Newberg Dundee Bypass Tier 2 Draft Environmental Impact Statement

June 2010
Federal Aid Numbers: S091 (018), S01W (036) and S091 (015)

Tier 2 Draft Environmental Impact Statement
FHWA-OR-EIS-10-01-D

Submitted pursuant to 42 U.S.C. 4332(2)(c) & 49 U.S.C., Sec. 303
U.S. Department of Transportation, Federal Highway Administration (FHWA), and
Oregon Department of Transportation (ODOT)

5-26-10
Date

Jane Lee, Region Manager, ODOT Region 2,

5-26-2010
Date

Phillip A. Ditzler, Division Administrator, Federal Highway Administration

The following persons may be contacted for further information:

Tim Potter, P.E.
Area 3 Manager, Region 2
Oregon Department of Transportation
Mid-Willamette Valley Area
885 Airport Road SE, Bldg. P
Salem, OR 97301-4788
(503) 986-2764
james.t.potter@odot.state.or.us

Michelle Eraut
Environmental Program Manager
Federal Highway Administration
530 Center Street NE, Suite 100
Salem, OR 97301
(503) 587-4716
Michelle.Eraut@odot.gov

Abstract: FHWA and ODOT propose building an 11-mile, four-travel lane, access-controlled expressway (Bypass) with four interchanges and related local circulation changes to reduce congestion on Oregon 99W through Newberg and Dundee in Yamhill County, Oregon. The FHWA and ODOT are joint lead agencies. The U.S. Army Corps of Engineers, the Federal Aviation Administration, and the U.S. Fish and Wildlife Agency are Cooperating Agencies. The project is located along the south sides of Newberg and Dundee, from the Oregon 99W/ Oregon 18 junction near Dayton (Oregon 18 milepost 51.6) to past Rex Hill, east of Newberg (Oregon 99W milepost 19.6). The proposed project is following a tiered NEPA process. On August 26, 2005, FHWA issued a Record of Decision (ROD) on the Tier 1 Final EIS that approved the Bypass corridor (Corridor), the number and location of interchanges, and a general bypass configuration. Following this ROD, ODOT and FHWA started the Tier 2 process to study an alignment for the Bypass within the Corridor and related local circulation improvements. This Tier 2 DEIS evaluates a Build Alternative and a No Build Alternative. The Build Alternative includes options that are available to address the roadway, interchanges, and local circulation. A preferred Build Alternative is recommended for those areas with multiple design and local road circulation options.

Major expected impacts include the conversion of about 446-461 acres to highway use; potentially 95-103 residential and 26 business displacements; an estimated 5.3 acres of wetland impacts; an increase of 10 to 23 decibels of noise to residential areas adjacent to the Bypass in some areas; modification and/or new Oregon land use goal exceptions for impacts to farm land; displacement of between 77 and 80 acres of wildlife habitat; an increase of up to 1 7/4 acres of pavement to the watershed area, and a visual impact due a new facility in the rural area. Other impacts would involve the costs and disruption to utilities, the risk of encountering archaeological resources and hazardous materials, and geological issues related to excavation and construction of the project. The project includes proposed mitigation. Section 4(f) de minimis findings are proposed for the Chehalis Park and Recreation District golf course and one historic resource, the SP Newsprint Paper Mill.

Beneficial impacts of the proposed project include better traffic flows, reduced congestion, and safer traffic operations on Oregon 99W through Newberg and Dundee. Current travel time for the 11-mile route is about 30 minutes and is forecast to increase to 50 minutes by 2030 without the project. Forecasted travel time on the Bypass is 12 minutes, and downtown traffic on Oregon 99W is forecast for a 23 percent reduction in Newberg and 68 percent reduction in Dundee in 2030. These lower traffic levels would make these downtowns more pedestrian friendly and safer.

Controversial issues include the cost of the project and funding, noise considerations, and loss of farmland. The primary federal actions required are federal agency permits/approvals such as the Federal Clean Water Act Section 404 permit and Section 7 Consultation with the National Marine Fisheries Service and US Fish and Wildlife Service.

Total project costs are estimated to be $753-883 million including right-of-way and construction costs, with an estimated construction start date of 2015. The proposed project is included in the Oregon Jobs and Transportation Act (HB 2001) which proposes partial funding for the project. The full project is not funded for construction. Funding availability will determine if the project is completed in phases or with full construction. Full construction would take 4 to 5 years.
June 2010

TO THOSE WHO HAVE EXPRESSED INTEREST IN THE

Newberg Dundee Bypass
OR 99W, Pacific Highway West
Yamhill County, Oregon
Key No. 09320
Federal Aid Numbers S091(018), S01W(036) and S091(015)

Tier 2 Draft Environmental Impact Statement
FHWA-OR-EIS-10-01-D

Thank you for your interest in the proposed Newberg Dundee Bypass (proposed project). The Federal Highway Administration (FHWA) and Oregon Department of Transportation (ODOT) have completed the Tier 2 Draft Environmental Impact Statement (Tier 2 DEIS) for this proposed project. This DEIS describes expected environmental impacts and proposed mitigation measures, as well as proposed Section 4(f) de minimis findings for the Chehalem Park and Recreation District-owned Chehalem Glenn Golf Course and one historic resource, the SP Newsprint Paper Mill.

In accordance with 23 CFR 771.123(i), comments shall be submitted in writing to the applicant (ODOT) or the Administration within 45 days of the availability of the DEIS unless the Administration determines, for good cause, that a different period is warranted. Thus we request your reply within 45 days of the date at the top of this letter. If no comments are received, it will be assumed that you do not wish to comment on this EIS.

Please mail or email your comments to:

Tim Potter, P.E., Area 3 Manager, Region 2
Oregon Department of Transportation
Mid-Willamette Valley Area
885 Airport Road SE, Bldg. P
Salem, OR 97301-4788
james.t.potter@odot.state.or.us

A public hearing in accordance with 23 CFR 771.111(h) will be held for this proposed project. The location, date, and time for the public hearing are shown on the cover of this document. An Open House, displaying maps and pertinent information to answer your questions about the EIS, will accompany the public hearing. Opportunities for formal testimony (oral and/or written) will be provided. Although you are encouraged to attend the public hearing, it is not required. You may submit your comments directly to ODOT as indicated above.

If you have questions or need additional information concerning the proposed project, please contact Tim Potter, Area 3 Manager, Region 2, ODOT at (503) 986-2764.

Thank you for your participation.

Tim Potter, P.E.,
Area 3 Manager, Region 2
Oregon Department of Transportation
Notice of Availability

PROJECT DESCRIPTION

The Oregon Department of Transportation (ODOT) and the Federal Highway Administration (FHWA) propose building the Newberg Dundee Bypass (proposed project), an 11-mile, access-controlled expressway around the cities of Newberg and Dundee in Yamhill County, Oregon. The proposed project is being developed through a two-tiered National Environmental Policy Act (NEPA) process. Tier 1 selected the overall corridor for the Bypass and was approved in 2005. This Tier 2 DEIS is now evaluating design concepts within that overall corridor. The proposed project includes the Bypass roadway and four interchanges, as well as changes to local roads and streets that need to be relocated for the Bypass.

DOCUMENT AVAILABILITY

This Tier 2 DEIS and Executive Summary are available in the following formats:

- Electronically at the project website at: 
- A CD or hard copy may be requested by contacting:

  Tim Potter, Area 3 Manager, Region 2
  Oregon Department of Transportation
  Mid-Willamette Valley Area
  886 Airport Road SE, Bldg. P
  Salem, OR 97301-4788
  james.t.potter@odot.state.or.us
  Phone: (503) 986-2764

The CD or printed copy of the Executive Summary (the Executive Summary is available in English and Spanish) and the Tier 2 DEIS are available at no charge. Printed copies of the Tier 2 DEIS are available for review at the following locations:

Newberg City Hall
414 E 1st Street
Newberg, OR 97132
(503) 538-9421

Chehalem Park and Recreation District
(CPRD) Community Center
1802 Haworth Avenue
Newberg, OR 97132
(503) 537-2909

George Fox University Library
416 N Meridian
Newberg, OR 97132
(503) 538-8383

Dundee City Hall
620 SE 5th Street
Dundee, OR 97115
(503) 538-3922

Newberg Public Library
503 E Hancock Street
Newberg, OR 97132
(503) 538-7323

Dayton City Hall
416 Ferry Street
Dayton, OR 97114
(503) 864-2221
COMMENT PERIOD

The comments on this Tier 2 DEIS must be received within 45 days of the release of this DEIS.

REVIEW COMMENTS AND CONTACT INFORMATION

Written or email comments can be sent to:

Tim Potter, Area 3 Manager, Region 2
Oregon Department of Transportation
Mid-Willamette Valley Area
885 Airport Road SE, Bldg. P
Salem, OR 97301-4788
james.t.potter@odot.state.or.us

PUBLIC HEARING

A public hearing will be held to provide information on the proposed project and accept comments on this Tier 2 DEIS, as indicated on the cover of this document.

Comments on this Tier 2 DEIS will be evaluated in arriving at a decision on the proposed project. Following this comment period, a Preferred Alternative will be selected and carried into the Tier 2 Final Environmental Impact Statement (FEIS). The FEIS is anticipated to be published in late 2010. Following the Tier 2 FEIS, FHWA will issue a Record of Decision.
TABLE OF CONTENTS

EXECUTIVE SUMMARY ........................................................................................................... ES-1

INTRODUCTION ................................................................................................................ ES-1
WHAT IS THE PURPOSE AND NEED? ................................................................................ ES-3
PROJECT HISTORY ............................................................................................................. ES-4
DECISION AUTHORITY ..................................................................................................... ES-4
THE PROPOSED PROJECT .............................................................................................. ES-4
HOW WAS THE BUILD ALTERNATIVE DEVELOPED? ..................................................... ES-5
WHAT ARE THE TIER 2 DEIS ALTERNATIVES AND CHOICES? ................................ ES-6
WHAT ARE THE PROPOSED PROJECT’S POTENTIAL IMPACTS? ................................ ES-19
CONTROVERSIAL ISSUES .............................................................................................. ES-34
BENEFITS ....................................................................................................................... ES-34
ANTICIPATED PERMITS AND APPROVALS .................................................................... ES-35
PUBLIC AND AGENCY COORDINATION ........................................................................ ES-37
TIER 2 DEIS ORGANIZATION ......................................................................................... ES-37
ODOT’S RECOMMENDED ALTERNATIVE ................................................................... ES-38
HOW WILL THE PREFERRED ALTERNATIVE BE SELECTED? ..................................... ES-38
HOW CAN I COMMENT ON THE TIER 2 DEIS? .............................................................. ES-39

CHAPTER 1. PROJECT PURPOSE AND NEED ................................................................. 1-1
1.1 THE PROPOSED PROJECT ......................................................................................... 1-1
1.2 PROJECT BACKGROUND AND NEPA PROCESS .................................................... 1-3
1.3 WHAT IS THE TIER 2 DEIS? ................................................................................... 1-3
1.4 LEAD AGENCIES FOR THE TIER 2 NEPA PROCESS............................................. 1-5
1.5 HOW PEOPLE CAN MAKE THEIR VIEWS KNOWN TO THE DECISION-MAKERS ......................................................................................................................... 1-9

CHAPTER 2. ALTERNATIVES .......................................................................................... 2-1
2.1 INTRODUCTION ........................................................................................................ 2-1
2.2 TIER 2 DEIS ALTERNATIVES AND CHOICES ....................................................... 2-3
2.3 FUNDING AND COST ESTIMATES .......................................................................... 2-26
2.4 ODOT’S RECOMMENDED ALTERNATIVE ............................................................. 2-28
2.5 DESIGN OPTIONS CONSIDERED BUT WITHDRAWN ......................................... 2-31

CHAPTER 3. AFFECTED ENVIRONMENT, IMPACTS, AND MITIGATION ............ 3-1
3.1 TRANSPORTATION ................................................................................................ 3-5
3.2 LAND USE ............................................................................................................... 3-25
3.3 RIGHT-OF-WAY ..................................................................................................... 3-65
3.4 SOCIOECONOMICS .............................................................................................. 3-113
TABLE OF CONTENTS (Continued)

3.5 ENVIRONMENTAL JUSTICE ........................................................................................................ 3-143
3.6 PARKS AND RECREATION ......................................................................................................... 3-159
3.7 CULTURAL RESOURCES ......................................................................................................... 3-185
3.8 UTILITIES .................................................................................................................................. 3-203
3.9 AIR QUALITY ............................................................................................................................ 3-207
3.10 NOISE AND VIBRATION ......................................................................................................... 3-213
3.11 VISUAL RESOURCES .............................................................................................................. 3-255
3.12 WATER QUALITY AND HYDROLOGY .................................................................................... 3-291
3.13 WETLANDS ................................................................................................................................ 3-317
3.14 BIOLOGICAL RESOURCES .................................................................................................... 3-335
3.15 GEOTECHNICAL ..................................................................................................................... 3-367
3.16 HAZARDOUS MATERIALS .................................................................................................... 3-381
3.17 ENERGY ................................................................................................................................... 3-399
3.18 CLIMATE CHANGE ................................................................................................................ 3-405

CHAPTER 4. SHORT-TERM USE AND LONG-TERM PRODUCTIVITY/IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES...4-1
4.1 SHORT-TERM USE AND LONG-TERM PRODUCTIVITY ............................................................ 4-1
4.2 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES .................................... 4-3

CHAPTER 5. PUBLIC AND AGENCY INVOLVEMENT ................................................................. 5-1
5.1 APPROACH ............................................................................................................................... 5-1
5.2 NEPA SCOPING ......................................................................................................................... 5-5
5.3 COMPLIANCE WITH SAFETEA-LU SECTION 6002 ................................................................... 5-7
5.4 PUBLIC INVOLVEMENT ............................................................................................................ 5-10
5.5 AGENCY INVOLVEMENT .......................................................................................................... 5-12
5.6 ADVISORY COMMITTEES ........................................................................................................ 5-13
5.7 ENVIRONMENTAL JUSTICE OUTREACH ............................................................................... 5-14
5.8 TRIBAL CONSULTATION ......................................................................................................... 5-15

CHAPTER 6. PERMITS AND APPROVALS ............................................................................... 6-1
6.1 FEDERAL ................................................................................................................................... 6-1
6.2 STATE ....................................................................................................................................... 6-3
6.3 LOCAL JURISDICTIONS ............................................................................................................. 6-4
6.4 COUNTY ................................................................................................................................... 6-4

INDEX ........................................................................................................................................... i
# TABLE OF CONTENTS (Continued)

## LIST OF TABLES

| Table ES-1. Summary of Major Impacts and Differences Between Design Options by Segment and Resource | ES-15 |
| Table ES-2. Comparison of Major Differences Between Local Circulation Options | ES-19 |
| Table ES-3. Built Environment Impacts and Differences by Segment | ES-20 |
| Table ES-4. Summary of Total Estimated Noise Impacts by Segment and Design Option | ES-27 |
| Table ES-5. Natural Environment Impacts and Differences by Segment | ES-30 |
| Table 2.3-1. Build Alternative By Segment and Design Option Cost Estimates | 2-27 |
| Table 2.3-2. Local Circulation Options Cost Estimates | 2-28 |
| Table 3.1-1. Select Study Intersections Not Meeting OHP Mobility Standards | 3-12 |
| Table 3.1-2. Friday PM Peak-Hour Travel Time Results | 3-13 |
| Table 3.1-3. Existing Oregon 99W State Highway Section Crash Rates 2003-2007 | 3-13 |
| Table 3.1-4. Summary of Fatal Crashes 2003-2007 | 3-14 |
| Table 3.1-5. Summary of 2005 and 2030 ADT | 3-15 |
| Table 3.1-6. Estimated 2030 Bypass and Ramp v/c Ratios by Segment | 3-17 |
| Table 3.1-7. Oregon 99W Corridor PM Travel Times | 3-17 |
| Table 3.1-8. Intersections Not Meeting OHP Mobility Standards in 2030 Under the No Build Alternative | 3-18 |
| Table 3.1-9. 2030 Freight Traffic Impacts on Oregon 99W | 3-20 |
| Table 3.1-10. Intersections on Oregon 99W Not Meeting OHP Mobility Standards in 2030 Under the Build Alternative and Potential Improvements | 3-22 |
| Table 3.2-1. Corridor Area by Jurisdiction and Current Comprehensive Plan Designation | 3-25 |
| Table 3.2-2. Direct Land Use Impacts of the Bypass in Acres | 3-40 |
| Table 3.2-3. Direct Land Use Impacts of Local Circulation in Acres | 3-44 |
| Table 3.3-1. Build Alternative Preliminary Right-of-Way Estimates | 3-68 |
| Table 3.3-2. Segment 1 Potential Right-of-Way Impacts | 3-69 |
| Table 3.3-3. Segment 2 Potential Right-of-Way Impacts | 3-71 |
| Table 3.3-4. Segment 3 Local Circulation Preliminary Right-of-Way Estimates | 3-73 |
| Table 3.3-5. Segment 3 Potential Right-of-Way Impacts | 3-76 |
| Table 3.3-6. Segment 4 Potential Right-of-Way Impacts | 3-80 |
| Table 3.3-7. Segment 5 Potential Right-of-Way Impacts | 3-85 |
| Table 3.3-8. Segment 6 Potential Right-of-Way Impacts | 3-93 |
| Table 3.3-9. Segment 7 Potential Right-of-Way Impacts | 3-97 |
| Table 3.3-10. Segment 8.1 Potential Right-of-Way Impacts | 3-101 |
TABLE OF CONTENTS (Continued)

Table 3.3-11. Segment 8.1A Potential Right-of-Way Impacts ........................................ 3-103
Table 3.3-12. Estimated Price Range of Owner-Occupied Relocations ........................... 3-106
Table 3.3-13. Replacement Housing Through Available Listings .................................... 3-107
Table 3.3-14. Availability of Manufactured Home Sites and Dwellings in Newberg .... 3-108
Table 3.3-15. Availability of Manufactured Home Sites and Dwellings in Dayton, Lafayette, and South Sherwood ................................................................. 3-108
Table 3.3-16. Rental Rates of Rental House Relocations .................................................. 3-109
Table 3.3-17. Available Replacement Apartments and Rental Rates .................................. 3-109
Table 3.3-18. Available Replacement Rental Houses and Rental Rates in Newberg .... 3-110
Table 3.4-1. Population and Households (1990–2005) .................................................... 3-115
Table 3.4-2. Age Distribution (2000) .............................................................................. 3-116
Table 3.4-3. Race and Ethnicity (2000) .......................................................................... 3-117
Table 3.4-4. Household Income (1999) ......................................................................... 3-118
Table 3.4-5. Housing Tenure (2000) .............................................................................. 3-119
Table 3.4-6. Employed Residents by Industry Sector (2000) ............................................ 3-123
Table 3.4-7. Business Establishments by Industry Sector (2002) ................................. 3-124
Table 3.4-8. Direct Socioeconomics Impacts by Segment or Design Option ................. 3-126
Table 3.4-9. Estimated Annual Tax Revenues Lost by Segment ..................................... 3-128
Table 3.5-1. Total Population and Minority Population by Area (2000) .......................... 3-145
Table 3.5-2. Low-Income Populations by Area (2000) ..................................................... 3-147
Table 3.5-3. Potential EJ Residential Impacts for the Build Alternative ....................... 3-151
Table 3.6-1. Recreational Resources Within Project Vicinity ......................................... 3-159
Table 3.7-1. Section 106 Documents Prepared for This DEIS ........................................ 3-196
Table 3.7-2. Direct and Indirect Impacts to NRHP-Listed or -Eligible Resources .......... 3-196
Table 3.8-1. Summary of Utilities Direct Impacts ............................................................ 3-204
Table 3.9-1. Estimated Regional Emissions .................................................................... 3-209
Table 3.9-2. Annual Regional Vehicle Miles Traveled for 2030 ..................................... 3-210
Table 3.10-1. Existing Sound Levels in the Project Area ............................................... 3-214
Table 3.10-2. FHWA Noise Abatement Criteria and ODOT Absolute Noise Impact Criteria \( \text{L}_{\text{eq}}(h) - \text{dBA} \) .................................................................................................................. 3-216
Table 3.10-3. Existing Sound Levels Approaching or Exceeding the Abatement Criteria .......................................................................................................................... 3-217
Table 3.10-4. No Build Alternative (2030) Noise Levels .............................................. 3-220
Table 3.10-5. Summary of Total Estimated Noise Impacts by Segment and Design Option ......................................................................................................................... 3-223
Table 3.10-6. Estimated 2030 Build Alternative Noise Impacts by Geographic Area Within Each Segment and for Each Design Option ......................... 3-224
Table 3.10-7. Summary of Estimated Noise Barrier Costs .................................................. 3-246
Table 3.10-8. Estimated Noise Barrier Cost-Effectiveness ............................................. 3-252
Table 3.12-1. 2-Year and 100-Year Flows for Streams Crossing the Project Area .... 3-293
Table 3.12-2. Water Quality-Limited, 303(d)-Listed Streams Within the Project Area ......................... 3-295
Table 3.12-4. Stream Crossings ....................................................................................... 3-298
Table 3.12-5. Impervious Surface by Drainage Basin for Basins That Have or Will Exceed 10 Percent Impervious Surface Area ..................... 3-301
Table 3.12-6. Pollutant Load Summary ............................................................................ 3-307
Table 3.12-7. In-Water Work Windows .............................................................................. 3-315
Table 3.13-1. Wetlands Within the Project Area ................................................................ 3-321
Table 3.13-2. Summary of Direct Impacts to Wetlands by Segment and Wetland Classification ................................................................. 3-326
Table 3.14-1. Noxious Weed Presence in the Project Area .................................................. 3-335
Table 3.14-2. Rare Plant Species Reported to Occur in the Project Area .................... 3-336
Table 3.14-3. Identified Regional Wildlife Habitat Classifications Within the API 3-347
Table 3.14-4. Protected Terrestrial Species Reported to Occur Within 2 Miles of the API ................................................................. 3-349
Table 3.14-5. Potential Species Occurrence Within the API .............................................. 3-349
Table 3.14-6. Fish Distribution and Listing Status ............................................................. 3-353
Table 3.14-7. Fish Species Listing Status .......................................................................... 3-355
Table 3.14-8. Analysis of Build Alternative Direct Habitat Impacts .................................. 3-356
Table 3.14-9. Direct Impact Best- and Worst-Case Scenarios to Wildlife Habitat Within the Bypass Right-of-Way ......................................................... 3-357
Table 3.14-10. Estimated Habitat Loss in Bypass Area Between 1970 and 2005........ 3-359
Table 3.15-1. Summary of Geotechnical Factors for the Build Alternative by Segment and Design Option ................................................................. 3-372
Table 3.17-1. 2006 Daily Energy Use by Vehicle Type and Road Section (in Btu) .... 3-400
Table 3.17-2. 2006 Total Daily Vehicle Energy Use on All Road Sections ................. 3-400
Table 3.17-3. 2030 No Build Alternative Daily Energy Use by Vehicle Type and Road Section (in Btu) ................................................................. 3-401
Table 3.17-4. 2030 No Build Alternative Vehicle Energy Use ....................................... 3-401
Table 3.17-5. 2030 Build Alternative Daily Energy Use by Vehicle Type and Road Section (in Btu) ................................................................. 3-402
TABLE OF CONTENTS (Continued)

Table 3.17-6. 2030 Build Alternative Vehicle Energy Use ........................................ 3-403
Table 3.18-1. Greenhouse Gas Emissions (All Alternatives) ...................................... 3-405
Table 6.4-1. Anticipated Land Use Actions Required for the Build Alternative ............ 6-5
LIST OF FIGURES

Figure ES-1. General Proposed Project Location .......................................................... ES-2
Figure ES-2. Build Alternative, Segments 1 and 2 ..................................................... ES-8
Figure ES-3. Build Alternative, Segment 3 ................................................................. ES-9
Figure ES-4. Build Alternative, Segment 4 ................................................................. ES-10
Figure ES-5. Build Alternative, Segment 5 ................................................................. ES-11
Figure ES-6. Build Alternative, Segments 6 and 7 ..................................................... ES-12
Figure ES-7. Build Alternative, Segments 8.1 and 8.1A ........................................... ES-13
Figure 1.1-1. General Proposed Bypass Project Location ......................................... 1-2
Figure 1.3-1. Bypass Approved Corridor .................................................................... 1-4
Figure 1.4-1. Bypass Approved Corridor and Areas Outside the Bypass Approved Corridor ................................................................................................................................. 1-6
Figure 2.2-1. Build Alternative Segments .................................................................... 2-5
Figure 2.2-2. Build Alternative – Segment 1: Dayton Interchange ............................ 2-8
Figure 2.2-3. Build Alternative – Segment 2: Dayton Interchange to Dundee UGB .... 2-10
Figure 2.2-4. Build Alternative and Design Options – Segments 3 and 4: Dundee UGB to East Dundee Interchange, Design Options: 3.A, 3.A2, and 4.1 ........................................................................................................... 2-13
Figure 2.2-5. Build Alternative and Design Options – Segments 3 and 4: Dundee UGB to East Dundee Interchange, Design Options: 3.A, 3.A2, and 4.2 ........................................................................................................... 2-14
Figure 2.2-6. Build Alternative and Design Options – Segments 3 and 4: Dundee UGB to East Dundee Interchange, Design Options: 3.B, 3.B2, and 4.1 ........................................................................................................... 2-15
Figure 2.2-7. Build Alternative and Design Options – Segments 3 and 4: Dundee UGB to East Dundee Interchange, Design Options: 3.B, 3.B2, and 4.2 ........................................................................................................... 2-16
Figure 2.2-8a. Build Alternative and Design Options – Segments 5 and 6: West Newberg to Oregon 219 Interchange, Design Options 5.1C.2 and 5.1D.2 ........................................................................................................... 2-19
Figure 2.2-8b. Build Alternative and Design Options – Segments 5 and 6: West Newberg to Oregon 219 Interchange, Design Options 5.2D ........................................................................................................... 2-20
Figure 2.2-9. Build Alternative and Design Options – Segment 7: East Newberg to East Newberg Interchange, Segment 8.1: East Newberg Interchange, Segment 8.1A: Rex Hill, Design Option 7.4C ........................................................................................................... 2-22
Figure 2.2-10. Build Alternative and Design Options – Segment 7: East Newberg to East Newberg Interchange, Segment 8.1: East Newberg Interchange, Segment 8.1A: Rex Hill, Design Option 7.5C ........................................................................................................... 2-23
Figure 3.1-1. ADT at Count Locations (from September 2005 Counts) .................... 3-9
Figure 3.1-2. Count Intersections ................................................................................ 3-10
TABLE OF CONTENTS (Continued)

Figure 3.1-3. Hourly Volumes for Oregon 99W at Quarry Road (from September 2005 Counts) ........................................................................................................ 3-11
Figure 3.1-4. Study Intersections........................................................................................................ 3-19
Figure 3.2-1. Comprehensive Plan Designations – Segment 1: Dayton Interchange... 3-27
Figure 3.2-2. Comprehensive Plan Designations – Segment 2: Dayton Interchange to Dundee UGB ........................................................................................................ 3-28
Figure 3.2-3. Comprehensive Plan Designations – Segments 3 and 4: Dundee UGB to East Dundee Interchange, Design Options: 3.A, 3.A2, and 4.1 ........ 3-29
Figure 3.2-4. Comprehensive Plan Designations – Segments 3 and 4: Dundee UGB to East Dundee Interchange, Design Options: 3.A, 3.A2, and 4.2 ........ 3-30
Figure 3.2-5. Comprehensive Plan Designations – Segments 3 and 4: Dundee UGB to East Dundee Interchange, Design Options: 3.B, 3.B2, and 4.1 ........ 3-31
Figure 3.2-6. Comprehensive Plan Designations – Segments 3 and 4: Dundee UGB to East Dundee Interchange, Design Options: 3.B, 3.B2, and 4.2 ........ 3-32
Figure 3.2-7. Comprehensive Plan Designations – Segments 5 and 6: West Newberg to Oregon 219 Interchange, Design Options: 5.1C.2, 5.1D.2, 5.2D........................................................................................................ 3-33
Figure 3.2-8. Comprehensive Plan Designations – Segment 7: East Newberg to East Newberg Interchange, Segment 8.1: East Newberg Interchange, Segment 8.1A: Rex Hill, Design Option: 7.4C ........................................ 3-34
Figure 3.2-9. Comprehensive Plan Designations – Segment 7: East Newberg to East Newberg Interchange, Segment 8.1: East Newberg Interchange, Segment 8.1A: Rex Hill, Design Option: 7.5C ........................................ 3-35
Figure 3.3-1. Potential Property Acquisitions – Segment 1: Dayton Interchange ......... 3-70
Figure 3.3-2. Potential Property Acquisitions – Segment 2: Dayton Interchange to Dundee UGB ........................................................................................................ 3-74
Figure 3.3-3. Potential Property Acquisitions – Segment 3: Dundee UGB to East Dundee Interchange, Design Option: 3.A ............................................... 3-75
Figure 3.3-4. Potential Property Acquisitions – Segment 3: Dundee UGB to East Dundee Interchange, Design Option: 3.A2 ............................................... 3-77
Figure 3.3-5. Potential Property Acquisitions – Segment 3: Dundee UGB to East Dundee Interchange, Design Option: 3.B ............................................... 3-78
Figure 3.3-6. Potential Property Acquisitions – Segment 3: Dundee UGB to East Dundee Interchange, Design Option: 3.B2 ............................................... 3-79
Figure 3.3-7. Potential Property Acquisitions – Segment 4: East Dundee Interchange, Design Option: 4.1 ................................................................. 3-82
Figure 3.3-8. Potential Property Acquisitions – Segment 4: East Dundee Interchange, Design Option: 4.2 ................................................................. 3-83
Figure 3.3-9. Potential Property Acquisitions – Segment 5: West Newberg to Oregon 219 Interchange, Design Options: 5.1C.2 and 5.1D.2 .................. 3-91
Figure 3.3-10. Potential Property Acquisitions – Segment 5: West Newberg to Oregon 219 Interchange, Design Option: 5.2D ........................................ 3-92
TABLE OF CONTENTS (Continued)

Figure 3.3-11. Potential Property Acquisitions – Segment 6: Oregon 219 Interchange ................................................................. 3-96
Figure 3.3-12. Potential Property Acquisitions – Segment 7: East Newberg to East Newberg Interchange, Design Option: 7.4C................................. 3-99
Figure 3.3-13. Potential Property Acquisitions – Segment 7: East Newberg to East Newberg Interchange, Design Option: 7.5C................................. 3-100
Figure 3.3-14. Potential Property Acquisitions – Segment 8.1: East Newberg Interchange .................................................................................. 3-102
Figure 3.3-15. Potential Property Acquisitions – Segment 8.1A: Rex Hill ............................................................. 3-105
Figure 3.4-1. Block Groups ................................................................................................................................. 3-114
Figure 3.4-2. Community Facilities and Public Services ................................................................................................. 3-121
Figure 3.5-1. Non-White / Hispanic Populations .............................................................................................................. 3-146
Figure 3.5-2. Low- Income Households ....................................................................................................................... 3-146
Figure 3.5-3. School Boundaries ............................................................................................................................... 3-148
Figure 3.5-4. Area of Identified Environmental Justice Populations ................................................................................................. 3-152
Figure 3.6-1. Project Area Parks and Recreation .................................................................................................................. 3-161
Figure 3.6-2. Dayton Landing and Alderman Park – Segment 1: Dayton Interchange ................................................................................................. 3-162
Figure 3.6-3. Chehalem Parks and Recreation Locations – Segments 3, 4, and 5: Dundee UGB to West Newberg, Design Options: 3.A, 3.A2, 4.1, 5.1C.2, and 5.1D.2 ................................................................. 3-163
Figure 3.6-4. Chehalem Parks and Recreation Locations – Segments 3, 4, and 5: Dundee UGB to West Newberg, Design Options: 3.B, 3.B2, 4.2, and 5.2D .............................................................................................................. 3-164
Figure 3.6-5. Ewing Young Park – Segment 5: West Newberg, Design Options: 5.1C.2 and 5.1D.2 ................................................................................... 3-165
Figure 3.6-6. Scott Leavitt Park – Segment 5: West Newberg, Design Options 5.1C.2 and 5.1D.2 ................................................................. 3-167
Figure 3.6-7. Scott Leavitt Park – Segment 5: West Newberg, Design Option 5.2D ................................................................. 3-168
Figure 3.6-8. Chehalem Glenn Golf Course – Segment 6: Oregon 219 Interchange, Segment 7: East Newberg to East Newberg Interchange, Segment 8.1: East Newberg Interchange, Segment 8.1A: Rex Hill, Design Option 7.4C ................................................................................... 3-169
Figure 3.6-9. Chehalem Glenn Golf Course – Segment 6: Oregon 219 Interchange, Segment 7: East Newberg to East Newberg Interchange, Segment 8.1: East Newberg Interchange, Segment 8.1A: Rex Hill, Design Option 7.5C ................................................................................... 3-170
Figure 3.6-10. Spring Meadow Park – Segment 7: East Newberg to East Newberg Interchange, Segment 8.1: East Newberg Interchange, Design Option: 7.4C ................................................................................... 3-172
Figure 3.6-11. Newberg Riverfront Master Plan Area .............................................................................................................. 3-174
Figure 3.6-12. Chehalem Heritage Trail Concept ....................................................................................................................... 3-175
TABLE OF CONTENTS (Continued)

Figure 3.7-1. Cultural Resources Area of Potential Effect .............................................. 3-186
Figure 3.7-2. Affected National Register Historic Built Environment Resources –
Segment 1: Dayton Interchange .................................................................................. 3-191
Figure 3.7-3. Affected National Register Historic Built Environment Resources –
Segments 3 and 4: Dundee UGB to East Dundee Interchange ................................. 3-192
Figure 3.7-4. Affected National Register Historic Built Environment Resources –
Segments 5 and 6: West Newberg to Oregon 219 Interchange .............................. 3-193
Figure 3.7-5. Affected National Register Historic Built Environment Resources –
Segment 7: East Newberg to East Newberg Interchange, Segment 8.1: East Newberg Interchange, Segment 8.1A: Rex Hill ........................................... 3-194
Figure 3.7-6. Finding of Effect, SP Newsprint – Segment 5: West Newberg to
Oregon 219 Interchange, Design Options: 5.1C.2, 5.1D.2, and 5.2D .................. 3-199
Figure 3.10-1. Noise Monitoring Locations ................................................................ 3-215
Figure 3.10-2. Receptor Locations Which Approach or Exceed Abatement Criteria
Under Existing Conditions .......................................................................................... 3-218
Figure 3.10-3. Receptor Locations Which Approach or Exceed Abatement Criteria
Under No Build Conditions ...................................................................................... 3-222
Figure 3.10-4. Estimated Noise Impact Zones, Segment 1: Dayton Interchange ...... 3-228
Figure 3.10-5. Estimated Noise Impact Zones, Segment 2: Dayton Interchange to
Dundee UGB ............................................................................................................ 3-229
Figure 3.10-6. Estimated Noise Impact Zones, Segment 3 and 4: Dundee UGB to
East Dundee Interchange, Design Options: 3.A, 3.A2, and 4.1 ......................... 3-230
Figure 3.10-7. Estimated Noise Impact Zones, Segments 3 and 4: Dundee UGB to
East Dundee Interchange, Design Options: 3.A, 3.A2, and 4.2 ......................... 3-231
Figure 3.10-8. Estimated Noise Impact Zones, Segment 3 and 4: Dundee UGB to
Figure 3.10-9. Estimated Noise Impact Zones, Segment 3 and 4: Dundee UGB to
Figure 3.10-10. Estimated Noise Impact Zones, Segments 5 and 6: West Newberg
to Oregon 219 Interchange, Design Options: 5.1C.2, 5.1D.2, 5.2D .................. 3-236
Figure 3.10-11. Estimated Noise Impact Zones – Segment 7: East Newberg to East
Newberg Interchange, Segment 8.1: East Newberg Interchange, Segment 8.1A: Rex Hill, Design Option: 7.4C ......................................................... 3-238
Figure 3.10-12. Distances from Newberg Providence Hospital to Bypass, Segment 7 Design Options .............................................................. 3-242
Figure 3.10-13. Estimated Noise Impact Zones – Segment 7: East Newberg to East
Newberg Interchange, Segment 8.1: East Newberg Interchange, Segment 8.1A: Rex Hill, Design Option: 7.5C ......................................................... 3-243
Figure 3.10-14. Location for Potential Noise Barrier Analysis – Segment 2: Dayton
TABLE OF CONTENTS (Continued)

Figure 3.10-15. Location for Potential Noise Barrier Analysis – Segments 5 and 6: West Newberg to Oregon 219 Interchange, Design Options: 5.1C.2, 5.1D.2, and 5.2D ................................................................. 3-248

Figure 3.10-16. Location for Potential Noise Barrier Analysis – Segment 7: East Newberg to East Newberg Interchange, Segment 8.1: East Newberg Interchange, Segment 8.1A: Rex Hill, Design Option: 7.4C ................. 3-249

Figure 3.10-17. Location for Potential Noise Barrier Analysis – Segment 7: East Newberg to East Newberg Interchange, Segment 8.1: East Newberg Interchange, Segment 8.1A: Rex Hill, Design Option: 7.5C ................. 3-250

Figure 3.11-1. Newberry Dundee Bypass with Viewpoints .......................................... 3-256
Figure 3.11-2. Viewpoints V-1.1 through V-1.4 ........................................................... 3-258
Figure 3.11-3. Viewpoints V-1.5 through V-1.7 ........................................................... 3-259
Figure 3.11-4. Viewpoints V-2.1 through V-2.2 ........................................................... 3-261
Figure 3.11-5. Viewpoints V-3.1 through V-4.1 ........................................................... 3-262
Figure 3.11-6. Viewpoints V-5.1 through V-5.3 ........................................................... 3-264
Figure 3.11-7. Viewpoints V-5.4 through V-5.8 ........................................................... 3-265
Figure 3.11-8. Viewpoints V-6.1 through V-6.3 ........................................................... 3-266
Figure 3.11-9. Viewpoints V-7.1 through V-8.3 ........................................................... 3-269
Figure 3.11-10. Project Area Photopoints ................................................................. 3-272
Figure 3.11-11. Dayton Interchange Simulation, Before and After ............................. 3-273
Figure 3.11-12. Fulquartz Landing Overpass Simulation, Before and After ............... 3-275
Figure 3.11-13. 8th Street Overpass Simulation, Before and After ........................... 3-276
Figure 3.11-14. Dundee Connector Road at OR 99W Simulation, Before and After .. 3-277
Figure 3.11-15. 11th Street Underpass Simulation, Before and After ........................ 3-279
Figure 3.11-16. OR 219-Bypass Interchange Simulation, Before and After .............. 3-281
Figure 3.11-17. OR 219 Simulation, Before and After ................................................. 3-282
Figure 3.11-18. View from Providence Hospital Simulation, Before and After ......... 3-283
Figure 3.11-19. View from Chehalem Glenn Golf Course Simulation, Before and After .............................. 3-284
Figure 3.11-20. East Newberg Interchange Simulation, Before and After ................. 3-286
Figure 3.11-21. Quarry Road Overpass Simulation, Before and After ....................... 3-287
Figure 3.12-1. Area of Potential Impact for Hydrology ............................................. 3-292
Figure 3.12-2. Impervious Surface Area – Segments 1 and 2: Dayton Interchange and Dayton Interchange to Dundee UGB ........................................... 3-302
Figure 3.12-3. Impervious Surface Area – Segments 2 and 3: Dayton Interchange to Dundee UGB and Dundee UGB to East Dundee Interchange ... 3-303
Figure 3.12-4. Impervious Surface Area – Segments 4, 5, and 6: East Dundee Interchange, West Newberg to Oregon 219 Interchange, and Oregon 219 Interchange ......................................................... 3-304
# TABLE OF CONTENTS (Continued)

<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Figure 3.12-5.</td>
<td>Impervious Surface Area – Segments 7, 8.1, and 8.1A: East Newberg to East Newberg Interchange, East Newberg Interchange, and Rex Hill</td>
</tr>
<tr>
<td>Figure 3.13-1.</td>
<td>Field Survey Wetlands</td>
</tr>
<tr>
<td>Figure 3.13-2.</td>
<td>Regional Water Resources</td>
</tr>
<tr>
<td>Figure 3.14-1.</td>
<td>Habitat Classifications at Wildlife Corridors – Segment 1: Dayton Interchange</td>
</tr>
<tr>
<td>Figure 3.14-2.</td>
<td>Habitat Classifications at Wildlife Corridors – Segment 2: Dayton Interchange to Dundee UGB</td>
</tr>
<tr>
<td>Figure 3.14-3.</td>
<td>Habitat Classifications at Wildlife Corridors – Segments 3 and 4: Dundee UGB to East Dundee Interchange, Design Options: 3.A, 3.A2, and 4.1</td>
</tr>
<tr>
<td>Figure 3.14-4.</td>
<td>Habitat Classifications at Wildlife Corridors – Segments 3 and 4: Dundee UGB to East Dundee Interchange, Design Options: 3.A, 3.A2, and 4.2</td>
</tr>
<tr>
<td>Figure 3.14-5.</td>
<td>Habitat Classifications at Wildlife Corridors – Segments 3 and 4: Dundee UGB to East Dundee Interchange, Design Options: 3.B, 3.B2, and 4.1</td>
</tr>
<tr>
<td>Figure 3.14-6.</td>
<td>Habitat Classifications at Wildlife Corridors – Segments 3 and 4: Dundee UGB to East Dundee Interchange, Design Options: 3.B, 3.B2, and 4.2</td>
</tr>
<tr>
<td>Figure 3.14-7.</td>
<td>Habitat Classifications at Wildlife Corridors – Segments 5 and 6: West Newberg to Oregon 219 Interchange, Design Options: 5.1C.2, 5.1D.2, 5.2D</td>
</tr>
<tr>
<td>Figure 3.14-8.</td>
<td>Habitat Classifications at Wildlife Corridors – Segment 7: East Newberg to East Newberg Interchange, Segment 8.1: East Newberg Interchange, Segment 8.1A: Rex Hill, Design Option: 7.4C</td>
</tr>
<tr>
<td>Figure 3.14-9.</td>
<td>Habitat Classifications at Wildlife Corridors – Segment 7: East Newberg to East Newberg Interchange, Segment 8.1: East Newberg Interchange, Segment 8.1A: Rex Hill, Design Option: 7.5C</td>
</tr>
<tr>
<td>Figure 3.14-10.</td>
<td>Fish Resources</td>
</tr>
<tr>
<td>Figure 3.15-1.</td>
<td>Slope Instability Hazard and Suspected Landslide Areas Near Chehalem Creek</td>
</tr>
<tr>
<td>Figure 3.15-2.</td>
<td>Slope Instability Hazard and Suspected Landslide Areas Near Hess Creek North</td>
</tr>
<tr>
<td>Figure 3.16-1.</td>
<td>Hazardous Materials Sites – Segment 1: Dayton Interchange</td>
</tr>
<tr>
<td>Figure 3.16-2.</td>
<td>Hazardous Materials Sites – Segment 2: Dayton Interchange to Dundee UGB</td>
</tr>
<tr>
<td>Figure 3.16-3.</td>
<td>Hazardous Materials Sites – Segments 3 and 4: Dundee UGB to East Dundee Interchange Design Options: 3.A, 3.A2, and 4.1</td>
</tr>
<tr>
<td>Figure 3.16-4.</td>
<td>Hazardous Materials Sites – Segments 3 and 4: Dundee UGB to East Dundee Interchange Design Options: 3.A, 3.A2, and 4.2</td>
</tr>
</tbody>
</table>
TABLE OF CONTENTS (Continued)

Figure 3.16-5. Hazardous Materials Sites – Segments 3 and 4: Dundee UGB to East Dundee Interchange Design Options: 3.B, 3.B2, and 4.1 ............ 3-388

Figure 3.16-6. Hazardous Materials Sites – Segments 3 and 4: Dundee UGB to East Dundee Interchange Design Options: 3.B, 3.B2, and 4.2 ............ 3-389

Figure 3.16-7. Hazardous Material Sites – Segments 5 and 6: West Newberg to Oregon 219 Interchange Design Options 5.1C.2, 5.1D.2, 5.2D............ 3-390

Figure 3.16-8. Hazardous Material Sites – Segment 7: East Newberg to East Newberg Interchange, Segment 8.1: East Newberg Interchange, Segment 8.1A: Rex Hill, Design Option 7.4C................................................. 3-391

Figure 3.16-9. Hazardous Material Sites – Segment 7: East Newberg to East Newberg Interchange, Segment 8.1: East Newberg Interchange, Segment 8.1A: Rex Hill, Design Option 7.5C................................................. 3-392
TABLE OF CONTENTS (Continued)

LIST OF APPENDICES

APPENDIX A: PROPOSED SECTION 4(f) DE MINIMIS FINDINGS
APPENDIX B: EXISTING AND NO BUILD ALTERNATIVE SOUND AND BUILD ALTERNATIVE SOUND LEVELS AND RECEPTOR LOCATION FIGURES
APPENDIX C: USDA NRCS FARMLAND CONVERSION IMPACT RATING FORMS
APPENDIX D: LIST OF TECHNICAL MEMORANDA AND OTHER SUPPORTING DOCUMENTS
APPENDIX E: ROW BROCHURES
APPENDIX F: LIST OF PREPARERS
APPENDIX G: LIST OF TIER 2 DEIS RECIPIENTS
APPENDIX H: FEDERAL AND STATE EFFORTS ON CLIMATE CHANGE
APPENDIX I: ACRONYMS AND ABBREVIATIONS
APPENDIX J: GLOSSARY
APPENDIX K: NO EFFECT MEMORANDUM
APPENDIX L: INCOMPLETE OR UNAVAILABLE INFORMATION FOR MSAT ANALYSIS
APPENDIX M: COORDINATION PLAN
Newberg Dundee Bypass Tier 2 Draft Environmental Impact Statement

June 2010

Newberg Dundee Bypass Tier 2 Draft Environmental Impact Statement

June 2010

Newberg Dundee Bypass Tier 2 Draft Environmental Impact Statement

June 2010