preferred Alternative; however, proper aircraft fueling procedures will be followed and the Airport has plan in place to reduce the likelihood of a spill and plans in place to respond to any fuel spills. The Preferred Alternative will also not impact the closed pistol range site mentioned in the previous chapter.

**Pollution Prevention.** No significant changes to existing pollution prevention practices are anticipated as a result of the Preferred Alternative. The Airport has a National Pollutant Discharge Elimination System (NPDES) stormwater permit for construction to regulate the discharge of storm water that might contain traces of harmful pollutants. Furthermore, the airlines and fuel suppliers on the Airport maintain separate stormwater pollution prevention plans.

**Solid Waste.** Increases in solid waste generation and disposal as a result of the Preferred Alternative can reasonably be expected due to the increased use of the terminal building by arriving and departing airline passengers, as well as additional airport employees. However, because the Preferred Alternative does not include the demolition of any structures or facilities, these increases are expected to be minimal and would not be expected to exceed the capacities of the local disposal facilities.

Historical, Architectural, Archeological, and Cultural Resources

Summary

The Area of Potential Effect (APE) is defined as the immediate terminal area and the area within the 65 DNL noise contour. There are no sites within the APE designated or eligible for inclusion in the National Register of Historic Places (NRHP). Therefore, the FAA has made a determination of “no effect” on historical, architectural, archeological or cultural resources as a result of either the No Action or the Preferred Alternative. Due to the sovereignty of Federally-recognized tribes, consultation with these tribes must occur in a “government-to-government” manner in accordance with Executive Order 13175, Consultation and Coordination with
Indian Tribal Governments and FAA Order 1210.20, American Indian and Alaska Native Tribal Consultation Policy and Procedures.

Environmental Consequences of the Alternatives

The National Historic Preservation Act (NHPA) of 1966 requires a review to determine if any properties within the environmental impact area of a proposed action are in or eligible for inclusion in the NRHP. The Archeological and Historic Preservation Act of 1974 provides for the preservation of historic American sites, buildings, objects, and antiquities of national significance by providing for the survey, recovery and preservation of historical and archeological data. Section 106 requires Federal agencies to consider the impact of their undertaking on properties on or eligible for inclusion in the NRHP. Compliance with Section 106 requires consultation with the Advisory Council on Historic Preservation (ACHP), the State Historic Preservation Officer (SHPO), and/or the Tribal Historic Preservation Officer (THPO) if there is a potential adverse effect to historic properties on or eligible for listing on the National Register of Historic Places.

For this project, the APE consists of the area in the immediate vicinity of the existing terminal building at the Airport and the area within the 65 DNL noise contour. The Preferred Alternative would include modular terminal expansion work on the existing aircraft parking apron north and northwest of the terminal building. A review of 49 facilities listed on the National Register of Historic Places for Snohomish County was conducted. No historical, architectural, archeological or cultural sites are known to exist on airport property. The FAA has consulted, with the Washington Department of Archaeology and Historic Preservation (DAHP) pursuant to Section 106 of the NHPA. They have also consulted with the Stillaguamish Reservation, Sauk-Suiattle Tribal Council, and the Tulalip Reservation in accordance with the Executive Order on Tribal Consultation. The DAHP has concurred with the FAA determination of no historic properties affected and no responses have been received from the tribes to date. See Appendix J and N.

Light Emissions and Visual Environment

Summary

There would be a slight change in the light environment around the Airport due to increase lighting in the vicinity of the modular terminal expansion. However, due to the mostly industrial land use in the area, neither the No Action Alternative nor the Preferred Alternative would result in any significant impacts relating to the lighting and visual environment of the Airport. Although the modular terminal would alter the visual environment, such changes are in keeping with the existing visual setting of the Airport. Further, from a visual perspective, the aircraft operating at the Airport would not be substantially distinguishable from other types of aircraft already operating at Paine Field.
Environmental Consequences of the Alternatives

The FAA examines a project’s potential light emissions and visual impacts on the nearby area. The main lights associated with the Airport are the FAA required lighting for runways, taxiways and navigation. According to FAA Order 1050.1E, Change 1, Environmental Impacts: Polices and Procedures, due to relatively low levels of light intensity from airport lights compared to background levels associated with airport development actions, light emissions impacts are unlikely to have an adverse impact on human activity or the use or characteristics of the protected properties.

Because the No Action Alternative would not alter any existing light sources, there would be no light emission impacts on the surrounding area. The Preferred Alternative includes only minor lighting improvements associated with the modular terminal expansion as well as minor lighting improvements for the commercial aircraft parking apron. The Airport is surrounded by mostly industrial areas and therefore, these minor lighting improvements are not expected to result in a significant impact.

Visual impacts include things such as increasing contrast between an area and its environment and the community’s perception of that change. The visual environment would not change under the No Action Alternative. Visual impacts are not expected as a result of the Preferred Alternative because adjacent land uses are primarily industrial and the closest residential areas to the terminal building are located approximately ¾-mile to the east. The view from these residential areas toward the terminal is blocked by trees and other airport related facilities, consequently, it is assumed that any visual impacts would be minimal.

Natural Resources, Energy Supply, and Sustainable Design

Summary

There would be no significant impacts to any natural resources or the energy supply as a result of either the No Action Alternative or the Preferred Alternative.

Environmental Consequences of the Alternatives

Energy requirements associated with airport improvements generally fall into two categories: 1) changed demand for stationary facilities (e.g. airfield lighting and terminal building heating) and 2) those that involve the movement of air and ground vehicles, altering fuel consumption.

The Preferred Alternative would lead to a minor increase in fuel consumption through the construction of the modular terminal expansion and the additional heating/cooling requirements of the terminal. Additional increases in fuel consumption will be required for the aircraft being operated by the airlines as well as
aircraft ground support equipment (GSE). Based on the Vehicle Miles Traveled (VMT) Analysis (Appendix I), it is anticipated that the initiation of commercial air service at Paine Field will increase overall VMT by 3,193,775 miles per year in 2013 and 5,492,570 miles per year in 2018. The VMT is derived from the information included in the airline letters in Appendix A and the anticipated 956 average daily vehicle trips being added to the surrounding roadways. This annual increase in VMTs and its associated increase in energy consumption is not expected to have a significant impact on natural resources or energy supply.

During the implementation of the Preferred Alternative the use of natural resources would principally include construction materials and water. Additionally, no known natural gas, geothermal, or other energy resources would be impacted by the Preferred Alternative. The No Action Alternative would have no impact because it would not change or otherwise alter energy use at the Airport.

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**Noise**

**Summary**

As described in the following paragraphs, the 65 DNL noise contours for both the No Action Alternative and the Preferred Alternative remain primarily on airport property. In the small areas where the 65 DNL contours do extend off airport property, the corresponding land use is commercial or industrial, and is considered compatible with this level of aircraft noise. There are no noise sensitive uses within the 65 DNL noise contour or greater. Also, because the land uses within the 65 DNL noise contour are compatible, there are no anticipated 1.5 DNL noise increases of noise sensitive land uses within the 65 DNL. A detailed noise and land use analysis is presented in Appendix D.

**Environmental Consequences of the Alternatives**

The noise analysis and evaluation for the implementation of the Preferred Alternative used the same methodology as the evaluation of the existing noise environment described in the previous chapter. In predicting the approximate noise impacts that could occur from the increase in aircraft operations and the change in aircraft types as a result of the Preferred Alternative, the FAA approved operations forecasts and the letters from the potential airlines were reviewed and evaluated. The following tables, Table D7 and Table D8, again present the approved aircraft operations forecasts for the Airport that were utilized in the noise analysis. The majority of the air carrier operations (over 85%) are expected to be conducted by Bombardier Q400 turboprop aircraft with the remainder by Boeing MD83 turbine aircraft. It is also important to note that Horizon Air’s letter included a request of approval of their CRJ700 as a substitute aircraft; however, the airline only expects such a substitution approximately 1% of the time. This 1% substitution of the CRJ700 has been considered and included in the following noise analysis.
### Table D7
**NO ACTION ALTERNATIVE AIRCRAFT OPERATIONS, 2008, 2013 AND 2018**
*Snobomish County Airport Environmental Assessment*

<table>
<thead>
<tr>
<th>Aircraft Operations by Type</th>
<th>2008</th>
<th>2013</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Carrier</td>
<td>3,132</td>
<td>5,591</td>
<td>5,591</td>
</tr>
<tr>
<td>Air Taxi</td>
<td>2,782</td>
<td>2,464</td>
<td>2,464</td>
</tr>
<tr>
<td>General Aviation</td>
<td>136,900</td>
<td>103,425</td>
<td>104,479</td>
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<tr>
<td>Military</td>
<td>908</td>
<td>1,253</td>
<td>1,253</td>
</tr>
<tr>
<td><strong>Total Operations</strong></td>
<td><strong>143,722</strong></td>
<td><strong>112,733</strong></td>
<td><strong>113,787</strong></td>
</tr>
</tbody>
</table>

**Source:** Airport Records and Airport Staff Forecast Analysis, approved by FAA in letter to the Airport dated July 24, 2012.

### Table D8
**PREFERRED ALTERNATIVE AIRCRAFT OPERATIONS, 2008, 2013 AND 2018**
*Snobomish County Airport Environmental Assessment*

<table>
<thead>
<tr>
<th>Aircraft Operations by Type</th>
<th>2008</th>
<th>2013</th>
<th>2018</th>
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<tr>
<td>Air Carrier</td>
<td>3,132</td>
<td>10,179</td>
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<tr>
<td>Air Taxi</td>
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<td>2,464</td>
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<tr>
<td>General Aviation</td>
<td>136,900</td>
<td>103,425</td>
<td>104,479</td>
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<tr>
<td>Military</td>
<td>908</td>
<td>1,253</td>
<td>1,253</td>
</tr>
<tr>
<td><strong>Total Operations</strong></td>
<td><strong>143,722</strong></td>
<td><strong>117,321</strong></td>
<td><strong>122,127</strong></td>
</tr>
</tbody>
</table>

**Source:** Airport Records and Airport Staff Forecast Analysis, approved by FAA in letter to the Airport dated July 24, 2012. Airline provided information, Airport developed operations forecast report. Hirsh Memorandum (Appendix K).

This Environmental Assessment used the FAA developed Integrated Noise Model (INM), Version 7.0a to develop the 65 DNL noise contours and evaluate noise and land use impacts. This is consistent with the Federal Aviation Administration FAR Part 150 Land Use Guidelines. These guidelines indicate that residential development is incompatible within the 65 or greater DNL noise contours. Other noise sensitive land uses, such as schools, hospitals, churches and nursing homes are also considered to be incompatible if located within the 65 DNL contour.

The No Action Alternative would have no significant noise impacts on land uses surrounding the Snohomish County Airport/Paine Field. As indicated in Table D9, implementation of the Preferred Alternative would result in a slight increase in the size and location of the noise contours at the Snohomish County Airport/Paine Field. In the first year of commercial service operations (2013), the change in the 65 DNL noise contour compared to the No Action Alternative would be an increase of approximately 4.2 acres. By 2018, the change in the 65 DNL noise contour compared to the No Action Alternative would be an increase of approximately 17.6 acres.
Neither the 2013 nor the 2018 65 DNL contours will encompass any residences, persons, or other noise sensitive land uses or areas. A graphical comparison of the 2013 No Action and Preferred Alternative noise contours is shown in Figure D1, *FUTURE NOISE CONTOURS (2013) WITH & WITHOUT PROJECT*. A comparison of the 2018 No Action and Preferred Alternative noise contours is shown in Figure D2, *FUTURE NOISE CONTOURS (2018) WITH & WITHOUT PROJECT*. In addition, the future No Action 2013 contours by themselves are presented in Figure D3 and for 2018 in Figure D4. The 2013 With Project contours by themselves are presented in Figure D5 and the 2018 With Project contours are presented in Figure D6.

Table D9

PREFERRED ALTERNATIVE AND NO ACTION ALTERNATIVE CONTOUR ACREAGES, 2008, 2013 AND 2018

*Snohomish County Airport Environmental Assessment*

<table>
<thead>
<tr>
<th>Alternative</th>
<th>65 DNL, in acres</th>
<th>Change, in acres</th>
<th>Number of People</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008 Base Case</td>
<td>656.2</td>
<td>-</td>
<td>0</td>
</tr>
<tr>
<td>2013 No Action Alternative</td>
<td>704</td>
<td>-</td>
<td>0</td>
</tr>
<tr>
<td>2013 Preferred Alternative</td>
<td>708.2</td>
<td>4.2</td>
<td>0</td>
</tr>
<tr>
<td>2018 No Action Alternative</td>
<td>696</td>
<td>-</td>
<td>0</td>
</tr>
<tr>
<td>2018 Preferred Alternative</td>
<td>713.6</td>
<td>17.6</td>
<td>0</td>
</tr>
</tbody>
</table>

*Source:* BridgeNet International and FAA’s Integrated Noise Model Software
Figure D1: Future Noise Contours (2013) with and without Project

Source: Google Maps-June 2010.
Figure D2: Future Noise Contours (2018) with and without Project

Source: Google Maps-June 2010.
Figure D3 Future Noise Contours (2013) without Project

Source: Google Maps-June 2010.
Figure D4 Future Noise Contours (2018) without Project

Figure D5 Future Noise Contours (2013) with Project

Source: Google Maps-June 2010.
Figure D6 Future Noise Contours (2018) with Project

Source: Google Maps-June 2010.

Note: These Parks Are Protected Under Section 6(f) of the Land and Water Conservation Fund (LWCF) Act, which Requires Replacement Property as Mitigation for Conservation of Park Property that was Purchased or Deveoped with Stateside LWCF Funds.
Establishing land use compatibility within airport environs is the responsibility of local authorities, but should be based on a recognized standard. Federal Aviation Regulations (FAR) Part 150 Land Use Compatibility Guidelines are the acknowledged standard by the federal government regarding aircraft noise at airports. The following illustration, Figure D7, LAND USE COMPATIBILITY MATRIX, indicates those land uses that are compatible within certain DNL noise contours. It identifies land uses as being compatible, incompatible, or compatible if sound attenuated.

According to the FAA Order 1050.1E, thresholds of significance are primarily related to noise impacts and the 65 DNL or yearly day-night average sound level in decibels. If a noise sensitive use within the 65 DNL is subject to a 1.5 DNL or greater increase in noise level, the impacts are considered significant.

Under both the No Action and the Preferred Alternatives, small portions of the 65 DNL contour extends off of the Airport over Airport Road to the east, over Boeing Company property to the north and northeast, over SR 525 and commercial land uses south and southwest of the Airport.

Because there would be no non-compatible land uses within the 65 DNL contour and subject to a 1.5 DNL or greater increase in noise level, the No Action and Preferred Alternatives would have no significant impacts on land uses surrounding the Snohomish County Airport/Paine Field. Implementation of the Preferred Alternative would not result in the disruption of any communities, the relocation of residences or businesses, or result in any changes to existing or planned land uses.
### LAND USE COMPATIBILITY MATRIX

<table>
<thead>
<tr>
<th>LAND USE</th>
<th>BELOW 65</th>
<th>65-70</th>
<th>70-75</th>
<th>75-80</th>
<th>80-85</th>
<th>OVER 85</th>
</tr>
</thead>
<tbody>
<tr>
<td>RESIDENTIAL</td>
<td>Y</td>
<td>N(1)</td>
<td>N(1)</td>
<td>N</td>
<td>N</td>
<td>N</td>
</tr>
<tr>
<td>Mobile home parks</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
</tr>
<tr>
<td>Transient lodgings</td>
<td>Y</td>
<td>N(1)</td>
<td>N(1)</td>
<td>N(1)</td>
<td>N</td>
<td>N</td>
</tr>
<tr>
<td>PUBLIC USE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Schools</td>
<td>Y</td>
<td>N(1)</td>
<td>N(1)</td>
<td>N</td>
<td>N</td>
<td>N</td>
</tr>
<tr>
<td>Hospitals and nursing homes</td>
<td>Y</td>
<td>25</td>
<td>30</td>
<td>N</td>
<td>N</td>
<td>N</td>
</tr>
<tr>
<td>Churches, auditoriums and concert halls</td>
<td>Y</td>
<td>25</td>
<td>30</td>
<td>N</td>
<td>N</td>
<td>N</td>
</tr>
<tr>
<td>Governmental services</td>
<td>Y</td>
<td>Y</td>
<td>25</td>
<td>30</td>
<td>N</td>
<td>N</td>
</tr>
<tr>
<td>Transportation</td>
<td>Y</td>
<td>Y</td>
<td>Y(2)</td>
<td>Y(3)</td>
<td>Y(4)</td>
<td>Y(4)</td>
</tr>
<tr>
<td>Parking</td>
<td>Y</td>
<td>Y</td>
<td>Y(2)</td>
<td>Y(3)</td>
<td>Y(4)</td>
<td>N</td>
</tr>
<tr>
<td>COMMERCIAL USE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Offices, business and professional</td>
<td>Y</td>
<td>Y</td>
<td>25</td>
<td>30</td>
<td>N</td>
<td>N</td>
</tr>
<tr>
<td>Wholesale and retail building materials, hardware and farm equipment</td>
<td>Y</td>
<td>Y</td>
<td>Y(2)</td>
<td>Y(3)</td>
<td>Y(4)</td>
<td>N</td>
</tr>
<tr>
<td>Utilities</td>
<td>Y</td>
<td>Y</td>
<td>Y(2)</td>
<td>Y(3)</td>
<td>Y(4)</td>
<td>N</td>
</tr>
<tr>
<td>Communication</td>
<td>Y</td>
<td>Y</td>
<td>Y(2)</td>
<td>30</td>
<td>N</td>
<td>N</td>
</tr>
<tr>
<td>MANUFACTURING AND PRODUCTION</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Manufacturing, general</td>
<td>Y</td>
<td>Y</td>
<td>Y(2)</td>
<td>Y(3)</td>
<td>Y(4)</td>
<td>N</td>
</tr>
<tr>
<td>Photographic and optical</td>
<td>Y</td>
<td>Y</td>
<td>25</td>
<td>30</td>
<td>N</td>
<td>N</td>
</tr>
<tr>
<td>Agriculture (except livestock) and forestry</td>
<td>Y</td>
<td>Y(5)</td>
<td>Y(7)</td>
<td>Y(9)</td>
<td>Y(8)</td>
<td>Y(8)</td>
</tr>
<tr>
<td>Livestock farming and breeding</td>
<td>Y</td>
<td>Y(6)</td>
<td>Y(7)</td>
<td>N</td>
<td>N</td>
<td>N</td>
</tr>
<tr>
<td>Mining and fishing resource production and extraction</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>RECREATIONAL</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Outdoor sports arenas and spectator sports</td>
<td>Y</td>
<td>Y(5)</td>
<td>Y(5)</td>
<td>N</td>
<td>N</td>
<td>N</td>
</tr>
<tr>
<td>Outdoor music shells, amphitheaters</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
</tr>
<tr>
<td>Nature exhibits and zoos</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
</tr>
<tr>
<td>Amusements, parks, resorts and camps</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>N</td>
</tr>
<tr>
<td>Golf courses, riding stables and water recreation</td>
<td>Y</td>
<td>Y</td>
<td>25</td>
<td>30</td>
<td>N</td>
<td>N</td>
</tr>
</tbody>
</table>

The designations contained in this table do not constitute a Federal determination that any use of land covered by the program is acceptable or unacceptable under Federal, State or local law. The responsibility for determining the acceptable and permissible land uses and the relationship between specific properties and specific noise contours rests with the local authorities. FAA determinations under Part 150 are not intended to substitute federally determined land uses for those determined to be appropriate by local authorities in response to locally determined needs and values in achieving noise compatible land uses.

**TABLE KEY**

- Y(Yes): Land Use and related structures compatible without restrictions.
- N(No): Land Use and related structures are not compatible and should be prohibited.
- NLR: Noise Level Reduction (outdoor to indoor) to be achieved through incorporation of noise attenuation into the design and construction of the structure.
- 25, 30 or 35: Land Use and related structures generally compatible; measures to achieve NLR of 25, 30 or 35 dB must be incorporated into design and construction of structure.

**NOTES**

1. Where the community determines that residential or school uses must be allowed, measures to achieve outdoor to indoor Noise Level Reduction (NLR) of at least 25 dB to 30 dB should be incorporated into building codes and be considered in individual approvals. Normal residential construction can be expected to provide a NLR of 20 dB, thus, the reduction requirements are often stated as 5, 10 or 15 dB over standard construction and normally assume mechanical ventilation and closed windows year round. However, the use of NLR criteria will not eliminate outdoor noise problems.

2. Measures to achieve NLR of 25 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where the normal noise level is low.

3. Measures to achieve NLR of 30 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where the normal noise level is low.

4. Measures to achieve NLR of 35 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where the normal noise level is low.

5. Land use compatible provided that special sound reinforcement systems are installed.


8. Residential buildings not permitted.

---

**Figure D7: Land Use Compatibility Matrix**

Source: FAR Part 150 Guidelines.
Secondary (Induced) Impacts

Summary

The Preferred Alternative is not expected to alter or shift population, housing and or business development in the vicinity of the Airport and there are no anticipated significant induced impacts as a result of the proposed actions.

Environmental Consequences of the Alternatives

Major development projects can potentially influence induced or secondary impacts on the surrounding community. Some of these induced impacts could include the relocation of people or a substantial change to traffic patterns in the area. Minor traffic changes are anticipated to the roadway systems in the vicinity of the Airport as presented in the *Surface Transportation* Section and in the Traffic Impact Analysis Report found in Appendix F.

The Preferred Alternative is not considered a major development project. Due to the low number of project commercial service operations and enplanements, shifts in patterns of population movement and growth or changes in public service demands are not likely. There may however be a slight increase in business and economic activity at the Airport and along Airport Road that could be attributed to the provision of commercial service.

Socioeconomic Environment, Environmental Justice, and Children’s Environmental Health and Safety Risks

Summary

There would not be any significant changes to the socioeconomic environment around the Airport as a result of either the Preferred or No Action Alternatives. The Proposed Action takes place entirely on airport property and does not require any changes or improvements to roads or intersections in the vicinity of the Airport. No relocations are required and no disproportionate impacts to children, or low income or minority population groups are anticipated.

Environmental Consequences of the Alternatives

Environmental Justice. The Environmental Justice evaluation helps to determine whether the proposed action results in disproportionate effects to special population groups. These special population groups include minority, special ethnicity or low-income neighborhoods. As stated previously, there is no land acquisition associated with the Preferred Alternative and the only off-airport effects of the Preferred Alternative are in the areas of surface transportation and noise. As presented in the
following section entitled *Surface Transportation*, no significant impacts are expected and no improvements are required for the roadway system as a result of the increased traffic attributable to the Preferred Alternative. Also, as presented in the previous section entitled *Noise and Land Use Compatibility*, the 65 DNL noise contour remains primarily on airport property and does not encompass any residential development. Therefore, neither the No Action Alternative nor the Preferred Alternative are expected to result in any significant negative (or otherwise disproportionate) impacts to any special population groups.

**Children’s Environmental Health and Safety Risks.** Agencies are encouraged to identify potential impacts and ensure that their policies, programs, activities and standards address disproportionate risks to children resulting from environmental health risks or safety risks. There are no schools within close proximity to the proposed project area. The closest school to the project area is a technical high school located less than one mile northeast of the terminal building. There is also an elementary school located less than one mile south of the terminal building just across the road from the airport property line. Both schools are located well outside the 65 DNL noise contour and would not receive significant noise impacts as a result of the Preferred Alternative. The No Action and the Preferred Alternatives are not expected to result in any environmental health risks or safety risks for children. No property acquisition is included in the Preferred Alternative and no households containing children would need to be relocated. The Preferred Alternative is also not expected to significantly affect products or substances that a child is likely to come in contact with or ingest, such as air, food, drinking water, recreational waters or soil. No disproportionate impacts on the children’s health, safety or general welfare are anticipated.

**Socioeconomic Environment.** The Preferred Alternative is not expected to significantly change the socioeconomic environment around the Airport. Temporarily, the construction would provide an increased number of jobs within the area, paired with the potential use of other local goods and services to complete the Preferred Alternative. A slight increase in business both at the Airport and in the vicinity of Airport Road can be expected due to the increase in vehicular traffic to and from the Airport as a result of the Preferred Alternative; however, no major shifts in public service demand or economic demand are anticipated.

The Preferred Alternative would not require any changes to traffic patterns because the roadway system and intersections have the capacity to support the increase in vehicular traffic as a result of the Preferred Alternative without significant reductions to levels of service as described in the following section entitled *Surface Transportation*.

There are no homes or businesses located on airport property or within the 65 DNL noise contours and no property acquisition is included in the Preferred Alternative.
Surface Transportation

Summary

The Preferred Alternative will not cause any Snohomish County arterials or any Washington State Department of Transportation (WSDOT), City of Mukilteo or City of Everett intersections to change from an acceptable to a deficient level of service. All of the Snohomish County arterials analyzed in the Traffic Impact Analysis (TIA) (Appendix F) are anticipated to operate at acceptable levels of service in the opening year (2013) and the year 2018 under the Preferred Alternative. The No Action Alternative would have no effect on surface transportation. The Preferred Alternative will, however, add trips to four intersections that are anticipated to operate at deficient levels of service, regardless of whether or not the Preferred Alternative is implemented. These intersections are SR-525 at Beverly Park Road (WSDOT intersection), SR-99 at Airport Road (City of Everett intersection), the I-5 northbound ramps at 128th Street SW/SR-96 (WSDOT intersection), and SR-525 at 84th Street SW (City of Mukilteo Intersection). The project’s impacts to the WSDOT intersections will be mitigated through the WSDOT traffic mitigation fees. The City of Everett has identified that capacity improvements for single-occupancy vehicles to the intersection of SR-99 at Airport Road are not practical due to the existing lane configuration and lack of right-of-way. The SR-525 at 84th Street SW intersection could operate at an acceptable level with improved signal timings and therefore, the impacts to this intersection will be mitigated through the City of Mukilteo traffic mitigation fees. The project’s impacts to the WSDOT intersections will be mitigated through the WSDOT mitigation fees in accordance with the interlocal agreement between Snohomish County and WSDOT.

Environmental Consequences of the Alternatives

The Preferred Alternative is proposed to consist of 20 daily aircraft operations by Horizon Air and 20 weekly aircraft operations by Allegiant Air, with each operation being either an arrival (landing) or a departure (takeoff). These operations are anticipated to result in 956 average daily vehicle trips including 212 peak-hour vehicle trips added to the surrounding roadways and intersections. The trip generation calculations were performed using data from various sources, including the airlines and correlation with Bellingham International Airport and the Institute of Transportation Engineers. The peak-hour trip generation is conservative since it has been assumed that one arrival and one departure for each airline will occur in one hour and all passengers will arrive and depart Paine Field in that hour.

The trips from the project were distributed onto the surrounding road system based on regional data provided by the Puget Sound Regional Council area model, existing traffic patterns from the local area, other approved distributions from the local area and input from Snohomish County and City of Everett staff. The project may change some travel patterns in the Puget Sound region since it is anticipated that the
The project may divert some vehicle trips to Paine Field from Sea-Tac International Airport and Bellingham International Airport. This change in regional travel patterns could reduce the number of vehicles at the intersections and along the arterials analyzed in this report. However, a reduction has not been included in the analysis. The distribution of trips therefore assumes all of the trips generated by the project are new. Scoping discussions were held with staff at Snohomish County, the Washington State Department of Transportation (WSDOT), the City of Mukilteo and the City of Everett. These scoping discussions were performed to evaluate the trip generation and trip distribution and determine the scope of analysis required for the project. There were a total of three Snohomish County arterial units that meet the threshold for analysis and 11 WSDOT, City of Mukilteo and City of Everett intersections that were requested for analysis and meet the threshold for analysis. All of these arterials and intersections were analyzed for level of service. The level of service analysis was conducted for existing conditions with and without the project in the year 2013, opening operations, and with and without the project in the year 2018, full operation. The following Snohomish County arterials units have been analyzed in both directions as part of this report:

- #227 – Beverly Park Road (PM peak-hour)
- #228 – Airport Road/128th Street SW (AM and PM peak-hours)
- #231 – Airport Road (AM and PM peak-hours)

The following WSDOT intersections, designated by their associated study intersection numbers, have been analyzed as part of this report:

1. SR-525 at Beverly Park Road
11. I-5 Southbound Ramps at 128th Street SW
17. I-5 Northbound Ramps at 128th Street SW
20. Airport Road at SR-526 Westbound Ramps

The following City of Mukilteo intersections, designated by their associated study intersection numbers, have been analyzed as part of this report:

21. SR-526/Paine Field Boulevard at 84th Street SW
22. 44th Avenue W at 84th Street SW
23. SR-525 at 84th Street SW

The following City of Everett intersections, designated by their associated study intersection numbers, have been analyzed as part of this report:

5. Beverly Park Road at Airport Road
6. SR-99 at Airport Road
18. Airport Road at 112th Street SW
19. Airport Road at Casino Road
24. SR-526 Westbound Ramps at Evergreen Way
The project will not cause any Snohomish County arterials or any WSDOT, City of Mukilteo or City of Everett intersections to change from an acceptable to a deficient level of service. All of the Snohomish County arterials analyzed in this report are anticipated to operate at acceptable levels of service in the opening year and the year 2018 with full operation of the project.

The project will, however, add trips to four intersections that are anticipated to operate at deficient levels of service, whether or not the proposed project is implemented. These intersections are SR-525 at Beverly Park Road (WSDOT intersection), SR-99 at Airport Road (City of Everett intersection), the I-5 northbound ramps at 128th Street SW/SR-96 (WSDOT intersection) and SR-525 at 84th Street SW(City of Mukilteo Intersection). The project’s impacts to the WSDOT intersections will be mitigated through the WSDOT traffic mitigation fees. The City of Everett has identified that capacity improvements for single-occupancy vehicles to the intersection of SR-99 at Airport Road are not practical due to the existing lane configuration and lack of right-of-way. The SR-525 at 84th Street SW intersection could operate at an acceptable level with improved signal timings and therefore the impacts to this intersection will be mitigated through the City of Mukilteo traffic mitigation fees.

The Washington Growth Management Act (GMA) and Revised Code of Washington (RCW) 82.02.050(2) authorize local jurisdictions to establish proportionate share traffic mitigation fees in order to fund capital facilities, such as roads and intersections. Snohomish County Code (SCC) 30.66B applies that authority to developments in order to fund road improvements that would accommodate development. Additionally, through SCC 30.66B and the State Environmental Policy Act (SEPA), Snohomish County has established reciprocal traffic mitigation fee interlocal agreements with WSDOT and the City of Mukilteo that are within the influence area of the project. Based on the trip generation and identified codes the total traffic mitigation fees identified in this report for payment to Snohomish County, WSDOT, and the City of Mukilteo for the project is $333,262.85. The Snohomish County mitigation fees are $206,161.40, the WSDOT mitigation fees are $32,695.20 and the City of Mukilteo mitigation fees are $94,406.25.

Also, a noise analysis for vehicle traffic is not required under NEPA or CEQ regulations based on the increase in vehicle traffic trips anticipated as a result of the project. The project is only anticipated to increase traffic volumes in the vicinity of the Airport by approximately 2 percent. In terms of change in noise, this would result in an increase in DNL noise level of less than 0.1 dBA.
Water Quality

Summary

Neither the No Action nor the Preferred Alternative would significantly impact the water quality of surface water resources, stormwater runoff, sanitary wastewater, or groundwater resources. The Preferred alternative includes only a very small increase in impervious surface at the Airport as most of the actual development will be on existing paved surface.

Environmental Consequences of the Alternatives

Water quality considerations related to airport development and operation often include increased surface runoff, erosion and pollution from fuel, oil, solvents and deicing fluids. Potential pollution could come from petroleum products spilled on the surface and carried through drainage channels off of the Airport. State and Federal laws and regulations have been established that include standards for above ground and underground storage tanks, leak detection and overflow protection.

The No Action Alternative would not impact water quality. Snohomish County Airport/Paine Field currently operates under a Master Drainage Plan which includes stormwater detention and water quality requirements. According to the Master Drainage Plan, all runoff from the Airport is detained for stream protection standards as set forth in the 1992 Department of Energy (DOE) Manual and the Snohomish County Addendum to that manual. The Airport also operates under Permit #SO3000428C issued to Snohomish County under the State of Washington’s Industrial Stormwater General Permit.

The Airport is located on a topographic high and as such, contains headwater tributary areas to several watersheds including Japanese Gulch, Smugglers Gulch, and Big Gulch, which drain directly to Puget Sound and Swamp Creek which drains to Lake Washington. Wetlands present on airport property include two large wetland areas and a wetland mitigation bank. One of the large wetland areas, Wetland 25, is a permitted stormwater detention facility. Of the Airport’s 1,252 acres, approximately 41 percent is covered with impervious areas. Only a small amount of additional impervious area (approximately 1,000 square feet) is anticipated as a result of the Preferred Alternative. As such, no significant impacts to water quality are anticipated.

Commercial aircraft maintenance and washing activities are not expected as a result of the Preferred Alternative. All commercial aircraft requiring deicing will use the approved deicing pad located at Taxiway “A1”. This deicing pad drains to the Boeing Company sanitary sewer system and outfalls to the City of Everett Treatment Plant. The closest known aquifer is located approximately 220-feet below the Airport and infiltration or other impacts to this aquifer are considered unlikely.
Wetlands

Summary

Implementation of the Preferred Alternative is not expected to impact any wetland areas or the wetland mitigation bank.

Environmental Consequences of the Alternatives

According to the Master Drainage Plan, there are two large wetland areas, one wetland mitigation bank and a number of small wetlands located on airport property. Wetlands on Snohomish County Airport/Paine Field property have been impacted by fill, clearing and/or surrounding land use over the past several years. In 2007 the Airport completed a critical areas study to locate and delineate wetlands using the federal and state approved methodology for wetland delineation, to describe and classify any delineated wetland areas, to flag the ordinary high water mark (OHWM) of any streams, to discuss the regulatory implications of these findings and to assess wetland and buffer function. The three areas included in the 2007 Critical Areas Study were the entire west side of the Airport (Paine Field West), the portion of land between Airport Road and Runway 16L/34R and the Navy housing area on the south side of the Airport. The closest wetland to the proposed terminal expansion is Wetland A; however, the implementation of the Preferred Alternative is not expected to result in impacts to this, or any, wetland. Wetland A is shown in Figure D8, Snohomish County Airport Terminal Area Wetlands. The Critical Areas Study identifies no wetlands that would be impacted by either the No Action or the Preferred Alternative.
Cumulative Impacts

Summary

As shown in the other discussions in the Environmental Consequences section, the proposed actions are not expected to result in significant impacts. A review was then conducted of the effects that would occur in combination with past, present, and other future actions in the airport vicinity. Implementation of the Preferred Alternative would not result in significant changes to general aviation, air taxi, or military related aircraft operations at the Airport. Transportation Security Administration (TSA) rules will limit access to the airfield area near the terminal building to ensure commercial air travel security.

As described in the Surface Traffic section, regional population and economic growth has and is expected to continue to affect surface traffic conditions, requiring improvements in area roads to efficiency accommodate this growth. The Preferred Alternative would result in an increase in vehicle trips on various roadway segments and intersections due to the proposed commercial air service. However, this increase combined with other roadway improvements and area developments is not expected to create a significant traffic impact as defined by the level-of-service metrics.

The anticipated economic growth in the form of planned developments may produce cumulative socioeconomic impacts which are expected to be positive.

The increased aircraft operations would result in a slight increase in noise. However, the past, present, and reasonably foreseeable noise conditions combined with the proposed air service will not create a significant increase in cumulative noise exposure in the airport vicinity.

The Preferred Alternative would result in an increase in air carrier operations at the Airport; however, implementation of the Preferred Alternative would not cumulatively or significantly increase air emissions in the area.

Finally, the Preferred Alternative will not have a cumulative significant impact on historic, biotic, hydrological, or other environmental significance. Therefore, neither the No Action nor the Preferred Alternative would result in any significant adverse impacts at or in the vicinity of the Snohomish County Airport/Paine Field when considered cumulatively with other past, present or reasonably foreseeable projects.

Environmental Consequences of the Alternatives

Cumulative impacts are those impacts on the environment that result from the incremental impact of the action added to other past, present, and reasonably foreseeable future actions, regardless of what agency, federal or non-federal or person undertakes such other actions. Cumulative impacts can result from actions
which are individually minor, but collectively significant over a period of time. Because project related off-airport impacts are only anticipated related to surface transportation, socioeconomic environment, and noise, this section will consider the potential cumulative impacts of other projects when combined with the off-airport surface transportation, socioeconomic environment, and noise impacts expected as a result of the Preferred Alternative.

**Past and Present On-Airport Projects.** On-airport, the substantial majority of past and present airport development has occurred in response to the needs of general aviation and The Boeing Company, and the on-airport aviation related tenants that support Boeing. Examples of past and present on-Airport development include:

- Runway 16R/34L and Taxiway “A” rehabilitation Phase 1.
- Taxiway “K1 and “K” North Construction
- Boeing Ramp Expansion (adjacent to the Airport).
- Various tenant hangar rehabilitation and reconstruction.
- Various industrial tenant new construction.

**Reasonably Foreseeable Future On-Airport Projects.** Future projects are expected to continue to occur in response to the needs of general aviation and The Boeing Company and the on-airport tenants that support Boeing. Reasonably foreseeable future projects could include:

- Development of the on-airport area known as the Northwest Territories (Taxiway K South, Service Roads, hangars, etc) in support of The Boeing Company
- Installation and upgrade of navigational aids.
- Construction of various taxiway and aircraft apron improvements.
- Runway 16R/34L and 16L/34R rehabilitation.
- Construction of aircraft hangars and support buildings.
- Improvements to the passenger terminal building.
- Maintenance and improvements to utilities.

Each of the above actions will be the subject of separate federal actions. However, based on what is known about these projects, none of the proposed on-airport actions are expected to produce significant adverse effects.

**Past, Present and Reasonability Foreseeable Off-Airport Projects.** Further infill development is expected in the communities that surround the Airport. However, no major planned development is expected in the immediate airport vicinity. Some of this development, including the Mukilteo Town Center, the Center 44 Commercial Development and the Metropolitan Commerce Center are discussed below. General planned roadway improvements in the airport vicinity include: various intersection improvements designed to enhance safety and traffic operations and various pedestrian facility improvements including sidewalk improvements. The
only major road widening project in the vicinity of the Airport is the Ash Way Corridor Improvements (2012 to 2014) which are designed to widen Ash Way from 148 Street SW to Gibson Road, approximately two miles southeast of the Preferred Alternative project area.

Three notable regional/community developments are expected in the airport environs:

- The Mukilteo Town Center is a proposed commercial development anticipated to consist of industrial, retail, and office uses. The uses include industrial park, hotel, day-care, general office, specialty retail, fast-food with drive-through, automobile care center, and gas station with convenience market and car wash. The development is anticipated to include approximately 145,000 SF square feet of buildings. It will be located on the west side of Mukilteo Speedway (SR-525), between Paine Field Boulevard and Harbour Place.

- The Center 44 development is anticipated to include offices, retail and industrial uses in 4 buildings, totaling approximately 108,000 square feet. The industrial uses will include warehouse, manufacturing and general light industrial uses. The development is located east of 44th Avenue W between 80th Street SW and 84th Street SW in City of Mukilteo.

- The Metropolitan Commerce Center is a proposed commercial development that has been analyzed for 915,000 square feet of warehouse and industrial park uses with construction and occupancy by the year 2015. The site is currently vacant. The uses are anticipated to nearly all be warehouse; however, the pre-application with the City of Everett and Mukilteo indicated that this site may develop 75% warehouse (686,250 SF) and 25% industrial park (228,750 SF).

Off-airport development is expected to occur, in response to population growth and increased economic activity in the airport vicinity increasing the development density of the area. Such effects are expected to increase ambient surface traffic congestion, noise, air emissions, and economic activity. State and regional plans, such as the Regional Transportation Plan and the State Implementation Plan, are in place to reduce significant adverse effects from off-airport development.

**Cumulative Impacts.** As noted in the following paragraphs, the proposed actions are not expected to produce significant cumulative impacts. No significant adverse action-related effects have been identified. When adding the anticipated action-related impacts to the effects of past, present, and reasonably foreseeable actions, the cumulative effects are not expected to be significant. The following resource categories were considered in more detail because of the potential for cumulative impacts of the Preferred Alternative and other on-going development: Surface Transportation, Socioeconomic Environment, Noise and Compatible Land Use, and Air Quality.
• **Surface Transportation.** Future roadway improvements in the vicinity of Paine Field and their cumulative impacts were considered in the Traffic Impact Analysis (Appendix F). As discussed in Section 5 and Table 7 of the TIA, future regional/community development were considered for the potential for cumulative impacts when combined with the Preferred Alternative. As that analysis shows, no significant cumulative impacts are expected.

• **Socioeconomic Environment.** As discussed in the section entitled Socioeconomic Environment, Environmental Justice and Children’s Environmental Health and Safety Risks, the Preferred Alternative would result in a temporary increase in a number of jobs due to construction and would likely accelerate economic growth at the Airport and in the vicinity of Airport Road. A slight increase in permanent employment would occur from the start of commercial airline service; approximately 50 new permanent employees are expected at startup. Such an increase is not significant for the area and is not expected to induce a significant increase in population or demand for workforce housing. Therefore, the proposed action would not result in significant additional changes to planned development in the area.

Planned regional/community development is expected to improve socioeconomic conditions in the area. However, as stated previously, the anticipated increases in traffic and socio-economic conditions are expected to not be significant.

• **Noise and Compatible Land Use.** When considered in combination with past, present and foreseeable actions that have occurred on a national and local level, aircraft noise exposure has continued to decline since the advent and introduction of commercial jet service in the early 1960s. The noise reduction effects associated with the decreasing noise contours are associated with the establishment of Federal Aviation Regulations 36 and 91 which required first, the phase-out of Stage 1 aircraft by 1985, and then the phase-out of Stage 2 aircraft weighting more than 75,000 pounds by year 2000. The International Civil Aviation Organization, the group that identifies industry wide source noise controls, has adopted a Chapter 4 (called Stage 4 in the U.S.) noise standard that is expected to result in additional future reductions in aircraft noise exposure. Commencing 2006, the Stage 4 standard applied to newly certificated aircraft and to Stage 3 aircraft for which re-certification is requested. As a result, it is expected that further reductions would be made in the individual noise profiles associated with aircraft that use the Airport.

As stated in the previous Environmental Consequences section entitled Noise, there are no residences or noise-sensitive land uses within the 65 DNL contours and no property acquisition is planned as part of the Preferred Alternative.
None of the previously listed on- or off-airport projects are expected to cumulatively add to aircraft generated noise to produce a significant impact on noise sensitive land uses. Therefore no significant adverse cumulative aircraft noise impacts are expected.

- **Air Quality.** As noted in the Air Quality section, the proposed actions are expected to generate air emissions that would not occur except for the proposed actions. In the past, regional emissions were greater than presently occurring or those that are projected to occur in the region, as exceedances of the ozone and carbon monoxide National Ambient Air Quality Standards (NAAQS) occurred. Presently, the area is maintenance for carbon monoxide and attainment for all other pollutants. The slight increase in air emissions due to the proposed actions, in combination with other economic and community based development is not expected to result in exceedances of the NAAQS. Thus, no cumulative significant adverse air quality impacts are expected from the proposed actions.

As noted in the prior paragraphs, the proposed actions are not expected to produce significant cumulative impacts. No significant adverse action-related effects have been identified. When adding the anticipated action-related impacts to the effects of past, present, and reasonably foreseeable actions, the cumulative effects are not expected to be significant.

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**Mitigation**

This section outlines the potential mitigation measures associate with the Preferred Alternative. According to CEQ guidance, mitigation is an important mechanism used by federal agencies to avoid, minimize, or compensate for potential adverse environmental impacts associated with their actions. These mitigation measures are described in the following sections and include Best Management practices and other avoidance recommendations, as well as mitigation measures based on County requirements.

As described in CEQ guidance, mitigation includes:

- Avoiding an impact by not taking a certain action or parts of an action;
- Minimizing an impact by limiting the degree or magnitude of the action and its implementation
- Rectifying an impact by repairing, rehabilitating, or restoring the affected environment
- Reducing or eliminating an impact over time, through preservation and maintenance operations during the life of the action; and
- Compensating for an impact by replacing or providing substitute resources or environments.
Two other types of mitigation, rehabilitation (i.e., impact rectification) and compensation are also important to consider. However, these methods of mitigation are only required for significant impacts that cannot be avoided as defined by FAA Order 1050.1E. It is important to note that no significant impacts based on federal thresholds of significance have been identified. Therefore, the mitigation considered within this chapter relates to the measures set to avoid or minimize potential impacts, as well as mitigation measures for non-federal thresholds related to County-required traffic mitigation.

This section of the Environmental Consequences chapter outlines the process used to avoid, reduce, and minimize impacts to the environment. The first section describes the methods used to prevent and avoid impacts altogether. This includes the examination of alternatives, and avoidance/minimization techniques associated with the alternatives planning analysis. The second section describes the minimization measures to avoid or prevent impacts that could occur as a result of the proposed action. These include the best management practices outlined in the pertinent resource sections and summarized in this chapter. The final section addresses mitigation measures for those resources with required mitigation under County regulations.

Minimization of impacts - Best Management Practices

Separate from the selection of alternatives, impacts normally caused by implementation of the Preferred Alternative, can also be minimized or avoided through Best Management Practices. Although there would not be any significant impacts related to federally dictated thresholds of significance as a result of the Preferred Alternative, some impacts could occur, mostly related to construction activities. The following or similar Best Management Practices (BMPs) should be considered during construction. BMPs are activities relatively common in construction and can help prevent pollution, minimize environmental harm, and assure that appropriate response action is taken if unacceptable environmental impacts occur, such as during a fuel spill. This list will not be finalized until a construction management plan is prepared for the project permits.

- Contractors are required to comply with all regulations including, FAA guidance contained in FAA AC 150/5370-10A, Standards for Specifying Construction of Airports, AC 150/5320-15 (including Change #1) Management of Airport Industrial Waste, AC 150/5320-5B, Airport Drainage, and Item P-156, Temporary Air and Water Pollution, Soil Erosion and Siltation Control;
- Odors from vehicle emissions during construction will be controlled by muffler systems on the vehicles.
- Dust from construction activities will be controlled by the use of a water truck.
- The work will comply with the requirements of the Puget Sound Clean Air Agency and will use industry standard best management practices.
- Equipment will be turned off when idling.
- Construction equipment maintenance would be performed in a designated area and include control measures, such as drip pans to contain petroleum products.
• Any hazardous materials utilized during construction or operation of the proposed modular terminal expansion would be done according to applicable regulations and the person or entity responsible for handling the hazardous material will take immediate corrective action, including notifying the National Response Center, if there is an accidental release or other incident that could endanger people or environmental resources.

• All construction activities at the Airport are covered by the current NPDES stormwater permit. The contractor would be required to follow the Best Management Practices to prevent water pollution due to any construction work.

Mitigation of Impacts – Surface Transportation

“Compensatory” mitigation is a method for offsetting impacts that cannot be avoided or minimized under the Preferred Alternative. These offsets may take many forms, such as replacement of habitat types lost, preservation of other (typically similar) habitats at risk, or even funding to support other local or area mitigation needs. While neither the No Action, nor the Preferred Alternative are expected to result in significant impacts, the additional traffic as a result of the Preferred Alternative does require mitigation pursuant to state and local requirements. The Washington Growth Management Act (GMA) and Revised Code of Washington (RCW) 82.02.050(2) authorize local jurisdictions to establish proportionate share traffic mitigation fees in order to fund capital facilities, such as roads and intersections. Snohomish County Code (SCC) 30.66B applies that authority to developments in order to fund road improvements that would accommodate development. Additionally, through SCC 30.66B and the State Environmental Policy Act (SEPA), Snohomish County has established reciprocal traffic mitigation fee interlocal agreements with WSDOT and the City of Mukilteo that are within the influence area of the Preferred Alternative. Based on the trip generation and identified codes the total traffic mitigation fees identified in the TIA for payment to Snohomish County, WSDOT and the City of Mukilteo for the Preferred Alternative is $333,262.85. The Snohomish County mitigation fees are $206,161.40, the WSDOT mitigation fees are $32,695.20 and the City of Mukilteo mitigation fees are $94,406.25.