

Community Development Services

Marian Meadows
Planned Unit Development and Subdivision

Final Environmental Impact Statement[FF]

FROM THE CASCADES . . . TO THE COLUMBIA
KITTITAS COUNTY

February 2011

Parametrix

Marian Meadows

Planned Unit Development and Subdivision

Final Environmental Impact Statement

Prepared for:
Kittitas County
Community Development Services
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February 2011

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"Building Partnerships – Building Communities"

February 10, 2011

Dear Interested Party

The Final Environmental Impact Statement (FEIS) for the Marian Meadows proposal east of the community of Easton is attached.

This FEIS addresses comments that were received on the Draft EIS (DEIS) and incorporates three additional subdivision development alternatives, which are variations on Alternative 3, the No Action alternative in the DEIS (i.e., development without approval of a PUD) including:

Alternative 3B, with approximately 147 lots at a 3-acre lot size excluding a 40 acre parcel east of the BPA transmission line easement where the applicant has proposed a mini-storage use.

Alternative 3B, with approximately 33 lots at a maximum lot size of 3 acres excluding development on the steep eastern portion of the site. This alternative responds to a request made by local citizens during review of the DEIS.

Alternative 3D, with approximately 113 lots with the lots within the Airport Safety Zones (ASZ) of the Easton State Airport developed at a maximum density of one unit per 5 acres. Additional 3-acre lots are located outside the ASZs. This alternative responds to a request made by the Washington State Department of Transportation, Aviation Division.

In addition, Alternatives 4 and 5 were revised to reduce the total number of lots to about 147 and 113, respectively, to provide for a maximum density with ASZs of one unit per 3 acres, in accordance with Kittitas County Codes.

Major text revisions are indicated by a vertical line in the margin of the text, as indicated for this paragraph.

The information in this FEIS will be used by the county in reaching a decision on the pending applications for a Planned Unit Development and preliminary plat.

Parties who responded to the DEIS are parties of record and will receive notice of future hearings for consideration of the PUD and preliminary plat applications.

If you have questions about the proposal, please contact

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Fact Sheet

TITLE

Marian Meadows Planned Unit Development and Subdivision
Final Environmental Impact Statement

DESCRIPTION OF PROPOSAL AND ALTERNATIVES

Alternative 1: Applicant's Proposal on a 520-acre site consists of two elements:

- A rezone of the property to the Planned Unit Development (PUD) zoning district as provided by Chapter 17.36 of the Kittitas County zoning code. The PUD provisions allow development at up to three times the underlying zoning density or a total of up to 443 units.
- A preliminary plat covering the western one-third of the property (about 120 acres) that is proposed to be divided into 225 lots of approximately 0.5 acre each, together with a future residential development tract and open space tract on the eastern remainder of the property..

Alternative 2: Planned Unit Development consists of a PUD on the western third of the site with 443 units including multi-family units. This alternative generally meets the goals of the applicant.

Other Alternatives include:

Alternative 3A: No Action with Uniform 3-Acre Lots consists of a subdivision into 3-acre lots in accordance with the R-3 zoning district standards, which results in 147 lots.

Alternative 3B: No Action with 3-Acre Lots with Exclusions consists of a subdivision into 3-acre lots in accordance with the R-3 zoning district standards with development of an area northeast of the Bonneville Power Administration (BPA) easement excluded from the plat and devoted to a mini-storage use. This alternative results in 147 lots.

Alternative 3C: No Action with 3-Acre Lots Excluding the Eastern Portion of the Site consists of a subdivision into 3-acre lots with continued forestry use of the steeper eastern portion of the site. This alternative results in about 33 lots.

Alternative 3D: No Action with 5-Acre Lots in Airport Safety Zones (ASZs) consists of a subdivision into 5-acre lots in areas subject to Washington State Department of Transportation (WSDOT) Aviation recommendations for residential density within Aviation Safety Zones. This alternative results in about

FACT SHEET (continued)

	113 lots. **The Mitigated Alternatives** include specific measures to reduce impacts. **Alternative 4: PUD with Reduced Density on the Entire Site** includes development on both the western and eastern portions of the site with reduced density and specific design changes and about 147 lots. **Alternative 5: PUD with All Development Clustered on the Western Portion of the Site** includes development only on the western portion of the site with reduced density and specific design changes. This alternative results in about 113 lots.
PROPONENT	Easton Ridge Land Company 103 South Second Street PO Box 687 Roslyn, WA 98941 509-649-2211
DATE OF IMPLEMENTATION	Build-out is estimated to occur after 2015, and would depend on market conditions..
LEAD AGENCY	Kittitas County Community Development Services 411 N. Ruby Street, Suite 2 Ellensburg, WA 98962
RESPONSIBLE OFFICIAL	Kirk Holmes, Kittitas County Interim Planning Director
CONTACT PERSONS	Dan Valof, Senior Planner 509- 962-7506
LICENSES, PERMITS, AND APPROVALS POTENTIALLY REQUIRED	<u>Kittitas County</u>: Planned Unit Development Rezone Approval Preliminary and Final Plat Approval Master Drainage Plan Approval Environmentally Critical Area Modification Approval Road Improvement Plan Approval Right-of-way Permit for Utility Construction Clearing and Grading Permit(s) Fire Marshal Hydrant Permit Approval Agreement to Locate Utilities (Franchise) Development Agreement (optional) <u>Washington State Department of Ecology:</u> Wastewater Treatment Facility Design Approval Recycled water application permit

National Pollutant Discharge Elimination System (NPDES) Permit
Water right expansion RCW 90.03.330, 340 or 386
Fugitive Dust Control Plan (FDCP)
Burn permits for outdoor burning

Washington State Department of Health:
Water System Expansion Design Approval
Recycled Water Application Permit

Washington State Department of Fish and Wildlife:
Hydraulic Project Approval

Washington State Department of Natural Resources:
Forest Practices Permit

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DATE OF ISSUE OF FINAL EIS

February 10, 2011

LOCATION OF BACKGROUND INFORMATION

Kittitas County
Community Development Services
411 N. Ruby Street, Suite 2
Ellensburg, WA 98962

AVAILABILITY OF FINAL EIS TO THE PUBLIC

Kittitas County Community Development Services
Easton School Library
City of Cle Elum Library

Table of Contents

CHAPTER 1 Project Summary 1-1

1 Where is the proposed project? 1-1

2 What changes to zoning or other requirements are proposed? 1-9

3 What are the major design features? 1-9

4 What other proposals by the applicant would affect impacts? 1-9

5 What alternatives are considered? 1-10

6 What Kittitas County decisions are required? 1-12

7 What other agencies will review the proposal? 1-12

8 What other independent projects may occur near the proposal that may affect impacts? 1-13

9 What other potential environmental impacts assessment may take place for elements of the alternatives or other development on the site? 1-14

10 What are the potential environmental Impacts of the alternatives? 1-15

CHAPTER 2 Description of Alternatives 2-1

1 What is proposed by the applicant? 2-1

2 What alternatives have been considered? 2-5

3 What is the project schedule and phasing? 2-7

CHAPTER 3 Environmental Consequences 3-1

1 What is addressed in this chapter? 3-1

2 What are the major features of the project location? 3-1

3.1 Land Use 3-2

1 What are the geographical areas associated with the project? 3-2

2 What are the existing land uses in the area? 3-3

3 How many people live in the project vicinity? 3-5

4 What are the plans for future land use in the area? 3-5

5 What is the existing zoning and anticipated land use for the project site and surrounding area? 3-6

6 What is meant by “rural land use” and how does the proposal relate to rural policies? 3-20

7 What changes in land use would occur on the site from the proposal and alternatives? 3-25

8 Are future residents likely to live on the site year-round? Or will they live on the site seasonally? 3-25

9 How would construction of the proposal or alternatives affect nearby land uses? 3-29

10 What are the likely long-term effects on nearby land use associated with the proposal and alternatives? 3-30

11 What are the likely cumulative impacts with development of nearby land at rural densities? 3-39

12. What are the likely cumulative impacts with development of nearby land at densities similar to the proposal? 3-44

13 What measures could reduce the effects of the proposal and alternatives on land use? 3-50

TABLE OF CONTENTS (continued)

3.2 Transportation 3-52

3.2 1 Transportation – Surface System 3-52

1 What area was studied with respect to transportation? 3-52

2 What are the characteristics of the existing transportation system? 3-52

3 What roadways currently serve the area? 3-53

4 What pedestrian, bicycle, and other off-road facilities are currently available? 3-59

5 Who maintains existing roadways and other facilities and how much does it cost? 3-59

6 How well does the existing surface transportation system function? 3-60

7 How do local roads currently fit into the character of the local community? 3-60

8 What are the existing standards that define “acceptable” traffic conditions? 3-61

9 What are the existing level of service conditions? 3-62

10 Are there currently high numbers of collisions or hazardous roadway conditions in the area? 3-62

11 What policies and standards govern the transportation system function? 3-63

12 What scenarios were analyzed for the future? 3-65

13 How would the proposal and alternatives change how the future transportation system functions? 3-67

14 Would the roadways that serve the area change in the future? 3-67

15 What changes to future level of service conditions are expected? 3-67

16 How would collisions and/or hazardous roadway conditions change in the future? 3-67

17 Would pedestrian, bicycle, and other off-road use and facilities be affected? 3-68

18 How would future maintenance responsibilities and costs change? 3-75

19 Would there be changes to how local roads fit into the character of the local community? 3-76

20 What mitigation is needed for the alternatives? 3-76

21 What are the likely cumulative impacts on surface transportation with development of nearby land? 3-78

22 Would the cumulative effects change the roadways that serve the area? 3-89

23 Would the cumulative effects change the expected level of service? 3-89

24 Would the cumulative effects change collision frequencies and/or hazardous roadway conditions? 3-91

25 Would the cumulative effects change pedestrian, bicycle, and other off-road use or facilities? 3-92

26 Would the cumulative effects change maintenance responsibilities and costs? 3-92

27 Would the cumulative effects change how roadways fit into the character of the local community? 3-93

28 What mitigation is needed for the cumulative impacts? 3-93

3.2.2 Transportation - Aviation 3-97

1 What existing airports are in the area? 3-97

2 What mandates or standards for airports have been established and how are compatible land uses adjacent to airports determined? 3-98

3 How will the proposal and alternatives affect the future use of the airport or result in hazards to aviation? 3-104

4 How will use of the airport result in potential hazards to persons living on the project site? 3-104

5 What are the likely cumulative impacts with development of nearby land at existing zoning densities? 3-105

6 What are the likely cumulative impacts with development of nearby land at densities similar to the proposal? 3-106

TABLE OF CONTENTS (continued)

7 What measures could reduce or mitigate impacts of the proposal and alternatives on the airport, or impacts of the airport on the people living on the project site? ... 3-106

3.3 Parks And Recreation ... 3-109

1 What park and recreation facilities and services are currently provided in the area? ... 3-109

2 What mandates or standards for parks and recreational services have been established? ... 3-113

3 How will the proposal and alternatives affect park and recreation facilities and services? ... 3-117

4 What are the likely cumulative impacts on park and recreational facilities with development of nearby land at existing zoning densities? ... 3-122

5 What are the likely cumulative impacts on parks and recreational facilities with development of nearby land at densities similar to the proposal? ... 3-123

6 What measures would mitigate effects on park and recreational demand and facilities? ... 3-124

3.4 Public Services ... 3-124

3.4.1 Public Services - Schools ... 3-124

1 What school facilities and services are currently provided in the area? ... 3-124

2 What mandates or standards for school service have been established? ... 3-125

3 How will the proposal and alternatives affect school facilities and services? ... 3-131

4 What are the likely cumulative impacts on school facilities and services with development of nearby land at existing zoning or PUD densities? ... 3-137

5 What measures could reduce or mitigate impacts of the proposal on school facilities and services? ... 3-139

3.4.2 Public Services - Fire Protection ... 3-140

1 What fire protection facilities and services are currently provided in the area? ... 3-140

2 What mandates or standards for fire protection service have been established? ... 3-143

3 What risks are posed by wildfire in the area and to the proposal and alternatives? ... 3-146

4 How will the proposal and alternatives affect fire protection facilities and services? ... 3-147

5 What are the likely cumulative impacts with development of nearby land at existing zoning densities and PUD densities? ... 3-150

6 What measures could reduce or mitigate fire risks to persons and property and the impacts on fire protection facilities and services? ... 3-151

3.4.3 Public Services - Police and Public Safety ... 3-154

1 What police facilities and services are currently provided in the area? ... 3-154

2 What mandates or standards for police service have been established? ... 3-155

3 What risks are posed by the current level of police service to persons within the area? ... 3-155

4 How will the proposal and alternatives affect police facilities and services? ... 3-156

5 What are the likely cumulative impacts on the level of police service with additional development? ... 3-157

6 What measures could reduce or mitigate impacts of the proposal on police facilities and services and risks to persons and property within the area and the proposal? ... 3-158

3.4.4 Public Services – Medical Response ... 3-158

1 What medical response facilities and services are currently provided in the area? ... 3-158

2 What mandates or standards for medical response service have been established? ... 3-158

3 How will the proposal and alternatives affect medical response facilities and services? ... 3-159

TABLE OF CONTENTS (continued)

4 What are the likely cumulative impacts on medical response facilities and services with development of nearby land at existing zoning densities or at densities similar to the proposal? 3-159

5 What measures could reduce or mitigate impacts of the proposal on medical response facilities and services and risks to persons and property within the area and the proposal? 3-163

3.4.5 Public Services - Mail Service 3-163

1 What mail facilities and services are currently provided in the area? 3-163

2 What mandates or standards for mail service have been established? 3-163

3 How will the proposal and alternatives affect mail facilities and services? 3-164

4 What are the likely cumulative impacts on mail service with development of nearby land at existing zoning densities or at densities similar to the proposal? 3-164

5 What measures could reduce or mitigate impacts of the proposal on mail facilities and services? 3-164

3.5 Utilities 3-164

1 What utility services are addressed in this analysis? 3-164

2 What policies and standards govern utility services? 3-165

3.5.1 Utilities - Water 3-166

1 What water supply facilities and services are currently provided in the area? 3-166

2 What mandates or standards for water supply service have been established? 3-168

3 What is the demand for water from existing vacant lots in the LAMIRD and how does that affect water available to the alternatives for project development. 3-168

4 What is the demand for water under the different alternatives? 3-169

5 What are the likely cumulative impacts on water supply facilities and services with development of nearby land at existing zoning densities? 3-176

5 What are the likely cumulative impacts on water supply facilities and services with development of nearby land at densities similar to the proposal? 3-176

6 What measures could reduce or mitigate impacts of the proposal on water supply facilities and services? 3-179

3.5.2 Utilities - Sewage Disposal 3-179

1 What sewage disposal facilities and services are currently provided or planned in the area? 3-179

2 What mandates or standards for sewage disposal service have been established? 3-181

3 What sewage disposal facilities are included in the proposal and alternatives and what operational risks do they pose? 3-183

4 What risks may be associated with the proposed and alternative means of sewage disposal? 3-187

5 What are the likely cumulative impacts associated with sewage disposal facilities and services with development of nearby land? 3-189

6 What measures could reduce or mitigate impacts of the proposal on sewage disposal, including risks? 3-189

3.5.3 Utilities - Stormwater 3-190

1 What stormwater facilities and services are currently provided or planned in the area? 3-190

2 What mandates or standards for stormwater management have been established? 3-190

3 What stormwater facilities are included in the proposal and alternatives? 3-191

4 What impacts to surface water, flooding, or other resources may be associated with the proposed and alternative means of stormwater management? 3-191

5 What are the likely cumulative impacts to stormwater facilities and services with development of nearby land at existing zoning densities or at densities similar to the proposal? 3-192

TABLE OF CONTENTS (continued)

6 What measures could reduce or mitigate impacts of the proposal on stormwater management facilities and services and risks within the area and the proposal? 3-192

3.5.4 Utilities - Solid Waste 3-193

1 What solid waste facilities and services are currently provided or planned in the area? 3-193

2 What mandates or standards for solid waste management have been established? 3-193

3 What solid waste facilities or services are included in the proposal and alternatives? 3-194

4 How will the proposal and alternatives affect solid waste facilities and services? 3-194

3.5.5 Utilities - Electrical 3-195

1 What electrical facilities and services are currently provided or planned in the area? 3-195

2 What mandates or standards for electrical facilities and services have been established? 3-196

3 What risks may be associated with existing and planned electrical facilities and services in the area, including risks to future residents of the proposal? 3-197

4 What electrical facilities and services are included in the proposal and alternatives? 3-198

5 What impacts to electrical facilities and services may be associated with the proposal and alternatives? 3-198

6 What are the likely cumulative impacts on electrical facilities and services with development of nearby land at existing zoning and PUD densities? 3-199

7 What measures could reduce or mitigate impacts of the proposal on electrical facilities and services and risks? 3-199

3.5.6 Utilities - Communication 3-200

1 What communication facilities and services are currently provided or planned in the area? 3-200

2 What mandates or standards for communication facilities and services have been established? 3-200

3 How will the proposal and alternatives affect communication facilities and services? 3-201

3.5.7 Utilities - Cable Television 3-201

1 What cable television facilities and services are currently provided or planned in the area? 3-201

2 What mandates or standards for cable television facilities and services have been established? 3-201

3 How will the proposal and alternatives affect cable television facilities and services? 3-201

3.6 Visual Quality, Light, and Glare 3-201

1 How can the aesthetic experience be characterized? 3-201

2 What does the area look like now? 3-203

3 What mandates or standards have been established for views and aesthetics? 3-205

4 What will the area look like during construction? 3-205

5 What will the area look like after completion of the project? 3-206

6 What are the likely cumulative impacts on visual quality in the area with development of nearby land at existing zoning or PUD densities? 3-208

7 What measures can reduce the effects of the proposal on the appearance of the area? 3-209

3.7 Noise 3-219

1 What is noise? 3-219

2 What sources and intensity of noise are currently present in the area? 3-220

3 What noise standards apply in the area? 3-226

4 What are the expected effects of construction noise on nearby uses? 3-227

TABLE OF CONTENTS (continued)

5 How can construction noise be reduced? 3-227

6 What long-term noise disturbance will result from the proposal and alternatives? 3-228

7 What are the likely cumulative impacts with development of nearby land at rural densities or at densities similar to the proposal? 3-229

3.8 Air Quality 3-230

1 Are there currently air quality problems in the area? 3-230

2 What air quality standards apply in the area? 3-231

3 During construction, are air quality problems expected? 3-233

4 What long-term effects on air quality are expected from the proposal and alternatives? 3-233

5 What are the likely cumulative impacts with development of nearby land at rural densities or at densities similar to the PUD proposal? 3-235

6 During construction, what measures can reduce air quality effects of the project? 3-235

7 During operation, what measures can reduce air quality effects of the project? 3-236

3.9 Hazardous Materials 3-236

1 Are there likely to be hazardous materials in the project area? 3-236

2 What hazardous materials could be released during construction? 3-237

3 What measures would address hazardous materials during construction? 3-237

4 What long-term effects could the project and alternatives have on hazardous materials? 3-238

5 What are the likely cumulative impacts with development of nearby land at rural densities or at densities similar to the PUD proposal? 3-238

6 What measures can reduce potential hazardous material risks? 3-238

3.10 Historic, Cultural, And Archaeological Resources 3-238

1 What historic, cultural, or archaeological resources are likely to be present in the project area? 3-238

2 What policies and regulations govern historic cultural or archaeological resources that may be present on the site or in the vicinity? 3-240

3 What effects on historic, cultural, or archaeological resources may occur from the proposal and alternatives during construction and use? 3-241

4 What are the likely cumulative impacts with development of nearby land at densities similar to the proposal? 3-241

5 What measures could reduce effects on historic, cultural, or archaeological resources? 3-241

3.11 Geology, Topography, And Soils 3-242

1 What are the geologic, topographic, and soil conditions in the area? 3-242

2 What risks or hazards are associated with geology, topography, and soils? 3-251

3 What policies and standards address geological hazards? 3-258

4 How would geology, topography, and soils pose risks or hazards to facilities or persons living in the proposed project area? 3-259

5 What potential is there for utilizing mineral resources on the site? 3-263

6 What measures may reduce the effects of geology and soils on facilities and persons in the proposed project area? 3-265

3.12 Surface Water Resources 3-265

1 What surface water resources are present in the project area? 3-265

TABLE OF CONTENTS (continued)

2 What regulations apply to surface water quantity or quality? 3-267

3 What regulations apply to development near streams or other waterbodies? 3-275

4 What stormwater regulations apply to runoff from the proposal? 3-275

5 What stormwater facilities are included in the proposal and alternatives? 3-277

6 What impacts to surface water, flooding or other resources may be associated with the proposed and alternative means of stormwater management? 3-277

7 What are the likely cumulative impacts on surface water with development of nearby land at existing zoning densities or PUD densities? 3-277

8 What measures may reduce the effects of the proposal on surface water resources? 3-278

TABLE OF CONTENTS (continued)

3.13 Groundwater Resources 3-279

1 What groundwater resources are present in the project area? 3-279

2 What policies and regulations apply to groundwater quantity or quality? 3-285

3 How does water rights law apply to new groundwater withdrawals in the area? 3-286

4 What effects will the alternatives have on groundwater resources availability? 3-289

5 What risks to groundwater will occur during construction? 3-289

6 How would the adequacy of groundwater availability for existing uses be affected by the project over the long term? 3-289

7 What are the likely cumulative impacts on groundwater availability with development of nearby land at existing zoning densities or at PUD densities? 3-289

8 What risks to groundwater quality and domestic water sources would result from the proposal and alternatives? 3-290

3.14 Vegetation And Wetlands 3-291

1 What vegetation is present in the project area? 3-291

2 What wetlands are present in the area? 3-298

3 What policies and standards address wetlands 3-300

4 What effects would construction of the proposal have on vegetation and wetlands? 3-305

5 What permanent effects on vegetation and wetlands would result from the proposal and the potential for other development in the area? 3-306

6 What measures can reduce permanent effects on vegetation and wetlands? 3-306

3.15 Fish And Wildlife 3-307

1 What fish species and habitat are present in the project area? 3-307

2 What terrestrial species and habitat are present in the project area? 3-308

3 What federal and state threatened, endangered, and candidate species, and species of concern occur in the project area? 3-319

4 State Listed and Priority Habitats and Species 3-320

5 What policies and standards apply to aquatic and terrestrial habitat? 3-321

6 What effects on wildlife and fish would occur during construction? 3-322

7 What permanent effects on wildlife and fish would result from the proposal and alternatives? 3-322

8 What are the likely cumulative impacts with development of nearby land at densities similar to the proposal? 3-330

9 What measures could reduce the effects of the proposal and alternatives on aquatic species, and terrestrial wildlife species and habitat? 3-331

CHAPTER 4 References 4-1

TABLE OF CONTENTS (continued)

List of Figures

Figure 1-1. Location Map 1-3

Figure 1-2. Vicinity Map 1-5

Figure 1-3. Project Site Alternative 1 Flyover View 1-7

Figure 2-1. Applicant's Proposed Planned Unit Development 2-11

Figure 2-2. PUD with 443 Units on Western Portion of the Site 2-13

Figure 2-3A. No Action Alternative with Uniform 3-Acre Lots over the Entire Site 2-15

Figure 2-3B. Alternative 3B with Uniform 3-Acre Lots Over Most of the Site 2-17

Figure 2-3C. Alternative 3C: Uniform 3-Acre Lots on the Western Portion of the Site 2-19

Figure 2-3D Alternative 3D: No Action. Five Acre Lots within ASZ 2-20

Figure 2-4. Alternative 4 PUD with 147 Units on Western and Eastern Sites 2-21

Figure 2-5. Alternative 5 PUD with 113 Units on the Western Portion of the Site 2-23

Figure 3-1. Major Features in the Easton Vicinity 3-7

Figure 3-2. Existing Land Use in the Easton Vicinity 3-9

Figure 3-3. Vacant Parcels in the Easton Vicinity 3-11

Figure 3-4. Comprehensive Plan Designations 3-13

Figure 3-4A. Easton Area Limited Areas of More Intensive Rural Development 3-15

Figure 3-5. Existing Zoning 3-17

Figure 3-6. Parcels Subject to Redevelopment under Existing Zoning 3-41

Figure 3-7. Parcels Subject to Redevelopment under PUD Densities 3-47

Figure 3-8. Transportation Study Area 3-55

Figure 3-9. 2008 PM Peak Hour Traffic Volumes 3-57

Figure 3-10. 2020 No Build PM Peak Hour Traffic Volumes 3-69

Figure 3-11. 2020 Alternative 1 226 Units PM Peak Hour Traffic Volumes 3-71

Figure 3-12. 2020 Alternative 1 443 Units PM Peak Hour Traffic Volumes 3-73

Figure 3-13. 2020 Cumulative with Alternative 1 226 Units and Rural Density PM Peak Hour Traffic Volumes 3-81

Figure 3-14. 2020 Cumulative Alternative 1, 226 Units with PUD Densities Peak Hour Traffic Volumes 3-83

Figure 3-15. 2020 Cumulative with Alternative 1 443 Units with Rural Density PM Peak Hour Traffic Volumes 3-85

Figure 3-16. 2020 Cumulative with Alternative 1 443 Units with PUD Density PM Peak Hour Traffic Volumes 3-87

Figure 3-17 Aviation Safety Zones 3-98

Figure 3-18. Aviation Safety Zones within Alternative 1 3-107

Figure 3-19. Existing Park and Recreation Facilities 3-115

Figure 3-20. Easton School District Boundaries 3-129

TABLE OF CONTENTS (continued)

Figure 3-21. Easton Fire District Boundaries 3-141
Figure 3-22. Hospital District 2 Boundary 3-161
Figure 3-23. Easton Water District Boundary 3-171
Figure 3-24. Existing Views of the Site from I-90 3-211
Figure 3-25. Existing Views of the Site from Lake Easton State Park 3-213
Figure 3-26. Views of Alternative 1 from I-90 3-215
Figure 3-27. Views of Alternative 1 from Lake Easton State Park 3-217
Figure 3-28. Sound Level Monitoring Sites 3-223
Figure 3-29 Aircraft Noise Footprints 3-225
Figure 3-30. Vicinity Geology 3-245
Figure 3-31. Vicinity Soils Map 3-249
Figure 3-32. Steep Slopes and Geologic Hazards 3-255
Figure 3-33 Existing Rockfall on Marian Meadows Site 3-261
Figure 3-34. Vicinity Streams and Waterbodies 3-269
Figure 3-35. Project Site Streams and Waterbodies 3-271
Figure 3-36. Vicinity Floodplain 3-273
Figure 3-37. Groundwater Contours 3-281
Figure 3-38. Major Wells in the Project Vicinity 3-283
Figure 3-39. Generalized Land Cover and Habitat Types 3-295
Figure 3-40. NWI-Mapped Wetlands 3-301
Figure 3-41. Wetlands in the Project Vicinity 3-303
Figure 3-42. Wildlife Use and Corridors 3-317

List of Tables

Table 2-1. Number of Lots in Alternatives 2-9
Table 3-1. Area Population and Housing Characteristics 3-19
Table 3-2. Population of Alternatives with Tenure Scenarios 3-29
Table 3-3. Population of Cumulative Development Scenarios 3-45
Table 3-4. Level of Service (LOS) Ratings for Signalized and Unsignalized Intersections 3-61
Table 3-5. Existing 2008 PM Peak Hour LOS Summary 3-62
Table 3-6. Alternative 1 – 226 Lot Subdivision PM Peak Hour Trip Generation 3-66
Table 3-7. Alternatives 1 and 2 – PUD Development of 443 Units PM Peak Hour Trip Generation 3-66
Table 3-8. Existing 2008, No-Build 2020, and Build 2020 LOS Summary 3-68
Table 3-9. Cumulative 226 Units with Existing Rural Zoning Trip Generation 3-79
Table 3-10. Cumulative 226 Units with PUD Density Trip Generation 3-79

TABLE OF CONTENTS (continued)

Table 3-10. Cumulative 226 Units with PUD Density Trip Generation 3-79
Table 3-11. Cumulative 443 Units with Existing Zoning Trip Generation 3-79
Table 3-12. Cumulative 443 Units with PUD Density Trip Generation 3-89
Table 3-13. No Build 2020 and Cumulative 2020 LOS Summary 3-90
Table 3-14. Accident Safety Zones and Capture Rates for Aircraft Accidents 3-101
Table 3-15. Aviation Risk Land Use Recommendations 3-102
Table 3-16 Exposure Scores for Aircraft Accidents for the Alternatives 3-103
Table 3-17 Park and Trail Demand per Standards and Guidelines 3-120
Table 3-18 Easton School District Enrollment and Staffing 3-126
Table 3-19 Easton School District Budget 3-127
Table 3-20. Easton School District Student Population by Alternative and Tenure 3-135
Table 3-21. Easton School District Cumulative Student Population by Alternative and Tenure 3-138
Table 3-22. Police Incident Reports, Easton, January 2006 to June 2008 3-155
Table 3-23. Projected Water Use Easton LAMIRDs and Water District 3-170
Table 3-24 Projected Water Use, Alternatives 1 and 2 – 443 Units 3-170
Table 3-25. Projected Water Use, Alternatives 3A, 3B, and 4 – 147 Units 3-173
Table 3-26. Projected Water Use, Alternatives 3D and 5 – 113 Units 3-174
Table 3-27. Projected Water Use, Alternative 3C – 33 Units 3-175
Table 3-28. Cumulative Water Use, Rural Development, in Project Vicinity 3-177
Table 3-29. Cumulative Water Use, PUD Density Development in Project Vicinity 3-178
Table 3-30. Sound Levels Produced by Common Noise Sources 3-220
Table 3-31. Project Vicinity Noise Measurements 3-221
Table 3-32. State of Washington Maximum Permissible Noise Levels (WAC 173-60-040) 3-226
Table 3-33. Typical Construction Equipment Noise 3-227
Table 3-34. Washington Air Quality Advisory PM2.5 Standards 3-232
Table 3-35. Washington Air Quality Advisory Effects by Category 3-232
Table 3-36. Soil Properties at the Marian Meadows Site 3-247
Table 3-37. Kittitas County Stream Buffer Specifications 3-275
Table 3-38. Vegetation Communities Comprising Marian Meadows 3-292

List of Appendices

A - State-Listed Candidate, Sensitive, and Priority Species

B – Comments Received on the Draft EIS

C- Response to Comments Received on the Draft EIS

Acronyms and Abbreviations

ac-ft	acre-feet
ADT	average daily traffic
AKART	all known, available, and reasonable methods of prevention, control, and treatment
ASZ	Airport Safety Zone
ATV	all-terrain vehicle
BNSF	Burlington Northern Santa Fe
BOD	biological oxygen demand
BPA	Bonneville Power Administration
BST	bituminous surface treatment
°C	degrees Celsius
CDP	Census Designated Place
CEA	Connectivity Emphasis Area
CF	Commercial Forest
CFR	Code of Federal Regulations
cfs	cubic feet per second
CPSE	Center for Public Safety Excellence, Inc.
CUP	Conditional Use Permit
CWPP	Community Wildlife Protection Plan
dB	decibel
dBA	A-weighted decibel
DEIS	Draft Environmental Impact Statement
DNR	Washington State Department of Natural Resources
DOH	Department of Health
DSL	digital subscriber line
Ecology	Washington State Department of Ecology
EDNA	environmental designation for noise abatement
EIS	Environmental Impact Statement
EMF	electromagnetic field
EMS	emergency medical service
EMT	Emergency Medical Technician
EPA	U.S. Environmental Protection Agency
ERU	equivalent residential unit
ESA	Endangered Species Act
°F	degrees Fahrenheit
FAR	Federal Aviation Regulations
FCC	Federal Communications Commission
FDCP	Fugitive Dust Control Plan
FEIS	Final Environmental Impact Statement
FERC	Federal Energy Regulatory Commission
FR	Forest and Range
FSRS	Fire Suppression Rating Schedule
FTE	full-time equivalent
GMA	Growth Management Act

ACRONYMS AND ABBREVIATIONS (continued)

gpd	gallons per day
gpm	gallons per minute
GPO	goals, policies, and objectives
HCM	Highway Capacity Manual
HUC	Hydraulic Unit Code
IFC	International Fire Code
ITE	Institute of Transportation Engineers
I-90	Interstate 90
LAMIRD	Limited Area of More Intensive Rural Development
in./yr	inches per year
ISO	Insurance Service Organization
KCC	Kittitas County Code
kV	kilovolt
LOS	level of service
Lt.	Lieutenant
MBR	membrane bioreactors
mg-N/L	milligrams of nitrogen per liter
MOU	Memorandum of Understanding
mph	miles per hour
$MTCO_2E$	metric ton carbon dioxide equivalent
NAAQS	National Ambient Air Quality Standards
NPDES	National Pollutant Discharge Elimination System
NRPA	National Recreation and Park Association
NTSB	National Transportation Safety Board
NTU	nephelometric turbidity unit
NWI	National Wetlands Inventory
OAHP	Office of Archaeological and Historical Preservation
OHWM	ordinary high water mark
OSPI	Office of the Superintendent of Public Instruction
OSS	On-site sewage systems
PM	particulate matter
PPC	Public Protection Classification
PSE	Puget Sound Energy
PUD	planned unit development
R-3	rural 3
RCW	Revised Code of Washington
SBR	sequencing batch reactor
SCF	Straight Creek Fault
SEPA	Washington State Environmental Policy Act
SPCC	Spill Prevention, Control and Countermeasure (Plan)
SPI	State Superintendent of Public Instruction
SWMP	Solid Waste Management Plan
SWR	Solid Waste Regulations
TRB	Transportation Research Board
TSS	total suspended solids

ACRONYMS AND ABBREVIATIONS (continued)

UGA	urban growth area
UGN	urban growth node
USC	United States Code
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
USPS	U.S. Postal Service
UV	ultraviolet
vpd	vehicles per day
WAC	Washington Administrative Code
WAQA	Washington Air Quality Advisory
WASL	Washington Assessment of Student Learning
WDFW	Washington State Department of Fish and Wildlife
WNF	Wenatchee National Forest
WNHP	Washington Natural Heritage Program
WRIA	Water Resource Inventory Area
WSDOT	Washington State Department of Transportation
WSP	Washington State Patrol
WSPRC	Washington State Parks and Recreation Commission
WUI	Wildlife Urban Interface
WUTC	Washington Transportation and Utilities Commission

CHAPTER 1Project Summary

Introduction

This Final Environmental Impact Statement (FEIS) was prepared to provide information for consideration by Kittitas County in making their decisions regarding permitting of the proposed Marian Meadows development.

This FEIS is intended to be more approachable for the general public. It is written in a question-and-answer format, with explanations of technical terms and various color graphics, tables, and photos to illustrate the text. The format, however, does not reduce the detail of information provided. In some cases, additional technical detail and data are provided in the appendices.

This chapter (Chapter 1) summarizes the proposed project and includes a table comparing the impacts of the alternatives.

Chapter 2 describes the proposal and alternatives.

Chapter 3 describes existing conditions, impacts, and mitigation for each environmental element and alternative.

What is an Environmental Impact Statement ?

The Washington State Environmental Policy Act (SEPA) requires the examination and consideration of potential impacts on environmental resources when considering the approval of a project. An Environmental Impact Statement (EIS) is a document that is required when a proposal is likely to result in significant adverse impacts on the environment.

The purpose of an EIS is to provide information on impacts and mitigating measures. This information is used by a decision maker to decide whether to proceed with a project, or make modifications to reduce specific impacts or deny the proposal. .

1 Where is the proposed project?

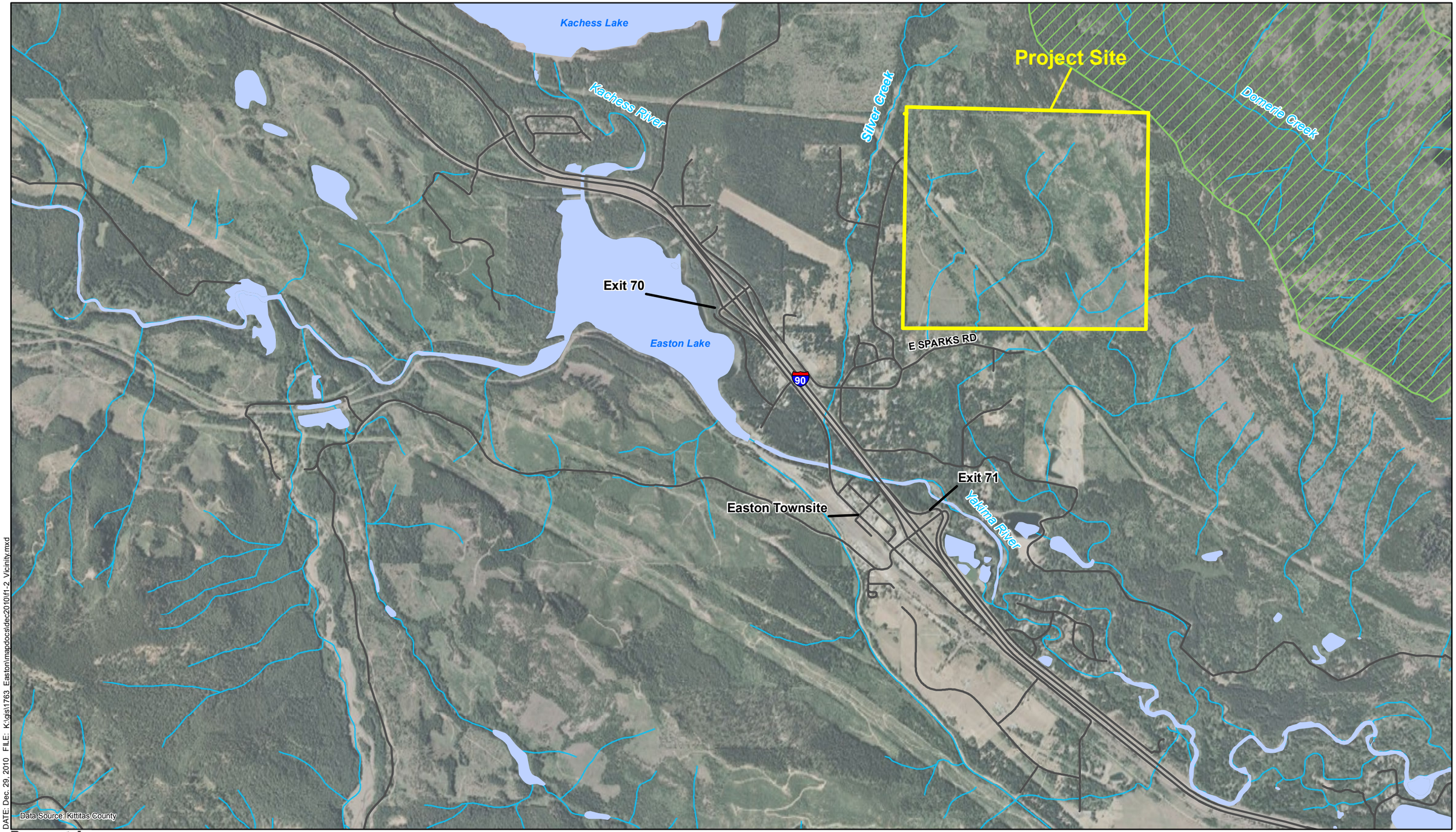
The proposed project is located on the north side of Interstate 90 (I-90), northeast of the unincorporated community of Easton in western Kittitas County, Washington, as indicated in Figure 1-1. The general context of the area is provided in Figure 1-2. The three-dimensional flyover view in Figure 1-3 provides a perspective on the physical features of the setting and the lot layout in Alternative 1.

The project site is approximately 15 miles west of the town of Cle Elum and approximately 15 miles east of the Snoqualmie Pass summit, within the Yakima River Valley, about 2 miles southeast of Kachess Lake. The site is on the lower slopes of Easton Ridge, which divides the Yakima River drainage from Domerie Creek and the Cle Elum River drainage to the east.

The upper park of Domerie Creek is the City of Roslyn's watershed for its municipal water system. The sole source of supply for the City of Roslyn is a small impoundment located approximately 5 miles from the City.



Figure 1-1
Marian Meadows
Location Map



DATE: Dec. 29, 2010 FILE: K:\gis\1763 Easton\mapdocs\dec2010\f1-2 Vicinity.mxd

Parametrix

N

0 2,000

Scale in Feet

Legend

- Project Site
- Road
- City of Roslyn Municipal Watershed
- Lake
- Stream

Figure 1-2
Marian Meadows
Easton Vicinity



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Parametrix

N

Project Site

Figure 1-3
Vicinity Map
Flyover view

The site is accessed from the Sparks Road interchange, Exit 70 off of I-90. It is about 1 mile from the interchange to the site via Sparks Road, a county road.

2 What changes to zoning or other requirements are proposed?

The proposal consists of two elements:

- A rezone of the majority of the property (430 acres) to the planned unit development (PUD) zoning district as provided by Chapter 17.36 of the Kittitas County zoning code. The purpose of the PUD zone is to provide for and encourage a harmonious mixture of land uses with greater flexibility in land use controls. About 40 acres are proposed to be excluded from the PUD designation. This area lies at the foot of the steep sloping portion of the site and includes the Bonneville Power Administration (BPA) easement corridor, which is 350 feet wide.
- A preliminary plat covering the western one-third of the property (about 120 acres) is proposed to be divided into 225 lots of approximately 0.5 acre each.

3 What are the major design features?

Alternative 1: Applicant's Proposal, is for a single-family residential development consisting of:

- A preliminary plat that would divide the western one-third of the property into 225 lots of approximately 0.5 acre each on a site of about 120 acres.
- Future unspecified single-family development in the eastern portion of the site that would consist of up to 218 additional units on 305 acres. A conceptual layout developed for the FEIS avoids the steepest slopes, wetlands, and streams and results in lot sizes that range from about 0.5 acre to almost 5 acres.

The project includes related infrastructure comprising:

- Approximately 6.4 miles of road.
- Water service by Easton Water District No. 3.
- Sewage disposal through a sewage treatment plant proposed to be built by the applicant and designed such that treated effluent would meet standards for recycled water.

4 What other proposals by the applicant would affect impacts?

An element that is not part of the PUD application is the development of up to 300 mini-storage units along the northeast side of the 350-foot-wide BPA easement, which was excluded from the PUD application. This use received Conditional Use Permit (CUP) approval on February 10, 2010 (File No. CU-09-0003). The plans for the mini-storage site include an internal roadway parallel to and 10 feet from the edge of the BPA right-of-way with buildings located northeast of the road. The conceptual plans indicate up to 300 units provided in the 16 structures shown in the approved CUP. Potential cumulative impacts of this proposal are included in applicable elements of the environment.

The applicant has indicated that there is the potential for a subsequent application for a quarry on portions of the site. Preliminary identification of a potential quarry site indicates that the quarry proposal may affect the viability of the roadway corridor indicated for access to the steeply sloping eastern portion of the site. The quarry location intercepts the projected alignment of that roadway. Depending on the location, amount and configuration of excavation for the quarry, provisions made for continuation of the road through the quarry site, and the underlying characteristics of the rock formations, the long-term stability of this roadway corridor may be affected. These issues, together with assessment of impacts on other elements of the environment, would be addressed in an environmental review for a subsequent application for the quarry site.

5 What alternatives are considered?

Four alternatives to the applicant's proposal have been developed, with some options related to site conditions and the nearby airport:

- **Alternative 2: Planned Unit Development (PUD),** retains the maximum number of units allowable under a PUD, but locates all 443 units on the western flatter portion of the site. It employs a mix of single-family and multi-family units and includes the mini-storage use.

No Action Alternatives presume development without approval of a PUD:

- **Alternative 3A: No Action with Uniform 3-Acre Lots** illustrates development of the entire site at the existing zoning, which requires 3-acre minimum lot sizes. The conceptual layout includes a uniform distribution of lots over the proposed development. It calls for a development consisting of about 147 lots with 143 units provided by the 430 acres zoned Rural (R-3), and 4 units provided by the density allowance in the 90 acres zoned Forest and Range (FR). This option would include water district service but would employ individual on-site sewage disposal rather than a sewage treatment plant. The entire site would be subdivided; the mini-storage use included in Alternatives 1 and 2 would not take place.
- **Alternative 3B: No Action with 3-Acre Lots with Exclusions** has the same features as Alternative 3A, except for exclusion of the area northeast of the BPA easement for development of up to 300 mini-storage units. It would have about147 lots.
- **Alternative 3C: No Action with 3-Acre Lots Excluding the Eastern Portion of the Site** has the same features as Alternative 3A, except for exclusion of the steep eastern portion of the site and results in a substantial reduction in units to between 30 and 35 lots. The mini-storage use is not included.
- **Alternative 3D: No Action with 5-Acre Lots in Airport Safety Zones (ASZ)** subdivides the portion of the site within ASZs at a density of one unit per 5 acres. This results in 68 lots in the ASZs, 45 lots outside the ASZs, and about 113 lots overall. The mini-storage use is not included.

Alternatives 4 and 5 include Compilation of Mitigation Measures consisting of development that would either (a) incorporate measures identified in the EIS analysis that would reduce specific impacts upon the environment, or (b) incorporate changes in the proposal that could be imposed as governmental conditions to control environmental impacts or meet applicable local, state, or federal codes or criteria. Two alternatives were developed after an initial assessment of the existing conditions and impacts of the proposal.

- **Alternative 4: PUD with Reduced Density on the Entire Site** includes a rezone to PUD with 147 lots but provides for no development in (ASZs) 3 and 4. It provides for density of one unit per three acres in all ASZs, avoids areas of debris flow hazards, and reduces the number of lots on the steepest slopes on the eastern portion of the site. It also increases lot sizes at the perimeter of the site and along potential wildlife corridors. The mini-storage use would be relocated within ASZ 4.
- **Alternative 5: PUD with All Development on the Western Portion of the Site** includes the same features as Alternative 4 to avoid impacts, but also avoids all development on the steep slopes located on the eastern portion of the site . It includes slightly smaller lots in some areas than Alternative 4 and includes a component of multi-family development. It exceeds the 113-unit maximum allowed by Kittitas County within all ASZs. The mini-storage use could be relocated within ASZ 4 as indicated in Alternative 4.

These options would include water district service but would employ individual on-site sewage disposal rather than a sewage treatment plant.

- In addition to the site development alternatives, four **tenure scenarios** were developed. Tenure scenarios address future residents' effect on public service impacts based on age and whether they live on the site year-round or are part-time recreational residents. Because of uncertainty in predicting the character of future residents, four scenarios have been developed with different mixes of residents:
  - **Tenure Scenario 1:** All full-time residents: 85 percent workforce families and 15 percent retired persons;
  - **Tenure Scenario 2:** 60 percent workforce families, 15 percent retired and 25 percent part-time recreational;
  - **Tenure Scenario 3:** 35 percent workforce families, 30 percent retired, and 35 percent recreational; and
  - **Tenure Scenario 4:** 25 percent workforce families, 25 percent retired and 50 percent recreational.

6 What Kittitas County decisions are required?

Decisions required by Kittitas County are as follows:

- The Kittitas County Board of Commissioners will consider the PUD rezone as a quasi-judicial decision. The rezone will first be reviewed by the Hearing Examiner who will make a recommendation to the County Commissioners.
- The Kittitas County Board of Commissioners will consider the subdivision as a quasi-judicial decision only if the rezone is approved. The preliminary plat will first be reviewed by the Hearing Examiner who will make a recommendation to the County Commissioners.
- Kittitas County may also issue other ministerial approvals subsequent to rezone and preliminary plat approval for infrastructure review and construction. These include:
  - Road Improvement Plan Approval
  - Clearing and Grading Permit(s)
  - Fire Marshal Hydrant Permit Approval
  - Agreement to Locate Utilities (Franchise)
  - Master Drainage Plan Approval
  - Final Plat Approval.
- If the PUD rezone is approved, subsequent phases of the project would require the following approvals:
  - Preliminary Plat Approval
  - Environmentally Critical Area Modification Approval.

7 What other agencies will review the proposal?

The Easton Water District No. 3 will review and approve construction plans for water system expansion.

The Washington State Department of Ecology (Ecology) will review:

- Water right expansion to serve expanded Water District boundaries under RCW 90.03.330, 340 or 386
- Wastewater Treatment Facility Design Approval under RCW 90.48.110
- Recycled Water Application Permit
- National Pollutant Discharge Elimination System (NPDES) Clearing and Grading Permit
- Fugitive Dust Control Plan (FDCP)

- Burn permits for outdoor burning

The Washington State Department of Health will review:

- Water System Expansion Design Approval
- Recycled Water Application Permit.

The Washington Department of Fish and Wildlife (WDFW) will review:

- Hydraulic Project Approval for relocation of a watercourse (if the existing watercourses across the property are determined to be within its jurisdiction).

The Washington State Department of Natural Resources (DNR) will review:

- Forest Practices Permit for clearing of the site.

8 What other independent projects may occur near the proposal that may affect impacts?

Potential cumulative impacts may occur from land development in the project vicinity in the area north of I-90 served by Sparks Road. Two scenarios would be evaluated:

- Development at existing rural densities at one unit per 3 to 5 acres; and
- Development at the intensity allowed under PUD regulations as proposed for the Marian Meadows site, resulting in about one unit per acre.

How many lots are in the area now?

At the current time there are about 200 lots in the vicinity. About 40 percent of them are vacant. About a third of them are less than 3 acres in size and are largely included in three existing subdivisions. The majority of the other parcels range from 3 to 5 acres with a few parcels ranging from 20 to 40 acres south of Sparks Road. The state-owned Easton Airport is about 280 acres.

Rural Density

Development under existing zoning allowing one lot per 3 acres would allow additional development only for those lots larger than 6 acres. Subdivision of parcels large enough for subdivision (excluding the airport) into 3-acre parcels could create an additional 130 lots. When added to the existing 200 lots (about 80 of which are vacant), there would be a total of about 330 lots in the vicinity outside Marian Meadows.

PUD Density

Development is based on the premise that approval of the Marian Meadows PUD application would set a precedent to allow a similar density up to three times that of the current zoning, or about one unit per acre. If development reflecting this density of development were applied to the area as a whole, many of the existing parcels larger than 2 acres could be subdivided. Subdivision of eligible parcels (excluding the airport) into 3-acre parcels could create about 550 lots in the area, including the existing 200 lots (about 80 of which are vacant).

The cumulative impacts are assessed for elements that would change the impacts as compared to the project alone.

9 What other potential environmental impacts assessment may take place for elements of the alternatives or other development on the site?

This Final EIS assesses impacts of the proposed PUD that would occur from the density and general preliminary plat arrangement of development on the site. It does not assess specific impacts of elements of the proposal that have not been defined sufficiently to be assessed in this EIS. This approach is consistent with the SEPA rules, specifically Washington Administrative Code (WAC) 197-11-060(5), Phased Review, which provides for an appropriate scope and level of detail of environmental review to coincide with meaningful points in their planning and decision-making processes and to focus on issues that are ready for consideration and exclude from consideration issues not yet ready.

Issues subject to future environmental analysis may include:

- Subdivision development layouts not analyzed in the Alternatives in this EIS;
- Future quarry operations on the site, including but not limited to the applicant's proposed excavation of 150,000 tons of material from the existing quarry.
- Requirements for acquisition and/or transfer of water rights.

Future environmental review of any aspect of the development not addressed in this EIS will follow the procedures outlined in WAC 197-11. Use of all or part of the analysis in this EIS will be made by the lead agency in accordance with WAC 197-11-600, and will be based on whether the analysis in this EIS includes adequate analysis of the impacts that would occur from the specific proposal.

10 What are the potential environmental impacts of the alternatives?

The following is a summary of potential impacts of the development on environmental elements. More detailed analyses is included in Chapter 3.

Land Use

Land use impacts are related to the number of units and how they are similar to or differ from existing patterns of land use in the vicinity.

Alternative 1, the applicant's proposed PUD with 443 units, would result in a substantial change in density and open space from the majority of the development in the vicinity, particularly the lots directly adjacent to the site, which are generally greater than 3 acres. The majority of the property in the vicinity consists of lots larger than 3 acres.

Most residents in the area would experience the proposal and the alternatives in terms of a change in character as follows:

- Native forest vegetation would no longer predominate on the site. The size of proposed lots and typical associated clearing would result in elements of the built environment such as buildings and ornamental landscaping being the dominant feature.
- The observed visual character of the community would change due largely to the predominance of residences and associated permanent clearing of forest cover.
- Residents of Marian Meadows would be unlikely to derive significant support from traditional rural resource-based economies, and would likely be predominantly commuters to urban areas or recreational users. This may result in fewer social interactions among members of the community.
- There would be an increase in the number of people on local streets, businesses, schools, and other public places.
- The area would likely experience a decline in use by wildlife, especially large mammals such as elk, as discussed in more detail in Section 3.15. In addition, the cumulative impacts of development of a mini-storage project east of the BPA easement, in addition to impacts of the PUD would likely result in substantial additional adverse impacts on wildlife movement.

Alternative 2, PUD on the western portion of the site only with up to 443 units, would result in the same number of units in a smaller area.

Alternative 2 would have similar impacts as Alternative 1, except that the inclusion of multi-family use would be a greater change from the existing large lot development. The observed visual character of the community would change less for distant views because the steep sloping eastern portion of the site would not be developed and would remain in forested use. This would preserve the forested ridges that contribute to the rural character of the area.

Alternative 3A, No Action with Uniform 3-Acre Lots, would increase the total residential lots in the immediate vicinity from approximately 200 to about 350, a little more than half of the total proposed by Alternatives 1 and 2, but a substantial increase over the existing amount. The character would be similar to the existing large lot development in the vicinity.

Alternative 3B, No Action with 3-Acre Lots with Exclusions would have the same impacts as Alternative 3A.

Alternative 3C, No Action with 3-Acre Lots Excluding the Eastern Portion of the Site, would increase the total residential lots in the immediate vicinity from approximately 200 to about 233. The character would be similar to the existing large lot development in the vicinity, and there would not be a large increase in lot number. This alternative also reduces visual impacts in the most visible portion of the steep eastern area of the site.

Alternative 3D, No Action with 5-Acre Lots in ASZs, has very similar impacts to Alternative 3A, but the larger lots in ASZs would preserve more open space and natural features.

Alternative 4, PUD with Reduced Density on the Entire Site, would result in an increase in total residential lots in the immediate vicinity from about 200 to about 350, or a little more than half of the total proposed by Alternatives 1 and 2. Alternative 4 would have slightly more lots than the total in Alternative 5, and the same as Alternative 3A, but with less visual impact due to fewer lots on the most visible portions of the steep eastern area of the site.

Alternative 5, PUD with All Development Clustered on the Western Portion of the Site, could have up to 113 lots. The development would include a mix of lot sizes with larger lots located immediately adjacent to the site, which would provide consistency with existing adjacent large lots. The majority of residents in the community would experience the change from the existing forest cover; however, a substantial area of native forest vegetation would be preserved in the ASZ and hazard avoidance areas, as well as on the eastern portion of the site. The preservation of the steeply sloping eastern portion of the site, which is the most visible, would preserve the forested ridges that contribute to the rural character of the area as seen from a distance.

Cumulative Impacts

Rural Densities

Cumulative impacts of development of other land in the vicinity at the current density allowed by rural zoning at one unit per 3 acres would allow subdivision of lots greater than 6 acres in size.

Alternatives 1 and 2, Cumulative impacts from development of nearby land at rural densities (existing zoning 3-acre lot sizes) would result, in up to about 770 single-family lots (including the proposed 443 units). The Marian Meadows development would contribute nearly 60 percent of the total lots. The full-time equivalent (FTE) cumulative population would vary between 2,350 and 1,300 residents depending on the proportion of full-time and seasonal residents. For comparative purposes, this would range from 120 percent larger than the 2009 population of Cle Elum (1,870) to about 70 percent of the size of Cle Elum. The rural character of the community would be changed substantially

Alternatives 3A, 3B, and 4 would each result in a cumulative total of about 470 lots, amounting to about 60 percent of the cumulative number of lots with Alternatives 1 and 2. Under Alternatives 3A and 3B, the majority of development in the area would be in large lots similar to development in the vicinity of the site. Under Alternative 4, the majority of lots would be less than 1.5 acres in size, substantially smaller than existing development. The FTE cumulative population would vary between 1,270 full-time residents and 823 seasonal residents depending on the proportion of full-time and seasonal residents. For comparative purposes, this would range from about 70 percent of the size of Cle Elum to about 45 percent of the size of Cle Elum.

Alternative 3C would result in a cumulative total of about 360 lots, which is about 47 percent of the cumulative number of lots with Alternatives 1 and 2. The majority of lots under this alternative would be

3 acres in size or larger. The FTE cumulative population would vary between 970 full-time residents and 625 full-time and seasonal residents depending on the tenure alternative. For comparative purposes, this population would range from about 50 percent of the size of Cle Elum to about one-third the size of Cle Elum.

Under **Alternatives 3D and 5**, a total of about 443 lots would be developed in the vicinity, about 58 percent of the cumulative number of lots with Alternatives 1 and 2. With Alternative 3-D, the majority of development in the area would be in large lots of 3 acres in size or larger . With Alternative 5, the majority of development in the area would be in small lots less than 1 acre in size. FTE cumulative populations would vary between 1,180 full-time residents and 764 full-time and seasonal residents. For comparative purposes, this population would range from about 63 percent of the size of Cle Elum to about 40 percent of the size of Cle Elum.

PUD Densities: Approval of the proposed PUD with bonus provisions allowing up to three times the density allowed by underlying rural zoning could provide a precedent for development of other parcels in the vicinity at similar densities.

Alternatives 1 and 2, Cumulative impacts with development of nearby land at the same average density as provided in the PUD application would result (in combination with Alternatives 1 and 2 PUDs) in a total of about 990 single-family lots in the area (including the 443 lots included in PUD alternatives). The lots within the Marian Meadows development would be smaller than the average in the area and Alternative 2 would contain the only multi-family development in the area. The FTE population would vary between 2,630 and 1,700 residents. For comparative purposes, this would range from 140 percent larger than the 2009 population of Cle Elum (1,870) to about 90 percent of the size of Cle Elum.

The area as a whole would take on an increasingly suburban character and existing rural characteristics would be reduced. The result would be a setting in which:

- Open space, the natural landscape, and vegetation have a less predominant role as compared to elements of the built environment and ornamental vegetation.
- Forest resource activities would be reduced and nearby residential use would likely interfere to some extent with commercial forestry activities, even with local policies designed to protect resource use.
- There would be little opportunity for small acreage ranches and associated animal keeping.
- Opportunities to provide wildlife habitat would be greatly reduced with smaller lot sizes in the area as a whole.
- Governmental services more consistent with urban uses would be required.

Transportation

Traffic intersections in the area are expected to experience relatively small increases in delay in 2020; however, all intersections would continue to operate better than the Kittitas County Level of Service (LOS) C standard.

Increased traffic can be expected to increase; however, existing collision frequency is substantially below a level of concern. As a result, traffic safety is not expected to be a substantial problem in the future with or without the project.

With the substantial increases in traffic volumes, roadways previously shared by motorized and non-motorized travel modes could pose safety concerns.

Road maintenance responsibilities would generally be similar to those being practiced today; however, if substantial increases in traffic occur from the development, resurfacing to fill pot holes and dust suppression treatments along Country Drive and Pit Way could become more frequent and costs could increase slightly.

Within the existing Easton Village subdivision, traffic volumes on Country Road are projected to increase more than four-fold, with 10 percent of project trips presumed to take that route. If more project trips chose that route, the increase would be greater. The total number of trips is relatively low, but it may increase enough to change perceptions of safety for children playing in the area. Use of local streets as part of the social interaction pattern within the community, including as a play area for children, may change as the result of perceived increases in traffic.

Cumulative impacts

The cumulative effects of buildout of the proposed PUD, combined with the PUD density in the vicinity, would result in delay increases of up to 144.2 seconds per vehicle. Four intersections would operate worse than the LOS C standard:

- I-90 eastbound ramps/Railroad Street – LOS F
- I-90 westbound ramps/Railroad Street – LOS D
- Sparks Road/Railroad Street – LOS F
- Spark Road/Pit Way – LOS E.

Mitigation of these impacts can be accomplished with relatively minor changes in designation of all-way stop control or minor reconfiguration of intersections to add left-turn lanes and similar features.

Transportation - Aviation

Alternative 1 would result in 60 lots located completely or partially in the outer safety zone and 25 lots located completely or partially in the inner turning zone, which would expose those residents to hazards from airport operation.

Alternatives 2 would result in no lots being located completely or partially in the outer safety zone. Up to 27 lots would be located partially in the inner turning zone; however, building areas would be entirely outside of the ASZs. With subdivision restrictions on building within the safety zones, there would be no increase in exposure to hazards from airplane collisions with the ground within the safety zones.

Alternatives 3A and 3B would result in seven lots being located completely or partially within the outer safety zone and nine lots located completely or partially within the inner turning zone. Of these 15 lots (some lots are in both zones), seven would have building areas outside the safety zones, resulting in a net increase of eight lots with future residents exposed to the higher risk from aviation accidents represented by the safety zones. The location of fewer lots in ASZ 4 and the lower density results in a much lower exposure to risk compared to Alternatives 1 or 2.

Alternative 3C with 3-acre lots has fewer overall lots, at 33, in all ASZs with nine in ASZ 4 and 24 in ASZ 6. Fewer lots results in substantially lower exposure than under Alternatives 3A or 3B.

Alternative 3D with 5-acre lots in all ASZs has a lower risk because of the lower number of lots, the potential building areas in ASZs 3 and 4 and the lower density.

Alternatives 4 and 5, mitigation alternatives with about 147 and up to 113 lots, respectively, have a building area for all lots entirely outside of ASZs 3 and 4, which have the highest risk of accidents. The clustering of development in ASZ 5 substantially reduces the risk exposure as compared to Alternatives 1 and 2. The larger number of lots in ASZ 6 and smaller lots, however, result in a greater exposure than Alternatives 3A and 3B, which have a substantial component of their lots outside of the ASZs. With subdivision restrictions on building within the safety zones, there would be no increase in exposure to hazards from aviation accidents within the safety zones.

For all the alternatives, there still remains the potential for aviation accidents outside the safety zones.

Parks and Recreation

Alternatives 1 and 2 recreation demand based on National Recreation and Park Association (NRPA) guidelines would depend on population and would be between 8.5 and 14.3 acres of parkland for the tenure scenario with largely full-time population, and between 4.8 and 8.0 acres for the tenure scenario with 50 percent seasonal population. The proposed provision of 1.88 acres of park at three locations would not meet Kittitas County standards or NRPA guidelines.

Other Alternatives would have correspondingly less demand for park acreage, depending on the number of future lots and resulting future population.

For all alternatives, the lack of provision for recreation likely would result in either greater use of off-site facilities or a lack of recreational opportunities for residents. The population likely served the least would be the demand for youth sports.

Cumulative Impacts

Under existing county LOS standards, it is unlikely that adequate provision for parks and recreational facilities would take place in conjunction with new development. The lack of provision for recreation likely would result in either greater use of off-site facilities, which are either not in existence, or well below the capacity to serve such a population, or would result in a lack of opportunities for recreational activities to serve residents.

Public Services - Schools

Impacts on Instruction

Education financing is established by the state legislature through annual appropriation and includes funding for what the state defines as "basic education." The local community currently pays about 30 percent of the cost of education not paid by the state.

In the future, if current funding formulas continue, the local community would be expected to provide between 20 and 30 percent of the cost of instruction and transportation.

Impacts on Facilities

The projected student populations are affected substantially by the percent of retired and seasonal residents. The number of students range from about 260 with Alternative 1 with largely full-time residents to about 90 with Alternatives 3 and 5 with the same tenure scenario. This scenario would result in a need to increase the size of facilities by a factor of up to about two-and-a-half for the existing school.

At the lower end of the tenure range with up to 50 percent of residents seasonal, Alternative 1 would add an additional 80 students and Alternatives 3 and 5 would add about 30. This student population likely could be accommodated for the first few years by capacity in existing classrooms. After a period of several years, at least two and possibly three new classrooms would need to be added to the existing school.

Transportation costs are related to facility decisions. For Alternative 1, the student population could vary from about 260 students with all full-time residents to about 80 students with half the units occupied by seasonal recreational residents. The number of school buses required to transport that many students would range from about six to about two.

Cumulative Impacts

If development reflecting PUD density were applied to the area as a whole, additional student enrollment would vary from around 850 at the high end to around 153 at the low end. At the upper end of the range, this would be equivalent to current student enrollment of the Cle Elum School District. With buildout of the project vicinity at rural density with 3-acre lots, the district would have about three-quarters the number of students as the Cle Elum School District.

Public Services - Fire Protection

The Easton Fire District would be substantially affected by additional demands to provide fire protection. The limits of the volunteer district to provide service may result in risks to life and property. All alternatives would require a substantial increase in the need for volunteer fire fighters and equipment.

Alternative 1 increases the total number of residential structures to be protected in the district by about 30 percent. It also provides the greatest potential exposure of fire risk and potential impacts requiring additional volunteer personnel, higher levels of training, and additional equipment. The steep eastern portion of the site provides an area of extreme wildfire hazard because of its location on a slope and the potential for wildfires to move more quickly uphill, heating fuels as it moves uphill, and reinforcing the speed and heat as it moves. The potential for more than 200 units on this portion of the site places a large number of residents at risk. The site is also at risk from wildfires initiated from human sources on the site (as are half of wildfires), including wildfires spreading from forest lands on the north, east, and south sides of the site. The single access provided to the steep eastern portion of the site also limits the ability to escape a fire without interfering with fire response vehicles and equipment trying to move up the same roadway to respond. A fire that started on the flat portion of the site and moved uphill could block or seriously impede escape or access on the road.

Alternative 2 would reduce the risk to persons and property from wildfire substantially by locating all development on the flat western portion of the site. The development of approximately 200 multi-family units on the site would substantially increase fire exposure due to the type of units and the lack of separation between units. Fire suppression in multi-family structures would require additional personnel, additional equipment, and additional training for the volunteer fire force.

Alternatives 3A, **3B, and 3D** would reduce the total exposure to fire risk and resources required of the fire district, compared to Alternative 1, by reducing the number of units and increasing separation between units. Residences on the steep eastern portion of the site would have similar extreme exposure to risk from wildfires; however, the overall risk exposure would be somewhat less because of fewer lots, as well as larger lots with greater separation between buildings.

Alternative 3C would have the least exposure to fire risk as there would be no development on the steep eastern portion of the site, more space between buildings due to larger lots, and the fewest number of buildings due to the fewest number of lots.

Alternatives 4 and 5 would have similar reductions to fire hazards as Alternatives 3A, 3B, and 3D. However, the overall risk exposure for Alternative 4 would be somewhat less because of fewer lots and the lack of lots on the higher slopes where escape and access would be most difficult. The overall risk exposure for Alternative 5 would be even less than Alternative 4 because there would be no building on any part of the slope.

Cumulative Impacts

Cumulative impacts of the project in the immediate vicinity would result largely from the number of additional residents, lot sizes, type of development, and location.

Alternatives 1 and 2 with 443 units and additional development at rural densities would result in 773 cumulative lots or units in the project vicinity. Alternatives 3A, 3B, and 4 with 147 units would result in 477 lots, Alternative 3C with 33 lots would result in 363 lots in the project vicinity, and Alternative 5 with 113 lots would result in 443 lots in the vicinity. In general, risk and resources needed for fire suppression would be less than the proposed PUD because of the minimum 3-acre lot size and in the cases of Alternatives 3C, 4, and 5 flatter terrain, which would tend to reduce the risk of fire spreading and facilitate faster response.

If Alternatives 1 or 2 were approved, they may provide the precedent for similar development of other properties in the vicinity at the same overall density. Most of the lots outside Marian Meadows would be on the flat valley floor and at an average of 1 acre each. Distance between structures would be less than with 3-acre lots under existing zoning and would increase the risk of spread of fire for structure fires and wildfires.

Public Services – Police and Public Safety

In general, the additional population in the area would lead to increased demand for police response. That response would demand service from whatever police officers from the sheriff's department and other agencies, such as the state patrol, are available. A higher level of response would be reflected in more responses per shift, but may not affect the ability of personnel to respond, unless a number of incidents overlap, or incidents involving a threat to persons require a backup response that would likely involve response from multiple agencies. The likely effect noticed by local residents would be less frequent presence of officers patrolling the area, or longer response time to calls. The likely effect on personnel would be busier shifts and a perception of greater risk to them from multiple calls.

Public Service – Medical Response

The volunteer fire department's ability to respond to cumulative demand is largely dependent on the volunteer pool, which generally is increased by more population, but may be reduced by a greater proportion of residents commuting outside the area or seasonal residents. The long-term impacts on the fire district of fire and emergency medical response may be to encourage a transition to a core paid staff that can respond during working hours when volunteers are less likely to be available.

Hospital District No. 2 is likely to be able to respond to cumulative demand by adding more equipment and personnel because it relies on paid staff, provided that local assessments provide adequate resources, or voters approve additional assessments. Additional development in the area is likely to add enough tax revenue to offset additional costs. In addition, cumulative development in the Easton area is likely to be a relatively smaller component of the hospital district's demand compared to growth in the Cle Elum/Roslyn/Suncadia area.

Public Service – Mail Service

The likely impact of any of the cumulative impact scenarios under any alternative would result in mail demand similar to a small town. Acquisition of a new post office with greatly expanded individual mailboxes, or rural delivery, or both are the likely mitigating measures for increased demand for service.

Utilities – Water

The provision of additional storage east of I-90 would improve water service to that portion of the Easton Water District Service Area.

Alternatives 1 and 2 with 443 units have substantially different water demand with different tenure options. Tenure Scenarios 1 and 2 with a higher proportion of full-time residences (workforce and retired) have substantially higher water demand. All the tenure options exceed the current Easton Water District water rights of 137.2 acre-feet (ac-ft) per year with existing use of 71 ac-ft resulting in up to 61 additional ac-ft per year available for new hookups. If the pending water rights application for an additional 112 ac-ft per year were approved, the resulting rights of 252 ac-ft per year would result in 178 ac-ft available for new hookups. This amount would not be adequate for any options except Tenure Scenario 4 with 50 percent seasonal residents. If provision is made for reserving water supply for existing platted lots and the land within the Limited Area of More Intense Rural Development (LAMIRD), the district is not likely to have sufficient water rights for any scenarios.

Alternatives 3A, 3B, and 4 water demand for 147 units is proportionally lower than Alternatives 1 and 2. Tenure Scenarios 3 and 4with seasonal residents totaling 35 percent and 50 percent, respectively, are within the 61 additional ac-ft per year available for new hookups under the existing Easton Water District water rights including only existing use. If provision is made for reserving water supply for existing platted lots and the land within the LAMIRDs, the district is not likely to have sufficient water rights. If the pending water rights application for an additional 112 ac-ft per year were approved, all tenure scenarios would be adequately served by the 178 ac-ft available for new hookups.

Alternatives 3D and 5 water demand for 113 units is within the 61 additional ac-ft per year available for new hookups according to the existing Easton Water District water rights including only existing use. If provision is made for reserving water supply for existing platted lots and the land within the LAMIRDs, the district is not likely to have sufficient water rights. If the pending water rights application for an additional 112 ac-ft per year were approved, all tenure options would be adequately served by the 178 ac-ft available for new hookups

Alternative 3C water demand for 33 units is within the 61 additional ac-ft per year available for new hookups including only existing use. If provision is made for reserving water supply for existing platted lots and the land within the LAMIRDs, the district is still likely to have sufficient water rights. One consequence of the alternatives is the use of much of the existing capacity of the water system. If more water is used by the Marian Meadows development, less is available for other users.

One of the ways in which the water district would be potentially affected is the use of individual wells by future development. One of the disadvantages of individual well water supplies is that water supply and hydrants for fire flow are not provided. In addition, the systems are not monitored for water quality and reliability of service. In this case, an adverse unintended consequence of state water rights, as applied to the Easton Water District, with the demands of the Marian Meadows development may be the development of water supplies for new developments in the area that serves the public less effectively than the expansion of the water district system.

Cumulative Impacts

All cumulative scenarios for either rural development or development equivalent to the proposed PUD are in excess of the water district's existing water rights and additional applications pending. This demand would substantially increase the likelihood of using water sources other than the water district such as individual wells. This scenario would impose difficulties in managing surface and water rights to recognize senior rights and provide in-stream flows. If service is provided by individual wells, fire flow would not be required.

The extent of reduction that can be achieved through water conservation programs varies considerably between communities. Generally, there is a strong correlation between utility provisions of resources, including education and incentives, and the effectiveness of a program (AWE 2009).

Utilities – Sewage Disposal

The applicant's proposed wastewater treatment facilities with a combination of mechanical and biological processes employ technology that has been successfully used to serve large concentrations of population for many years. In this application, with a relatively small population, there are a number of factors that may lead to adverse impacts, including:

- High cost of implementation. The initial capital cost of a wastewater treatment facility is very high. For a service area of 443 units, the cost per unit is several magnitudes larger than on-site disposal. The sequencing batch reactor (SBR) wastewater treatment system proposed, however, is one of the lowest-cost alternatives available if such a system is needed or desirable.
- High cost of operation and maintenance. Any sewage treatment facility requires a relatively high level of oversight of operation and maintenance of key facilities. In this case, with the potential for variable populations due to vacation homes, a very high level of oversight may be required during seasonal startups and weekends. This task may involve checking the operation on a regular basis several times a day. It is also critical that personnel be on-call if critical parts of the system are not operating properly. The SBR system proposed needs relatively high levels of oversight and maintenance. For a service area of 443 units, the cost per unit is likely to be many times higher than typical charges for municipal sewage treatment due to economies of scale.
- High cost of replacement. The proposal to use steel tanks in the SBR system reduces initial capital cost, but ensures that major portions of the system would require replacement in 15 to 25 years.

This high cost would necessitate rates that build a reserve of funds for replacement that would be half to three-quarters of the cost of the initial system. In addition, key mechanical components such as the influent grinder would require relatively frequent replacement of key components.

- Risk of upset and failure to meet effluent standards as outlined above. There are a number of steps in the treatment process where mechanical failure or the failure to operate the system properly may result in not meeting effluent standards. This occurrence would subject the public using wastewater for reuse to potential risks from coming into contact with effluent that does not meet proposed standards. Moreover, this untreated wastewater could affect the groundwater aquifer used for public water supply. In the worst case, discharge of untreated wastewater would cause the average nitrate concentration in groundwater to increase beyond water quality standards to approximately 15 milligrams of nitrogen per liter (mg-N/L) within a plume that would migrate downgradient from the infiltration pond.

All alternatives can be served by on-site sewage disposal systems with provision of public water supply under current regulations. The major limitation for suitability of an on-site system is the character of the soil. Many soils in mountainous areas are not deep enough, are not permeable enough, or are too permeable, or have restrictive layers, or have high groundwater tables. The soils deposited in the flat valley bottom in the Easton area are generally too permeable to permit standard drainfield systems and require "sand-lined trenches" to provide a layer of soil that provides for adequate retention time for treatment. The general lack of suitable soils on the steeper eastern portion of the site is likely to result in use of community drainfields on the flatter eastern portions of the site for allowed development in those areas. The higher flows from such systems with the permeable soils in the area poses greater risks to groundwater quality. Detailed soil assessment and engineering design of such systems is required, as well as separate environmental review.

Utilities – Stormwater

Adverse impacts of stormwater conveyance generally would be experienced at downgradient locations. It is possible that during severe storm events in the area, especially rain-on-snow events with frozen ground, the Sparks Road conveyance capacity could be exceeded and surface water would flow generally to the southwest across the gently sloping topography and carve new channels in the path of least resistance.

The worst-case potential impacts would be from debris flow, which have occurred on the site in the past as evidenced by alluvial fans and high-capacity channels. Future debris flows and runoff could have catastrophic effects on residents in the development and off site.

The most effective mitigation for alluvial fans and debris flows is to avoid any human occupancy or improvements on the fan and its downstream conveyance area as well as providing channels or other measures such as berms to direct high lows away from developed areas.

Utilities – Solid Waste

The alternative and potential cumulative development in the area, either at existing rural densities or at the density of the PUD, likely would not affect the capacity of existing solid waste facilities but may require more frequent hauling of solid waste to the ultimate disposal site.

Utilities – Electrical

Substantial upgrades to the electrical substation and distribution system in the area would be required for the proposal and cumulative development. Such system improvements would be borne by general electrical utility rates.

Possible human health effects from exposure to power frequency electric and electromagnetic fields (EMF) are of concern from the overhead power lines that transmit electricity to residences, as well as the BPA 415-kilovolt (kV) line that passes diagonally through the property at the approximate eastern margin of the flat portion of the site. There are, however, no definitive studies that document EMF adverse impacts.

Utilities – Communication and Cable Television

Substantial upgrades to the communication and TV cable system in the area would be required for the proposal and cumulative development. Such system improvements would be borne by general electrical utility rates.

Visual Quality, Light, and Glare

Regardless of the alternative, development in the area would represent a significant change in the visual character of the Easton Range. The current visual continuity provided by somewhat undeveloped forest conditions (mitigated by the presence of clear-cut lines) would be altered in perpetuity by the presence of human development. Specific impacts, however, would vary based on the selected alternative.

Alternative 1, the applicant's PUD proposal with 443 units, would result in substantial change to the visual quality of the area due to the location of residences and infrastructure on the most visible steep-sloping eastern portions of the site seen from I-90 and much of the community. The visual prominence of development of the area would be high, and even more pronounced at night when residence and security lights would be visible at great distances. The development would stretch approximately halfway up the ridge, contrasting with the natural forested surroundings and introduce human elements in contrast to the existing natural scene. The change in visual character of the area would be most pronounced at night when lights in residences, especially outdoor security lights, would be visually prominent on the currently unlighted ridge. The change would contrast sharply with the existing unity of forest cover that characterizes the slopes and ridges framing the valley and would replace the natural landscape of the ridges with a substantial intrusion of human features in the view. The change in the visual character would be generally apparent throughout the community.

Alternatives 2, 3C, and 5 with no development on the steep eastern portion of the site would avoid features visible from I-90 and much of the community and retain the forested ridgeline.

Alternatives 3A, 3B, and 3D with 3-acre lots on both the eastern and western portions of the site would also result in substantial cleared areas for roads and residences, including the residential structures, on the steep eastern portion of the site. The amount of clearing would be less because fewer residences would be developed. That change, however, would contrast sharply with the existing unity of forest cover and would be generally apparent as a contrast to the forested slopes that currently frame the valley. Alternative 3D would have slightly less clearing than Alternatives 3A and 3B due to decreased density in ASZs.

Development on the lower flat portion of the site would be large lots similar to existing large lots in the area with extensive retention of forest cover. The large lots coupled with preservation of extensive areas of open space for the ASZs and debris flow areas would contribute to maintaining the rural character of the area.

Alternative 4, a PUD with reduced density on the entire site, would also result in significant, identifiable impacts to the character of the eastern sloping areas. However, impacts would be less than those associated with Alternative 1 because development would be avoided on the most visible upper portions of the site.

Noise

In general, the long-term noise impacts associated with a given residential development are directly related to the number and tenure of the persons inhabiting a development. Impacts would be the largest where residences are most densely clustered and under the tenure scenarios with the highest population and activity levels.

Air Quality

Regardless of the alternative that is ultimately selected, the existing data for Cle Elum and Ellensburg do not indicate that exceedance of air quality standards is likely, even with a greater population. The upper Yakima River Valley in the vicinity of Easton has good air circulation, no inversions, and no topographic or other features that contain air masses.

A restriction on all wood-burning stoves could be imposed on all privately owned units, including the single-family residences. This restriction would reduce emissions from the project, but would be likely to be difficult to enforce over the lifetime of the project.

Hazardous Materials

The site has not hosted past industrial or commercial activities that are likely to have resulted in hazardous materials being located on the site. It is possible that unregulated dumping on the site has resulted in deposition of household hazardous waste, but no such evidence has yet been observed in field work or reconnaissance on the site by numerous professionals.

If contaminated soils are encountered during development, the response is likely to be excavation and disposal of contaminated soils at an approved disposal facility. To control accidental discharge of hazardous materials during construction, a Spill Prevention, Control and Countermeasure (SPCC) Plan is likely to reduce potential impacts.

Historic, Cultural, and Archaeological Resources

No cultural resources have been identified on site. It is possible, however, that resources could be uncovered during construction. Mitigation measures available to ensure protection of all significant cultural resources on the site include stopping work, identifying resources, and avoiding or conserving the resources identified.

Geology, Topography, and Soils

The greatest potential for seismic hazards on the site are rockfall, shallow landslides, and debris flow across alluvial fans, as well as water flow downgradient of the fans where water is likely to flow after dropping sediments on the fan.

The most effective means of mitigating potential hazards is avoidance of these areas. Alternatives that avoid the steeper eastern portion of the site avoid much of the hazard area. On the western flatter portion of the site, the greatest potential impact is from debris flow and debris flow conveyance across the site. The most effective mitigation for alluvial fans and debris flows is to avoid any human occupancy or improvements on the fan and its downstream conveyance area as well as providing channels or other measures such as berms to direct high lows away from developed areas.

Addressing geologic hazards on the steeply sloping eastern portions of the site would require more detailed on-site assessment of conditions, risk and mitigation at the time of specific development proposals.

Surface Water Resources

It is unlikely that water from the site would reach surface water streams except under the most extreme rain-on-snow conditions. All alternatives are likely to handle normal stormwater up to typical 2- and 10-year storms through standard facilities. It is likely that infiltration would be utilized as well as conveyance in roadside ditches. The most significant hazard not addressed in standard engineering design is from isolated events leading to unpredictable volumes of water collecting in narrow canyons leading to catastrophic debris flows. This event has happened periodically on the site as is evidenced by alluvial fans that have formed at the base of several drainages and discontinuous drainage courses across the site. The most effective mitigation for alluvial fans and debris flows is to avoid any human occupancy or improvements on the fan and its downstream conveyance area as well as providing channels or other measures such as berms to direct high lows away from developed areas.

Groundwater Resources

Water withdrawal for domestic use would reduce groundwater resources in the area. It is likely that the major effect would be the cumulative effect of reduction in overall resources available in the watershed for other beneficial uses, including agriculture, fish habitat, and recreation. The use of sewage treatment facilities that return domestic water to groundwater can reduce the loss of groundwater resources and reduce watershed-wide effects. This is about equally effective whether water returned to groundwater is from a sewage treatment plant or septic tanks. The major potential loss of groundwater to the overall watershed is use for irrigation that results in a substantial loss due to evaporation. This loss is especially significant for groundwater because this resource is protected from evaporation and often is the source of low summer flows in surface waters in the Yakima Valley.

The major risk to groundwater quality and domestic supply is the potential for failure of the sewage treatment facility to meet discharge standards. Discharge of untreated wastewater would cause the average nitrate concentration in groundwater to exceed drinking water standards in downgradient wells.

Vegetation and Wetlands

All alternatives would remove much of the existing forest cover on the flatter western portion of the site. Alternatives 1, 3A, 3B, 3D, and 4 would remove varying proportions of the forest cover on the steeper eastern portion of the site.

Alternative 1 would involve residential development in the vicinity of existing wetlands in the bench area of the eastern portion of the site. Direct impacts would depend on the size of buffers included in the proposal. Regardless of the preservation of wetlands or the size of buffers, some change in the hydrologic conditions that support the wetlands can be expected either from diverting water that currently infiltrates into the ground and recharges the wetlands, or through additional discharge of stormwater into watercourses and to the wetland. In either case, the natural hydroperiod of the wetlands would change and have a ripple effect on functions.

Alternatives 2, 3C, and 5 would have much less impact on wetlands in the eastern portion of the site because the area would remain undeveloped and subject to disturbance only on the cycle of one a decade or less often for forest management practices. Some disturbance could be expected from recreational activities, but at a much lower intensity than from residential use.

Alternatives 3A, 3B, and 3D would involve residential development in the vicinity of existing wetlands in the bench area of the eastern portion of the site. Direct impacts would be somewhat less than Alternative 1 because of the lower intensity of use and would also depend on the size of buffers included in the proposal.

Alternative 4 would have similar impacts as Alternative 1 on wetlands because development is clustered in the flatter bench area where the wetlands are present.

Fish and Wildlife

Because of the distance to surface water and the soil conditions that promote infiltration, little impact on fish is expected.

Residential development and increased human presence would reduce the amount of suitable habitat for many species, as well as the quality of remaining habitat. Forest and shrub vegetation would be converted to housing, roadways, and lawns or other ornamental plantings with reduced structural diversity. Use of the site would change from the current pattern of occasional daytime recreational use to one in which human activity would become a permanent feature. Under all alternatives, the presence of residences with associated clearing of vegetation and introduction of noise, light, and domestic animals would discourage elk and other sensitive species such as mule deer from using the site. The likely continued use of the site for off-road vehicle use would further curtail habitat use. White-tailed deer, which are less sensitive than mule deer or elk to human disturbance, may become a nuisance due to foraging patterns that include ornamental plantings and vegetable gardens.

Elk likely would continue to use the site as a migration corridor for movement between the summer habitat to the north and winter range along the Yakima and Cle Elum rivers. Elk can tolerate some human disturbance during migration and may tend to move quickly through the Marian Meadows property during periods with low levels of human use, such as at night or in the early morning.

Alternative 1, the applicant's PUD proposal with 443 units, would have the greatest impact on wildlife due to residential development throughout the site. The flat, western portion of the site would be almost entirely divided into relatively small residential lots with little habitat potential. The eastern portion of the site (except for the highest-elevation areas in the northeastern corner) would also be converted to residential use, although with somewhat larger lot sizes. Wetlands and stream corridors on the site would become isolated and fragmented and lose much of their habitat value.

The intensity of residential use would substantially impair migration of large mammals such as elk and mule deer. The remaining corridor on the western part of the site, the BPA transmission line easement, is relatively narrow and would be bounded on one side by lots, which would create substantial sources of disturbance from noise, lights, and animals such as dogs and impair wildlife movement. The impacts of the proposed mini-storage units on the east side of the BPA corridor would result in an additional source of disturbance that would substantially increase impacts on animals using the corridor and likely substantially reduce use, resulting in a shift in migration pattern to less suitable corridors.

The potential migration corridor through the upper portion of the site would be impaired to an even greater extent by the subdivision of the less steep sloping lands across which herds would be most likely to travel.

Alternatives 2, 3C, and 5 with all development on the western portion of the site would retain the steep, eastern portion of the property in forest use. This area would continue to provide potential wildlife habitat and could serve as a migration corridor. The steep terrain in that part of the site, however, makes it a less productive habitat area and limits its effectiveness as a migration corridor for elk and other large animals. Impacts on the western portion of the site would be similar to Alternative 1. Similar restriction of migration across the western portion of the site would occur.

Alternatives 3A, 3B, and 3D would result in substantially less residential development than Alternative 1 or 2. Habitat value for species sensitive to human disturbance would be reduced compared to current conditions; however, migration across the site would be restricted. Alternative 3D might have slightly lower impacts than 3A and 3B due to larger lot size and fewer lots.

Alternative 4, PUD with reduced density on the entire site with about 147 lots, would result in the development of fewer residential lots than either Alternative 1 or 2. In the long term, however, habitat loss and species displacement would be similar to Alternative 1, although somewhat less on the steep, less productive eastern portion of the site.

Under any of these cumulative impact scenarios, anticipated future development in the vicinity of the Marian Meadows site would contribute to further losses of wildlife habitat, potential degradation of fish habitat, and increased levels of human disturbance. Increased density of residential development in the upper Yakima River Valley floodplain would further constrain the movement of elk and other large mammals through the area, presenting barriers to movement between summer and winter habitat areas.

CHAPTER 2 Description of Alternatives

1 What is proposed by the applicant?

Alternative 1 is the applicant's proposal. As presented in this FEIS, it includes a "pro-forma" subdivision layout in the eastern portion of the site. This is designed to provide a reasonable worst-case scenario of the full development potential for the maximum of 443 lots allowed with the PUD provisions for the analysis of potential impacts. No proposal for development of this portion of the site has been submitted by the applicant. A portion of the site along the northeast side of the BPA easement has been excluded from the PUD by the applicant and has received permit approval for development of up to 300 mini-storage units.

Alternative 2 generally meets the goals of the applicant but substantially changes the character of the development through placing all development on the western portion of the site. In order to accommodate the maximum number of lots allowed with PUD provisions, it includes substantially smaller single family lots and also includes a component of multi-family use. The development of up to 300 mini-storage units northeast of the BPA easement is included in this alternative.

How were the Proposal and Alternatives Developed?

The SEPA guidelines requires agencies to identify, evaluate, and require or implement, where required by the act and these rules, reasonable alternatives that would mitigate adverse effects of proposed actions on the environment according to WAC 197-11-030(2)(a).

As part of the scoping process for the EIS, input from the public and agencies was solicited.

One of the alternatives the public comments consistently requested to be analyzed was development under existing zoning.

Other alternatives have been developed to mitigate specific adverse impacts of the proposal.

Reasonable alternatives are those which an agency with jurisdiction has authority to control impacts either directly or indirectly through requirement of mitigation measures according to WAC 197-11-440(5)(b)(iii).

Limits on the range of alternatives considered for a private party generally do not apply to this proposal because it involves a rezone WAC 197-11-440(5)(d).

The Marian Meadows rezone and subdivision is located in unincorporated Kittitas County on a 520-acre site on the west-facing slopes of Easton Ridge (Figures 2-1 and 2-2). The site is divided topographically into an almost level western portion (about 120 acres) and a sloping area to the east (about 400 acres). The existing BPA 345-kV transmission line is at the approximate boundary line between the flat and sloped portions of the site.

These alternatives consist of two elements:

Element 1 - Rezone

A rezone of 520 acres of the property to a PUD zoning district is proposed as provided in Chapter 17.36 of the Kittitas County zoning code. An area at the bottom of the steep slope east of the BPA transmission line easement is excluded from the PUD application. The purpose of the PUD zone is to provide for and encourage a harmonious mixture of land uses with greater flexibility in land use controls, as well as to:

- Encourage innovative design;
- Provide for more economical and efficient use of land, streets, and public services;

- Preserve and create usable open space and other amenities;
- Preserve important natural features of the land;
- Encourage development of a variety of housing types and densities;
- Encourage energy conservation, including the use of passive solar energy;
- Encourage infill development of sites with special features;
- Create desirable public and private open space; and
- Vary the type, design, and layout of buildings.

The density of a PUD is governed by Kittitas County Comprehensive Plan County-wide Planning Policy D under "Contiguous and Orderly Development, Planned Unit Developments" that states: "Standards shall be developed for residential PUDs outside of urban growth areas (UGAs) and urban growth nodes (UGNs) for a maximum density not to exceed a 3 to 1 ratio of the underlying zone."

The maximum allowed density is derived as follows:

- Rural 3 (R-3) underlying zoning allows one unit per 3 acres, PUD would allow one unit per acre, and 430 acres are zoned R-3; therefore, 430 units are allowed.
- Forest and Range (FR) underlying zoning allows one unit per 20 acres, PUD would allow one unit per 6.66 acres, and 90 acres are zoned FR; therefore, 13.5 units are allowed.

The sum of these results is a total maximum of 443 units.

The criteria for approval of a rezone under Kittitas County Code 17.90.020(7) are:

- The proposed amendment is compatible with the comprehensive plan;
- The proposed amendment bears a substantial relation to the public health, safety or welfare;
- The proposed amendment has merit and value for Kittitas County or a sub-area of the county;
- The proposed amendment is appropriate because of changed circumstances, or a need for additional property in the proposed zone, or the proposed zone is appropriate for reasonable development of the subject property;
- The subject property is suitable for development in general conformance with zoning standards for the proposed zone;
- The proposed amendment will not be materially detrimental to the use of properties in the immediate vicinity of the subject property; and
- The proposed changes in use of the subject property shall not adversely impact irrigation water deliveries to other properties.

Directional References to I-90

Interstate 90 (I-90) traverses Washington State from east to west. Directional references to I-90 in this document respect that general orientation of the roadway and refer to property on either the north or south side of the interstate.

In this area, that reference can be somewhat confusing because I-90 runs in a northwest to southeast orientation. Locations "north" of I-90 in this area are east of the roadway.

Alternative 1 is shown in Figure 2-1 and includes the applicant's proposed plat layout with 226 lots on the western portion of the site, together with the "pro-forma" lot layout on the east side. For analysis purposes, this alternative is presumed to have 443 lots. The lot arrangement on the eastern portion of the site is provided for illustrative purposes only and is only one potential arrangement of lots.

The western, lower, flatter portion of the property is proposed to be divided into 226 lots on about 120 acres or about 1.8 lots per acre. After removal of area for roads, the lot size would be a little less than 0.5 acre.

The eastern, steeper portion of the property would host the remaining 218 lots on 305 acres. The applicant has not prepared a specific proposal for that portion of the site. Because of the lack of a specific proposal, a "pro-forma" layout of potential building sites and lots on that portion of the site has been developed for the EIS. The 218 lots on 305 acres is a nominally lower density of 0.72 lots per acre. The steep sloping portions of this site, together with a stream and wetland area, leave only 100 to 150 acres of this portion of the site suitable for building. The layout features lots that vary from about 0.25 acre to about 5 acres.

The site layout and PUD proposal includes the following features:

- Primary access would be provided to Sparks Road, a county-maintained public road to the south.
- Secondary access would be provided to Country Drive near the north boundary of the plat, a privately maintained public road.
- An open space area of about 100 acres is proposed in the northeast corner of the property adjacent to the Wenatchee National Forest.
- Water service would be provided by the Easton Water District No. 3.
- Sewage disposal would be provided through a reclaimed wastewater treatment plant to be built by the applicant, and designed such that treated effluent would meet standards for recycled water.

An element that is not part of the PUD application shown on Figure 2-1 is the development of up to 300 mini-storage units along the northeast side of the BPA easement, which was excluded from the PUD application and received CUP approval on February 18, 2010 (File No. CU-09-00003). The plans for the mini-storage site include an internal roadway parallel to and 10 feet from the edge of the BPA right-of-way with buildings located northeast of the road. The conceptual plans indicate up to 300 units provided in the 16 structures shown in the approved CUP.

Alternative 2 is shown in Figure 2-2 and includes clustered development in the lower portion of the site to avoid development in the steep eastern portion of the site and provides:

- Approximately 195 single-family lots ranging from about 5,000 square feet to about 20,000 square feet with slightly larger lots along the margins of the site or adjacent to the BPA transmission line easement, which would provide for a wildlife corridor through the site.
- A multi-family site of about 12.5 acres would accommodate 248 units, or about 20 units per acre if the full PUD density maximum of 443 units is reached.

- Impacts from road and future residential construction on steep sloping hillsides in the eastern portion of the site would be avoided.
- Potential risks of wildfire to persons and property would be reduced by avoiding the area with the highest potential risk and with lower potential for successful evacuation and successful fire suppression.
- Additional public service costs from water service to higher elevations, road maintenance, snow removal, and fire and emergency medical service response would be avoided.
- Larger contiguous areas would be retained for wildlife habitat and wildlife corridors without impacts from nearby residential use.
- About 32 acres in the southwest portion of the site would be undeveloped to accommodate the Easton State Airport safety zone.
- About 6 acres in the southeast portion of the site would be undeveloped to avoid an alluvial fan and debris flow hazard and would accommodate berms and a channel to convey water.
- Fewer deeper lots would be provided within the alluvial fan/debris flow hazard in the northern portion of the lower site with berms and a channel to convey water away from building areas on the lots.
- Recreation or other use may be accommodated in the airport safety zone and area of geologic hazard.
- The BPA transmission line easement could provide the potential for trail use.
- Additional public service costs from water service to higher elevations, road maintenance, snow removal, and fire and emergency medical service response would be avoided.
- Larger contiguous areas would be retained in the upper portion of the site for wildlife habitat without adverse impacts from nearby residential use.
- Access, water service, and sewage disposal would be the same as in Alternative 1.

This alternative shows the same layout for up to 300 mini-storage units along the northeast side of the BPA easement as shown in Alternative 1.

Element 2 - Preliminary Plat

The second element of the proposal is a preliminary plat covering the western one-third of the property that would be divided into 225 lots with an average lot size of approximately 0.41 acre, or about 17,500 square feet.

The preliminary plat includes the following features:

- Primary access would be provided to Sparks Road, a county-maintained public road to the south.
- Secondary access would be provided to Country Drive near the north boundary of the plat, a privately maintained public road. As an alternative or supplement, a second access could be

provided from Sparks Road at the eastern margin of the flat western portion of the site across adjacent property.

- Three roads are stubbed to the east to provide access to the remainder of the site. Two of these roads provide for access to the mini-storage site.

Proposed infrastructure to serve the project includes:

- Approximately 2.6 miles in the current preliminary plat application (and an estimated 3.8 miles in the eastern portion for 6.4 miles of road at full buildout).
- Water service would be provided by the Easton Water District No. 3.
- Sewage disposal is proposed through a wastewater treatment plant to be built by the applicant, and designed such that treated effluent would meet standards for recycled water. The lot size proposed in Alternative 1, however, would allow individual on-site sewage disposal systems under Washington State Board of Health standards. Multi-family development in Alternative 2 likely would not be accommodated by on-site systems.

The Kittitas County Board of Commissioners will consider the subdivision as a quasi-judicial decision only if the rezone is approved. The preliminary plat will first be reviewed by the Planning Commission who will make a recommendation to the County Commissioners. The criteria for approval of a subdivision under Kittitas County Code 16.12.160 and 170 are:

- Whether the proposal includes appropriate provisions for drainage, roads, alleys, and other public ways, water supplies, sanitary wastes, parks, playgrounds, fire protection facilities, school sites and grounds, and other public and private facilities and improvements;
- Whether the proposal conforms to the general purposes of the comprehensive plan; and
- If the public use and interest will apparently be served by the proposal (Ord. 2005-31, 2005).

2 What alternatives have been considered?

Two general approaches to alternatives to the applicant's proposal have been developed.

- Alternatives 3A, 3B, 3C, and 3D illustrate development at the existing rural zoning without PUD approval. This would not allow averaging or clustering of lots. All lots would be 3 acres in size or greater. The alternatives vary slightly in elements included and lot size.
- Alternatives 4 and 5 incorporate PUD provisions to vary lot size and cluster development to avoid environmental impacts. They differ primarily in whether the steeper western steeper portion of the site is developed.

Alternative 3A: No Action with Uniform 3-Acre Lots

This alternative illustrates development at the existing zoning without PUD approval. This option would include water district service but would employ individual on-site sewage disposal rather than a wastewater treatment plant. The proposal includes distribution of lots over the site at the minimum 3-acre lot size allowed by existing zoning. This would allow up to 147 total lots. Figure 2-3 provides a

conceptual layout of such a subdivision. The actual layout of roads and lots could vary from this concept and might result in fewer lots. This alternative includes the following features:

- This layout provides for average density of one dwelling unit per three acres in ASZs 3, 4 and 6 as provided for in Kittitas County Code 17.58.050.
- This layout does not avoid the area of geological hazards related to the alluvial fan and debris flow hazard. The configuration of lots in this area would expose up to 6 lots to this potential hazard. It is possible that alternative layouts in combination with construction of berms or channels to convey flooding and contain debris could reduce hazard exposure.
- Water service would be provided by the Easton Water District No. 3.
- Sewage disposal would be individual on-site sewage disposal systems on each lot.

The 300 mini-storage units along the northeast side of the BPA easement are not included in this layout, but are included in Alternative 3B.

Alternative 3B: No Action with 3-Acre Lots with Exclusions

This alternative also illustrates development at the existing zoning without PUD approval but excludes a portion of the overall site. It has the same features as Alternative 3A, except for exclusion of the area northeast of the BPA easement for development of up to 300 mini-storage units. This results in lot lines not extending across the BPA easement and therefore results in fewer lots than Alternative 3A. The road layout also is revised to accommodate the mini-storage area.

Alternative 3C: No Action with 3-Acre Lots Excluding the Eastern Portion of the Site

This alternative also illustrates development at the existing zoning without PUD approval. It has the same features as Alternative 3A, except for exclusion of the steep eastern portion of the site and the area northeast of the BPA easement for up to 300 mini-storage units. This results in a substantial reduction in units to about 33 lots.

Alternative 3D: No Action with 5-Acre Lots in ASZs

This alternative illustrates development at the existing zoning without PUD approval but at a density of one unit per 5 acres within the portion of the site that lies within ASZs, for a total of 68 lots in that area and up to 113 lots overall. Lots are slightly smaller than 5 acres because average density includes the area in roads and limited areas avoided because of geological hazards. This density would be consistent with recommendations of the WSDOT Aviation Division for residential density within those zones. There are 45 lots outside of ASZs at a minimum of 3 acres in size. Other than lot sizes, this alternative has the same features as Alternative 3A.

The **Compilation of Mitigation Measures Alternatives** consist of Alternatives 4 and 5 that incorporate measures identified in the Draft and Final EIS analysis that would reduce specific impacts upon the environment. These modifications may be imposed as governmental conditions to control environmental impacts or meet applicable local, state, or federal codes or criteria. Alternatives were developed after evaluating impacts of the proposal.

Two options are presented which would use the PUD process to vary lot sizes and cluster lots.

Alternative 4: PUD with Reduced Density on the Entire Site includes clustered development on both the lower, flatter western area and on the steeper eastern portion of the site. The lots within the ASZs are reduced to result in an overall density of one unit per three acres. The conceptual layout in Figure 2-4 includes up to 147 lots as a possible layout, which is the density allowed by existing zoning but without use of PUD bonus provisions. Other layouts could result in slightly more or fewer lots.

Alternative 5: PDA with All Development Clustered on the Western Portion of the Site provides for development only on the lower, flatter, western portion of the site. The conceptual layout in Figure 2-5 includes 113 lots, which is the maximum density allowed by Kittitas County codes at one unit per 3 acres within the ASZs.

Both of these options include the following features:

- Lot layout avoids development in ASZs 3 and 4 in the southwestern corner of the site. These ASZs are in closer alignment with the airport runway and pose the greatest potential safety hazard.
- Lot layout allows avoidance of the alluvial fan/debris flow hazard areas in the central and northern portions of the lower site and provides an area for high flow conveyance through construction of berms or channels to convey water away from structures on the lots.
- Development in the lower portion of the site provides a variety of lot sizes including larger lot sizes adjacent to existing large lot rural development along the eastern property line.
- A corridor for wildlife movement is provided, including the BPA transmission line easement and the area to the east extending to the bottom of the steep slope; larger lots are provided adjacent to this area with adequate lot depth to preserve a 100-foot-wide buffer of existing native vegetation.
- Open space provided in the area for high flow conveyance may be used for recreation or other use.
- The BPA transmission line easement provides the potential for trail use to address recreational needs of future residents.
- Water service would be provided by the Easton Water District No. 3.
- Sewage disposal would be provided by on-site sewage disposal systems. Individual systems for each lot would be feasible for the lower western portion of the site. Shared drainfield systems would likely be required for lots in the eastern portion of the site and could be accommodated within the BPA transmission line easement or other open space areas on the lower western portion of the site.

Alternative 4 has the following additional features:

- Lots are clustered and reduced in number to provide an overall average density of one unit per 3 acres with all ASZs resulting in 113 lots in the 341 acres affected to comply with Kittitas County Code 17.58.050. The clustered lots are within ASZ 6, which has a lower hazard level than ASZs 3 and 4, which are more closely aligned with the runway. Additional smaller lots are provided in the upper portion of the site outside of the ASZs.
- Lots are clustered in the upper portion of the site to avoid the steepest slopes and most sensitive natural features, such as wetlands and streams. This also provides a larger consolidated area of preserved forest in the upper potions of the site for more effective forest management and control of wildfire risk.
- The mini-storage proposal previously located northeast of and adjacent to the BPA transmission line is relocated to within ASZ 4. This reduces impacts on wildlife movement through the site and reflects the preference for low-intensity non-residential uses with few occupants within this ASZ. Accommodating such a use may require that the tract be excluded from the PUD.

Alternative 5 avoids all development on the eastern portion of the site and results in a reduction of the following potential impacts:

- Impacts from road and future residential construction on steep sloping hillsides would be avoided and reduce topographic modification with associated erosion, landslide, and rockfall hazard.
- Potential risks of wildfire to persons and property would be reduced by avoiding the area with the highest potential risk and with lower potential for successful evacuation and fire suppression.
- Additional public service costs from water service to higher elevations, road maintenance, snow removal, and fire and emergency medical service response would be avoided.
- Larger contiguous areas would be retained for wildlife habitat and corridors without impacts from nearby residential use.

The Alternative 5 layout is shown with 113 lots, which is the maximum allowed in the Kittitas County code provisions that limit average density in ASZs to one dwelling unit per 3 acres. Complying with the WSDOT Aviation recommendation of one unit per 5 acres in the ASZs would result in 68 lots.

The number of units in each scenario is summarized in Table 2-1, below.

Table 2-1. Number of Lots in Alternatives

Alternative	Total Lots	Site Area Excluded from PUD	Net Site Area	Site Acres/ Unit	Area Developed	Lots in ASZs	Ac/Unit in ASZs
Alternative 1	443	40	520	1.17		354	0.96
Alternative 2	443	40	520	3.5		443	0.77
Alternative 3A	147	0	560	3.8		113	3.02
Alternative 3B	147	40	520	3.8		113	3.02
Alternative 3C	33	0	560	15.8		33	10.33
Alternative 3D	113	0	560	4.9		68	5.01
Alternative 4	147	12	548	3.7		113	3.02
Alternative 5	113	12	548	4.8		113	3.02

Tenure Scenarios

In addition to site development alternatives, four tenure scenarios were developed to reflect a potential range of characteristics of future residents. Because of uncertainty in predicting the character of future residents, these scenarios comprise different mixes of:

- Full-time year-round residents primarily living and working in the area with the age structure and family tenure typical of Kittitas County as a whole;
- Full-time year-round residents who are retired; and
- Part-time seasonal residents primarily using the site for winter sports and summer recreation.

Details of the rationale for the tenure scenarios are found in the discussion of Land Use Impacts, specifically item 8, "Are future residents likely to live on the site year-round? Or will they live on the site seasonally?"

The four tenure scenarios that have been developed include:

Tenure Scenario 1 – All full-time residents

This scenario includes 85 percent workforce families composed of full-time year-round residents with the head of household younger than retirement age and 15 percent retired persons reflecting the current census demographics of Kittitas County.

Tenure Scenario 2 - Primarily workforce families

This scenario includes 60 percent workforce families, with 15 percent retired residents, and 25 percent part-time recreational residents.

T**enure Scenario 3 – Near Balanced**

This scenario includes 35 percent workforce families, with 30 percent retired residents, and 35 percent part-time recreational residents.

Tenure Scenario 4 - Primarily Recreational

This scenario includes 25 percent workforce families, with 25 percent retired residents, and 50 percent part-time recreational residents.

These scenarios do not affect the physical layout of the site, but have different impacts on public services such as schools and utility services.

3 What is the project schedule and phasing?

The project schedule and phasing are unknown due to current economic condition. After initiation of construction of infrastructure, the applicant estimates that for the 225-unit preliminary plat in the western portion of the site 45 lots placed on the market each year.

Between 2000 and 2008 an average of 43 new homes were built each year in the Easton School District, which extends from south of Easton to Snoqualmie Pass. Since 2008 there have been very few new building permits issued in the area.

For the entire 443-unit PUD, buildout of the project has been assumed to take about 10 years after initiation of construction of infrastructure.

Alluvial Fan / Debris Flow Hazard

PUD BOUNDARY

COUNTRY DRIVE

POWER LINE

SILVER CREEK II

PUD BOUNDARY

LOT 9

SNOW STORAGE AREA

OFFICE

BPA Transmission Line Easement

STORAGE UNITS

SNOW STORAGE AREA

DENSE TREES

DENSE TREES

Excluded from PUD

LOT 8

Alluvial Fan / Debris Flow Hazard

SILVER CREEK

EASTON ACRES

PUD BOUNDARY

SP 86-01

EASTON VILLAGE DIV. 1

SPOKANE COUNTY ROAD

PLAT OF EASTON AC VOL. 8, PAGE 198

POWER LINE

Airport Safety Zones

ASZ 3

ASZ 4

ASZ 6

Parametrix DATE: Dec 23, 2010 FILE: BL1763007P04T02-F2-1

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SCALE IN FEET

Kittitas County Marian Meadows Estates EIS

Figure 2-1
Alternative 1 - Proposed Development (Pro-Forma Layout on Easterly Portion)

Alluvial Fan /
Debris Flow Hazard

Flow Hazard
Conveyance

Excluded from PUD

Multi
Family

BPA Transmission Line Easement

Alluvial Fan /
Debris Flow Hazard

Flow Hazard
Conveyance

Open Space
for Debris Flow

Airport Safety
Zones

ASZ 3

ASZ 4

ASZ 6

PUD BOUNDARY

COUNTRY DRIVE

POWER LINE

SILVER CREEK II

SILVER CREEK

EASTON VILLAGE DIV. 1

EASTON ACRES

SP 86-01

SPARKS COUNTY ROAD

PLAT OF EASTON AC
VOL. 8, PAGE 119

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DENSE TREES

DENSE T

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SCALE IN FEET

Kittitas County Marian Meadows Estates EIS

Figure 2-2
Alternative 2 - Full PUD Density on Westerly Portion of Site

Alluvial Fan / Debris Flow Hazard

Airport Safety Zones

Alluvial Fan / Debris Flow Hazard

PUD BOUNDARY

SILVER CREEK II

SILVER CREEK

VILLAGE DIV. 1

EASTON ACRES

SP 86-01

COUNTY DRIVE

POWER LINE

BPA Transmission Line Easement

ASZ 3

ASZ 4

ASZ 6

DENSE TREES

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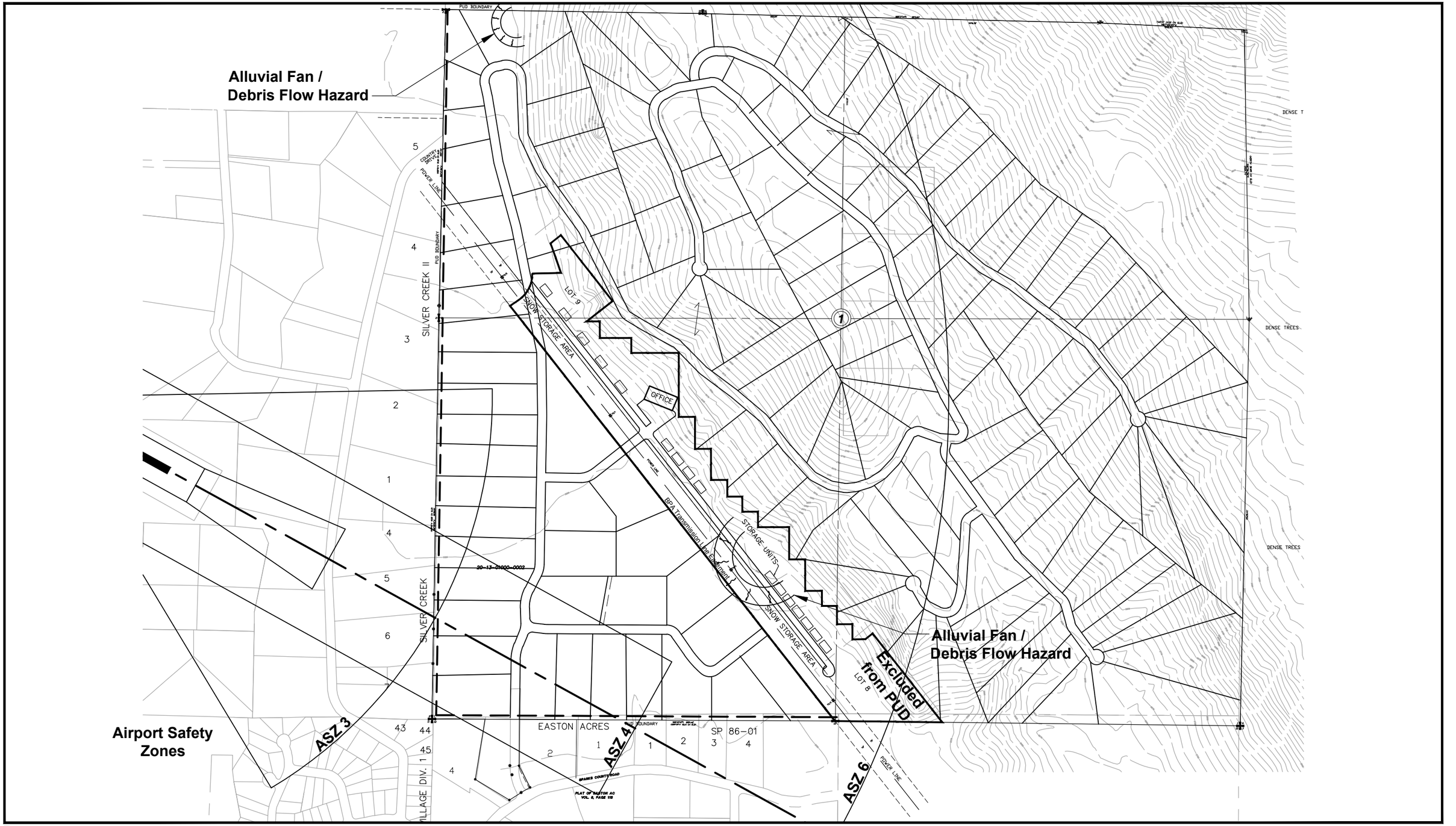
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SCALE IN FEET

Kittitas County Marian Meadows Estates EIS

Figure 2-3A
Alternative 3A - No Action
Three Acre Lots



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SCALE IN FEET

Kittitas County Marian Meadows Estates EIS

Figure 2-3B
Alternative 3B - No Action
Three Acre Lots

Alluvial Fan /
Debris Flow Hazard

Open Space for Flow
Hazard Conveyance

Vegetation Buffer for
Wildlife Corridor

Wildlife Corridor

Alluvial Fan /
Debris Flow Hazard

Open Space for Flow
Hazard Conveyance

Airport Safety
Zones

ASZ 3

ASZ 4

ASZ 6

PUD BOUNDARY

COUNTRY DRIVE

POWER LINE

SILVER CREEK II

SILVER CREEK

BPA Transmission Line Easement

EASTON ACRES

SP 86-01

SPANCS COUNTY ROAD

PLAT OF EASTON AC
VOL. 8, PAGE 119

DENSE TREES

DENSE T

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Kittitas County Marian Meadows
Estates EIS

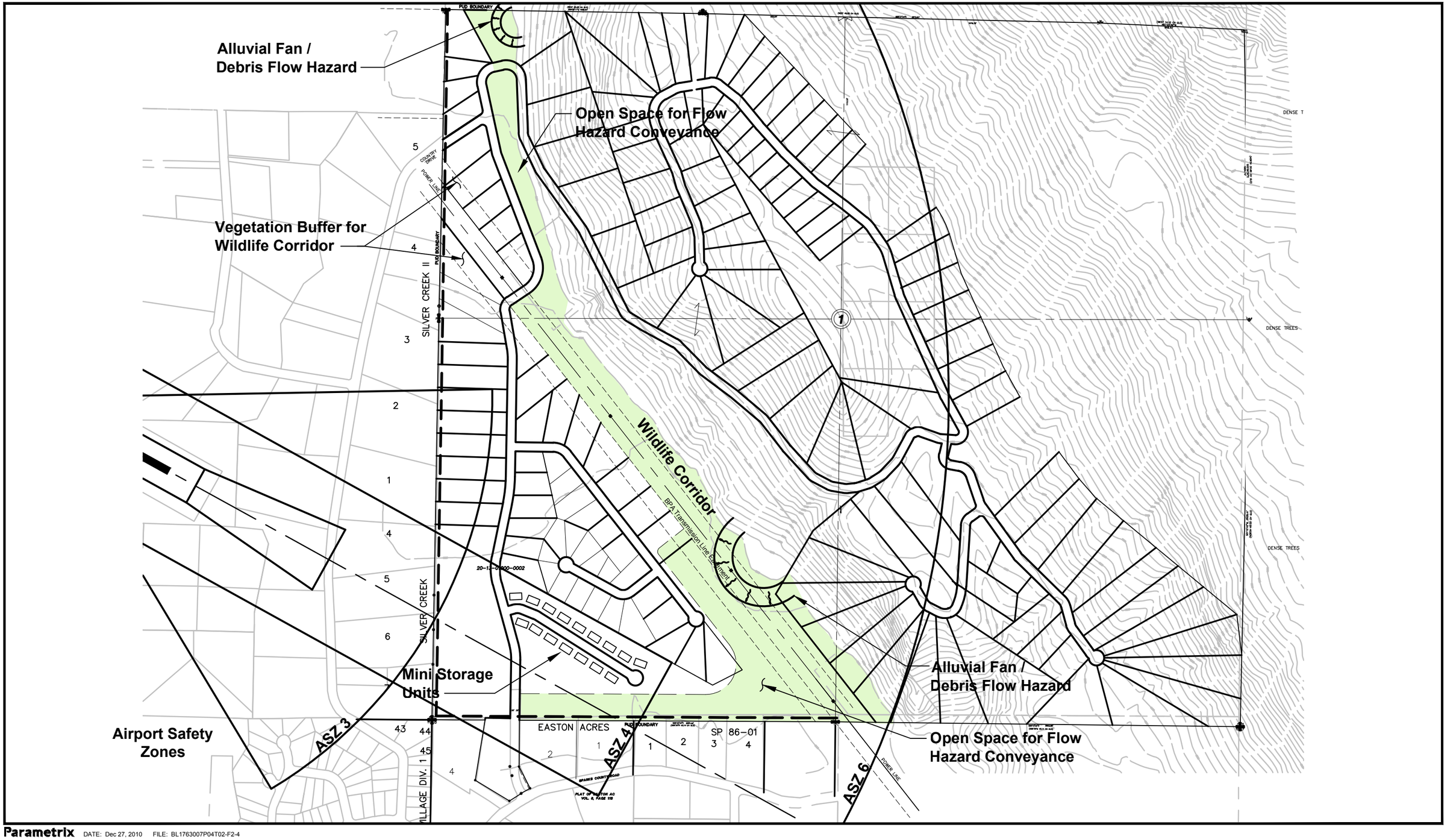
Figure 2-3C
Alternative 3C - No Action
Three Acre Lots
Western Portion Only



Parametrix DATE: Dec 27, 2010 FILE: BL1763007P04T02F2-3D

Kittitas County Marian Meadows Estates EIS

Figure 2-3D
Alternative 3D - No Action
Five Acre Lots within ASZ



Parametrix DATE: Dec 27, 2010 FILE: BL1763007P04T02-F2-4

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SCALE IN FEET

Kittitas County Marian Meadows Estates EIS

Figure 2-4
Alternative 4 - Mitigation Alternative: Development on Lower and Upper Portion of Site

Alluvial Fan /
Debris Flow Hazard

Flow Hazard Conveyance

Vegetation Buffer for
Wildlife Corridor

Airport Safety
Zones

Alluvial Fan /
Debris Flow Hazard

Open Space for Flow
Hazard Conveyance

Parametrix DATE: Dec 27, 2010 FILE: BL1763007P04T02-F2-5G

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SCALE IN FEET

Kittitas County Marian Meadows Estates EIS

Figure 2-5
Alternative 5 - Mitigation Alternative: Development on Lower Portion of Site Only

Chapter 3 Environmental Consequences

1 What is addressed in this chapter?

This chapter of the FEIS analyzes the environmental consequences of construction and long-term use of the proposed land use action, including buildout of all lots and operation of infrastructure. This chapter also includes an analysis of cumulative impacts of the proposal in conjunction with buildout of surrounding residential land north of I-90 at both the existing zoning and at densities allowed if currently unplatted lands were developed as a PUD.

2 What are the major features of the project location?

The proposed project is within the Yakima River Valley, approximately 2 miles southeast of Kachess Lake. The project area is located on the south-facing slopes of Easton Ridge, which divides the Yakima River drainage from Domerie Creek and the Cle Elum River drainage to the north. At this location, the Yakima River Valley is approximately about 1.50 miles wide and is bounded by Goat Mountain on the south and Easton Ridge on the north.

Directional References to I-90

I-90 traverses Washington State from east to west, ultimately connecting the city of Seattle on the west coast of the continental United States with the city of Boston on the east coast.

Directional references to I-90 in this document respect the general east-west orientation of the roadway and refer to property on either the north or south side of the interstate.

Directional references can be somewhat confusing because I-90 runs in a northwest to southeast orientation in the vicinity of the proposed site. Property "north" of I-90 in this area is also east of the interstate.

formula or quantifiable test. The context may vary with the physical setting. Intensity depends on the magnitude and duration of an impact.

The severity of an impact should be weighed along with the likelihood of its occurrence. An impact may be considered significant even if its chance of occurrence is not great if the resulting environmental impact would be severe if it occurred (WAC 197-11-794[2]).

The proposed site is approximately 15 miles west of the town of Cle Elum and approximately 15 miles east of Snoqualmie Pass summit. It is located on the north side of I-90, and is accessed via the Sparks Road interchange, Exit 70 off of I-90. The proposed site is located approximately 1 road-mile from the interchange.

The following major natural and built features are located in the immediate project vicinity (Figures 3-1 and 3-2):

- The Wenatchee National Forest abuts the proposed site to the east. The U.S. Forest Service is the major landowner of the higher elevation forest land in the proposed site vicinity.
- The Easton State Airport is located approximately 0.25 mile northwest of the proposed site.
- The unincorporated town of Easton, on the south side of I-90, is located approximately 0.75 mile west and approximately 2 road-miles from the proposed site.

- Kachess Lake, part of the U.S. Bureau of Reclamation Yakima River Irrigation Project, is located approximately 1 mile northwest of the proposed site.
- Lake Easton State Park is located approximately 0.50 mile west of the proposed site on the south side of I-90. The park is approximately 1.50 road-miles from the proposed site.

The Upper Kittitas Valley has a total population of approximately 9,300 residents, including the incorporated cities of Cle Elum (population 1,835) and Roslyn (population 1,020), and the unincorporated communities of South Cle Elum (population 580), Ronald (population 326), Easton (population 407), and Snoqualmie Pass (population 441) (OFM 2008).

3.1 LAND USE

1 What are the geographical areas associated with the project?

In assessing existing land use, and for use in assessing impacts on public services, several different areas have been designated based on the extent to which project impacts would affect local communities close by, or further removed from the project site.

Areas designated for analysis of potential impacts include:

- The immediate **Project Site Vicinity** is described as the area north (or east) of I-90, between Kachess Lake on the north, the floodplain of the Yakima River on the south, the Wenatchee National Forest boundary on the east, and I-90 on the west. This area is served by Sparks Roads. It includes the proposed site, surrounding rural development, and the Easton State Airport.
- The **Easton Vicinity** is the area on both sides of I-90 in the vicinity of the original unincorporated town of Easton and includes those areas accessible from I-90 from Exits 70 and 71. Also included are areas directly accessible to Easton from the local road system, extending west to the boundary between rural and forest zoning, and to the east to the Wenatchee National Forest boundary. The northern boundary is Kachess Lake on the north side of I-90, and the southern boundary is the end of Iron Horse Road on the south side of I-90, which marks the boundary of the road system accessible from Exit 71. Iron Horse Road does not connect to the road system that is accessed by Exit 74.

- The **Area of Influence** is the area in which impacts of the site interact with other features of the natural or human environment to affect overall or cumulative impacts. This area differs according to the elements addressed. For public services, the Area of Influence includes the service area of the particular service provider. For utilities, it includes the boundaries of a service district or the boundaries of an area served by an identifiable system component. For natural function, the Area of Influence varies by the resource; it is different for geology, surface water, groundwater, wildlife, and other elements. Each subsection below describes the Area of Influence for the resource influence analyzed.

2 What are the existing land uses in the area?

Project Site

The project site land use is currently forest use. The site was previously owned by a timber resources company and has been harvested a number of times since the area was settled in the 1850s. Approximately 130 acres of the western flat portion of the site was harvested in the 1980s. Approximately 440 acres of the eastern portion of the site consists of steep slopes and includes areas harvested for timber resources in the 1970s and 1980s. The character of the site and the size of trees and other vegetation reflect the regrowth that has occurred since the last harvest. The largest trees on the site are on steep slopes that were not harvested in the most recent cycles. These trees range from 50 to 70 years of age. The site is crisscrossed with logging roads and a number of landing and staging areas. There is an abandoned hard rock quarry at the edge of the steep slope area east of the BPA easement about 1,800 feet south of the northern boundary of the site.

Project Site Vicinity

The area to the east of the project site is largely Wenatchee National Forest land managed for multiple purposes including water resources, timber harvest, and recreation.

There are 25 parcels ranging from 2 to 10 acres located south of the project site on Sparks Road and Hawthorn Lane that accommodate full-time and seasonal home sites. To the southeast of this area is an active aggregate mine, the 97-acre Cresto Pit, operated by Ellensburg Cement Products within the Yakima River floodplain.

To the southwest of the project site, the Easton Village plat consists of 72 parcels ranging from one-third to slightly over 1 acre. Immediately west of the project site is the Silver Creek subdivision with 35 parcels averaging approximately 5 acres and ranging from one to seven acres.

The Easton State Airport, owned by WSDOT, is located on a 150-acre site about 0.25 mile west of the project. Northwest of the airport are two residential subdivisions off of Sparks Road with lot sizes between 0.50 acre to 1 acre. These subdivisions are Silver Acre Trails and Easton Estates.

Commercial development on Sparks Road, north of I-90 consists of a convenience store, gas station, restaurant, and recreational vehicle park called Turtle Town.

Easton Vicinity

What types of land uses are allowed in land zoned R-3?

A variety of land uses are allowed in the R-3 zone, ranging from single-family homes and mobile homes to lodges and community clubhouses. Resource land uses such as agriculture and forestry are also allowed. Mining is allowed in an established mining district, with a new mining use requiring a conditional use permit. A variety of other conditional uses include campgrounds, guest ranches, group homes, retreat centers, golf courses, and gas and oil exploration and production.

The unincorporated townsite of Easton was established by the Northern Pacific Railroad on the east side of the Stampede Pass tunnel at the Cascade Mountains divide after the tunnel opened in 1888. Easton was the site of a small depot and roundhouse with additional locomotives to provide extra traction power to move trains over the steeper section of track to the divide as well as providing resting quarters for the railroad crew. Most railroad facilities in Easton were closed in the 1970s (Phillips and Alldredge 2000). The Burlington Northern Santa Fe (BNSF) Railroad mothballed the rail line in 1984 and reopened it to limited traffic in 1996. A portion of the town of Easton is currently occupied by the Easton School District. Main Street and Railroad Avenue contain several businesses. North of the school are 25 houses with an estimated population of 60 residents.

The townsite of Easton should not be confused with the Easton Census Designated Place (CDP), which covers a larger area. The Easton CDP includes all the land between the BNSF Railroad on the south side of I-90 from Lake Easton State Park to Exit 71. It also includes the area north of I-90, which is north of Sparks Road and east of Country Drive. The CDP is smaller than the Easton Vicinity discussed in this document because it excludes land on the south of Sparks Road and east of Country Drive (including the Marian Meadows site). According to the 2000 U.S. Census, the Easton CDP had a population of 338 in 151 households with 228 housing units. The difference between 228 housing units and 151 households indicates that 77 housing units, or approximately one-third of the housing units in the Easton CDP, were either classified as vacant or seasonally occupied at the time of the 2000 census.

On the south side of I-90, most of Lake Easton is surrounded by Lake Easton State Park, except for an 8-acre site containing the Lake Easton Resort and Outdoor Recreation Club. South of the townsite of Easton, there is a development of approximately 40 lots, each 5 to 10 acres, about half of which include homes. West of Easton, development on Cabin Creek Road consists of approximately 30 lots.

North of I-90 is the Sun Island Park subdivision located just east of Exit 71, which consists of approximately 150 lots, averaging 1.50 acre, between two channels of the Yakima River. Approximately 115 lots are developed and two-thirds are estimated to be occupied seasonally (Anderson 2008).

According to Kittitas County Assessor's records, approximately half the lots in this area include improvements of sufficient value to indicate that a housing unit has been constructed. Of those with improvements, about half have a taxpayer address outside Kittitas County zip codes, indicating probable seasonal use.

Area of Influence

For the purposes of this land use analysis, the Area of Influence includes the area addressed in the Upper Kittitas County Vision Plan, prepared in 2005, and extends roughly from Cle Elum to

Snoqualmie Pass. The Area of Influence includes the cities of Cle Elum and Roslyn; the unincorporated communities of Ronald, Easton, and Snoqualmie Pass; and the resort community of Suncadia. The 2000 census population of the area was approximately 9,000. Table 3-1 contains more detailed population characteristics.

The communities of Cle Elum, Roslyn, Ronald, and the Suncadia Resort are distinct communities separated from the Easton area by Easton Ridge. The land to the east and north of the site beyond Easton Ridge is largely forest and is largely included in the Wenatchee National Forest. The City of Roslyn watershed within the Domerie Creek basin is adjacent to the northeast corner of the site and extends about 0.5 mile to the northwest and 2.5 miles to the southeast. The watershed is shown on Figures 1-1 and 3-1.

3 How many people live in the project vicinity?

The estimated population of the project vicinity (north of I-90) is based on the number of housing units (about 140 based on the County Assessor's data) and likely 50 percent split between year-round and seasonal residents based on 2000 census data and water consumption data. In addition to housing units, there are 60 to 80 vacant lots in the project vicinity. Vacant lots in the vicinity are shown in Figure 3-3. The estimated year-round residents are between 180 and 200 permanent residents, of which about 20 percent are estimated to be retired. Peak population when most seasonal residents are in the area on holiday weekends is likely to be 450 to 500.

Table 3-1 indicates the population estimates and some characteristics of the population from the 2000 census.

4 What are the plans for future land use in the area?

The Kittitas County Comprehensive Plan designation for the site is Rural, as shown on Figure 3-4.

The Kittitas County Comprehensive Plan designations for the Easton Area are a combination of Rural, Forest, Forest and Range, and Commercial Forest, with a Commercial designation on the north side of I-90 near Exit 70 and in the town of Easton, as shown on Figure 3-4.

Kittitas County has designated two LAMIRDs. This includes designation of the area around the Easton Townsite as a Rural Activity Center and designation of an area on the west side of I-90 accessed by Exit 70 and Sparks Road as a Rural Employment Center. These areas are shown on Figure 3-4A. The LAMIRD designation is an optional tool provided by the Growth Management Act (GMA) that is intended to recognize these pre-existing development patterns; provide for limited infill, development or redevelopment; and allow for necessary public services to serve the LAMIRD. The Marian Meadows site is about .5 mile from the Rural Employment Center and about 2 miles from the Rural Activity Center.

5 What is the existing zoning and anticipated land use for the project site and surrounding area?

The existing zoning for the project site is Rural 3 (R-3) for 481 acres in the western portion of the site. The 88 acres in the northeast corner are zoned Forest and Range (FR) as indicated in Figure 3-5. R-3 zoning was extended in 2002 to over 152 acres in the northern half of the property, which was formerly zoned Commercial Forest (CF).

The purpose of the R-3 zoning designation is to provide areas where residential development may occur on a low density basis. A primary goal in siting R-3 zones is to minimize adverse effects on adjacent natural resource lands (KCC 17.30.10). Accordingly, the minimum lot size is 3 acres (absent PUD zoning), with a front yard setback of 25 feet and other setbacks of 15 feet. A special setback of 200 feet is required from land in the CF zoning district.

The northeast 88 acres of the project site are zoned FR. This area was rezoned from CF in 2002. The purpose of this zone is to provide for areas where natural resource management is the highest priority and where the subdivision and development of lands for uses and activities incompatible with resource management are discouraged. The minimum lot size in the FR zone is 20 acres, with the provision that lots may be 0.50 acre within an approved platted cluster subdivision that is served by public water and sewer. Lot size may also be 6,000 square feet if the lot makes use of existing municipal sewer and water systems.

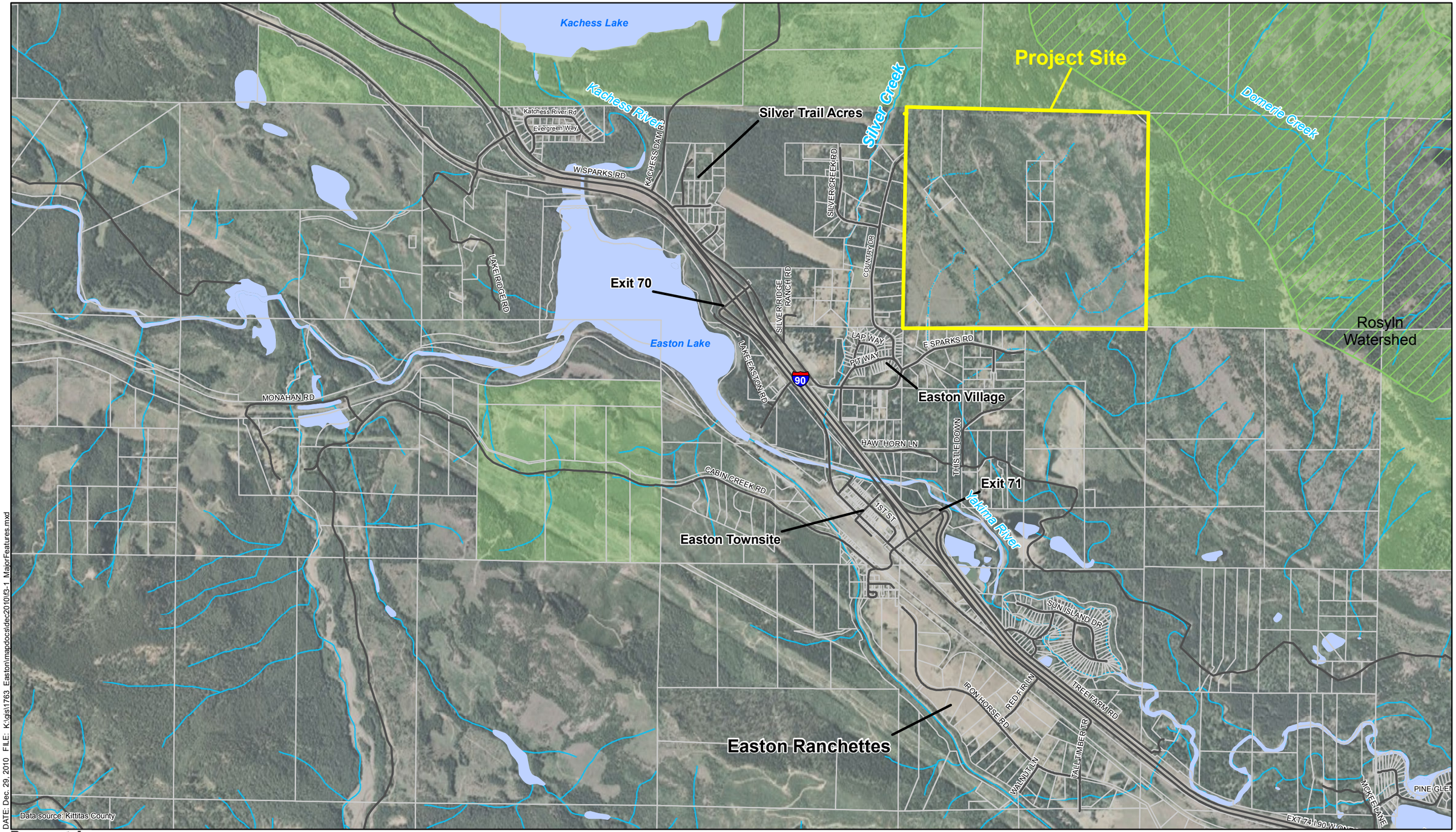


Figure 3-1
Marian Meadows Major Features in the Easton Vicinity

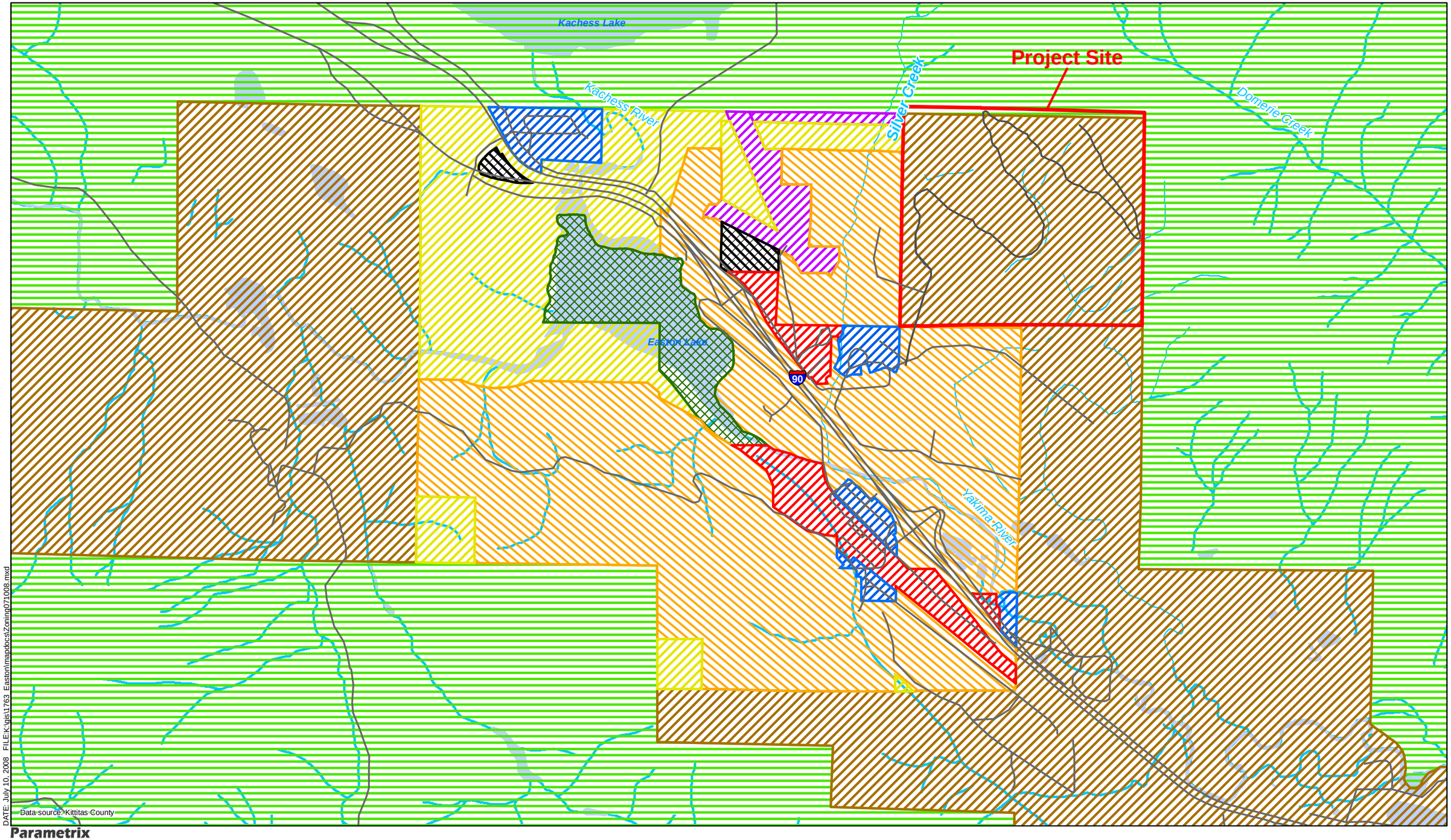
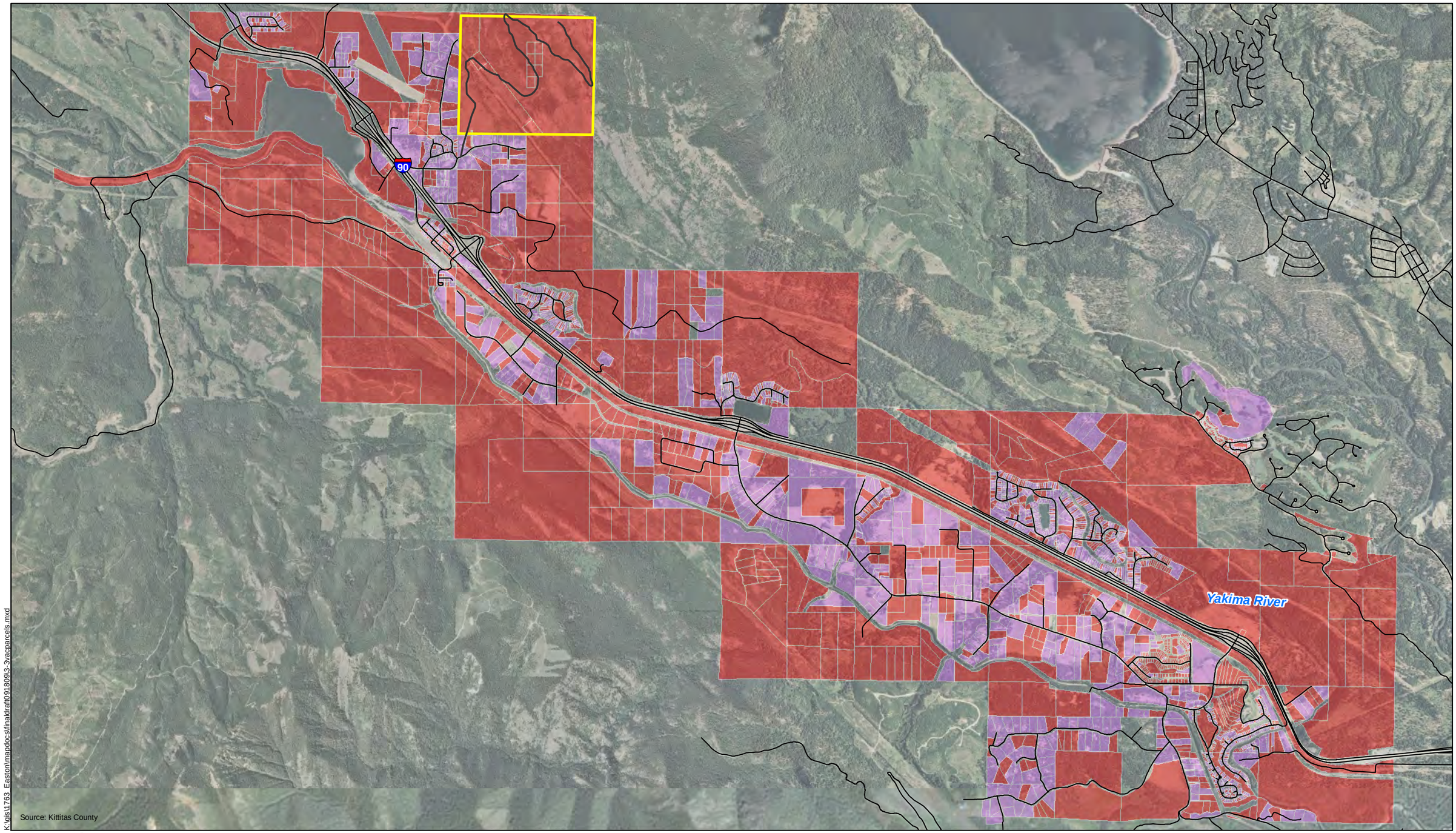


Figure 3-2
Marian Meadows
Existing Land Use
in the Easton Vicinity



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Parametrix

N

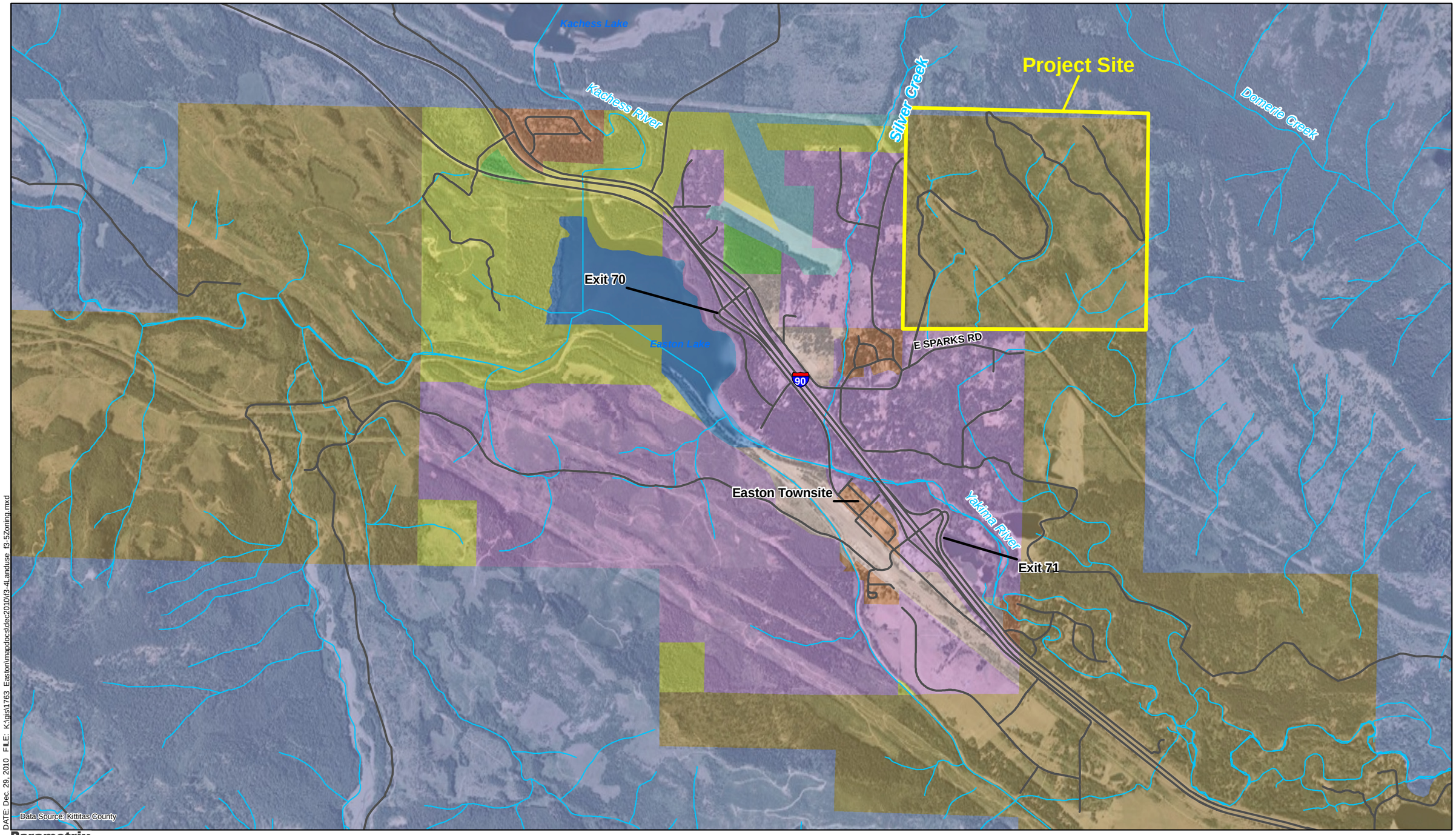
0 4,000

Scale in Feet

Legend

- Improvement value <=$10000 (Vacant Parcels)
- Improvement value > $10000
- Roads
- Project Site

Figure 3-3
Marian Meadows
Vacant Parcels



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Parametrix

N

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Scale in Feet

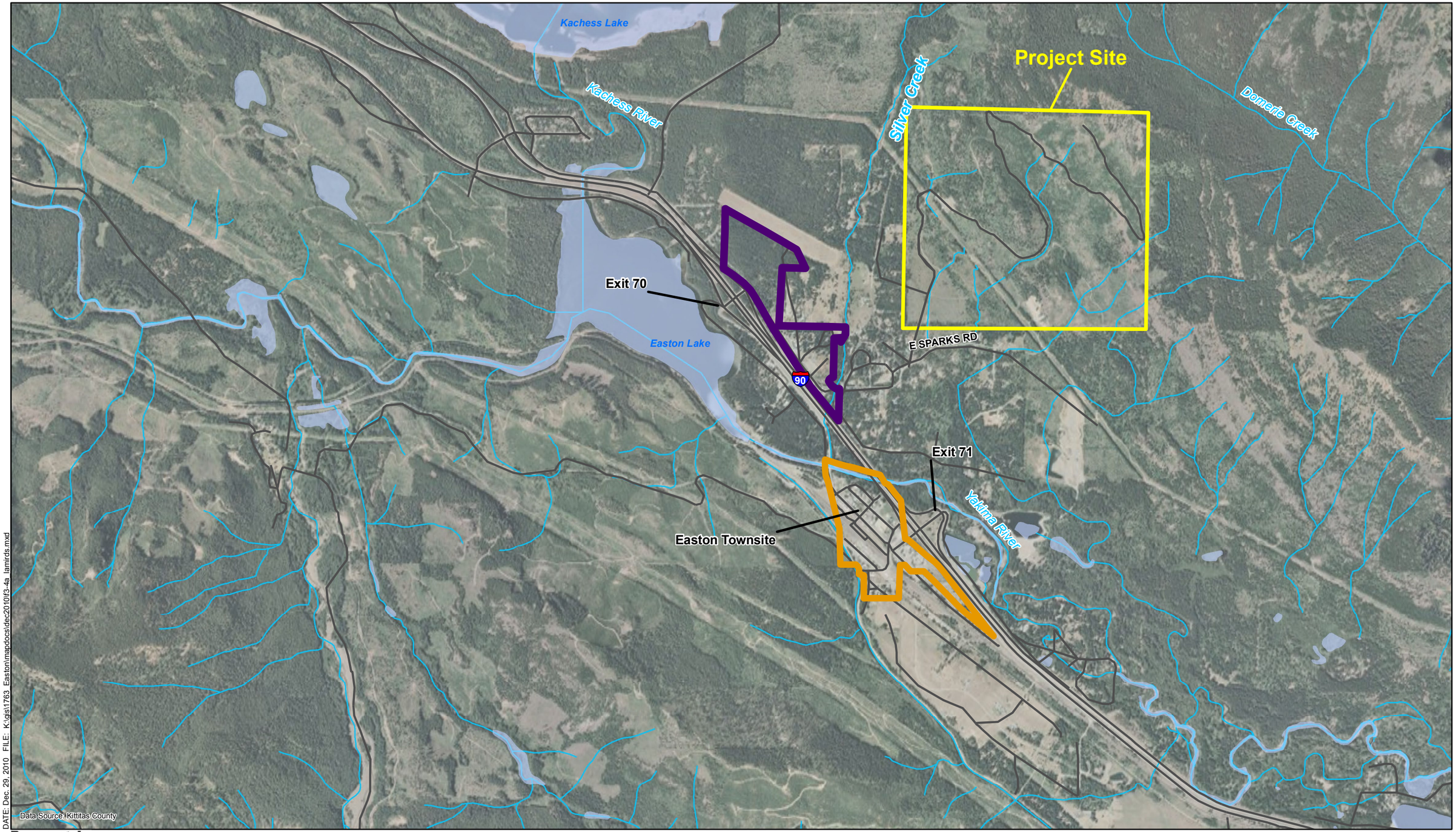
Legend

Project Site
Road
Stream

Land Use

Commercial
Commercial Forest
Forest Multiple Use
Industrial
Public Recreation
Rural
Rural Residential
Unclassified
Urban Residential

Figure 3-4
Marian Meadows
Existing Land Use
in the Easton Vicinity



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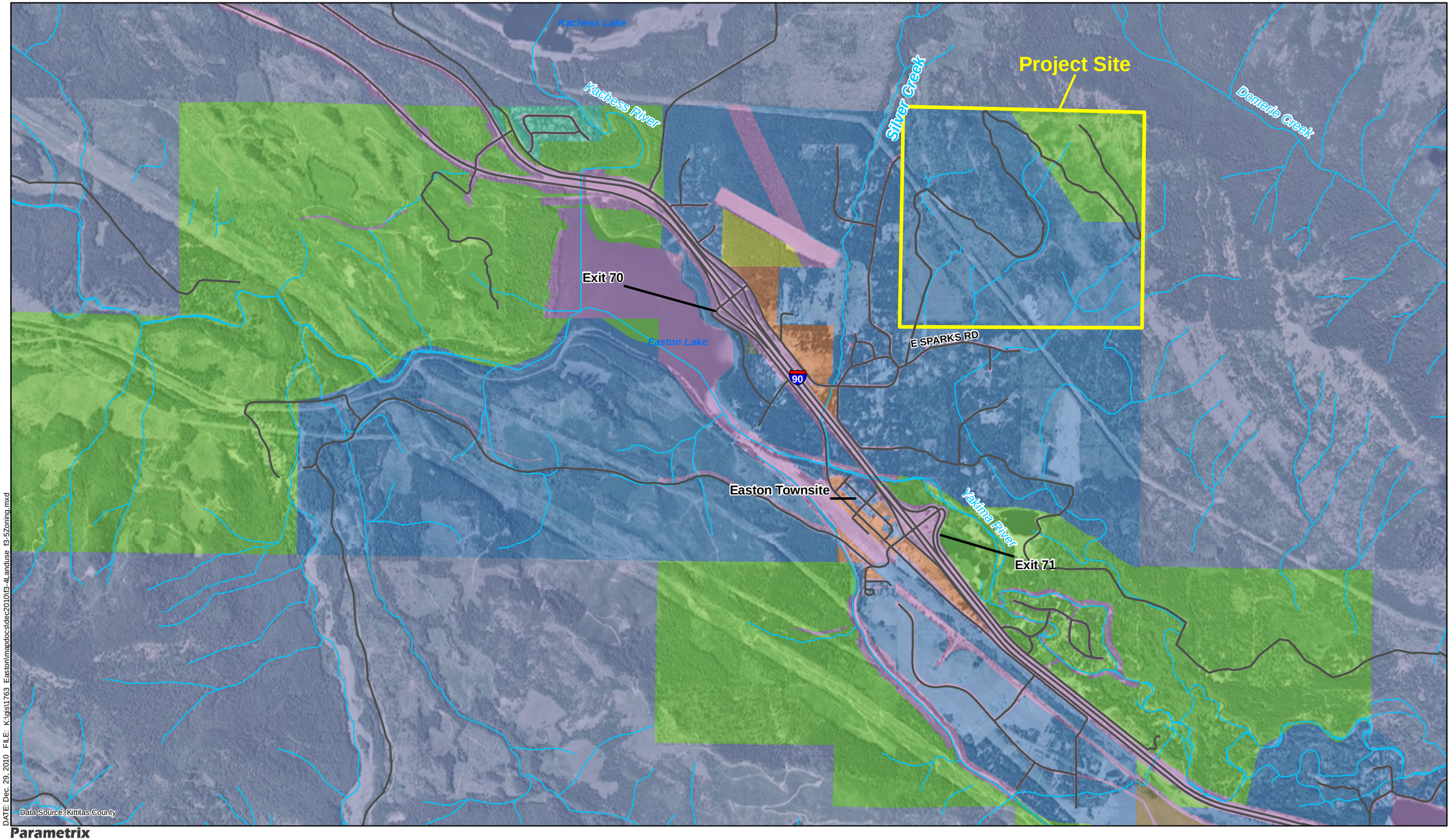
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Scale in Feet

Legend

- Project Site
- Road
- Lake
- Stream
- Type 1 LAMIRD - Rural Activity Center
- Type 3 LAMIRD - Rural Employment Center

Figure 3-4A
Marion Meadows
Easton Area LAMIRDs



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Scale in Feet

Legend

Project Site
Road
Stream

Zoning

AG-3
Commercial Forest
Forest & Range
General Commercial
Light Industrial
Right of Way
Rural 3
Rural Residential

Figure 3-5
Marian Meadows
Existing Zoning
in the Easton Vicinity

Table 3-1. Area Population and Housing Characteristics

	Washington State	Kittitas County	Upper Kittitas County	Easton CDP	Project Vicinity	Easton School District
2000 Census						
Population	5,894,121	33,362	3,336	383	167	837
Age 0-4 (percent)	6.7%	5.1%	4.4%	7.8%	7.8%	NA
Age 5-18 (percent)	19.0%	15.5%	16.7%	20.9%	14.4%	NA
Age 18-65 (percent)	63.1%	67.8%	64.0%	59.8%	65.3%	NA
Age 65 and older (percent)	11.2%	11.6%	14.9%	11.5%	12.5%	NA
Housing Units	2,451,075	16,475	3,198 units	228	156	NA
Occupied Housing Units (percent)	92.7% (2,271,398)	81.2% (13,382 units)	44.2% (1,413 units)	66.2% (151 units)	46.8% (73 units)	NA
Seasonal Housing (percent)	2.5% (60,355 units)	10.87% (1,791 units)	49.9% (1,595 units)	19.7% (45 units)	40.387% (63 units)	NA
Average Household Size	2.53	2.33	2.35	2.54	1.41	NA
Households with children (percent)	32.7% (742,481)	26.2% (3,506 total)	24.5% (345 total)	31.4% (169 total)	27.4% (20 total)	NA
Children per household	0.67 child/house	0.51 child/house	0.5 child/house	0.73 child/house	0.51	NA
Lived in different county in 1995 (percent)	20.7%	35.1%	36.9%	43.8%	P3	NA
Median household Income	$45,776	$32,546	$47,367	$37,708	P3	NA
Workforce (percent)	47.4% (2,793,722)	46.5% (15,509 total)	49.2% 1,641 total)	45.7% (175 total)	P3	NA
Workplace outside of county	14.9% (414,933)	15.1% (2,301 total)	42.9% (704 total)	52.0% (91 total)	P3	NA
Work travel time greater than 30 minutes (percent)	33.0% (919,605)	20.7% (3,144 total)	51.5% (833 total)	49.7% (87 total)	P3	NA
Workforce Resource (percent)	2.5%	5.2%	1.3%	5.0%	P3	NA
Workforce Manufacturing (percent)	12.5%	5.4%	8.8%	11.0%	P3	NA
Workforce Construction (percent)	6.9%	7.3%	16.4%	12.1%	P3	NA
Workforce Trade (percent)	16.2%	16.5%	11.5%	11.5%	P3	NA
Workforce Services (percent)	61.9%	65.6%	62.0%	60.4%	P3	NA

CT = Census Tract *BG = Block Group*

6 What is meant by "rural land use" and how does the proposal relate to rural policies?

Rural land use has a range of generic and legal meanings. The following discussion focuses on the Washington State GMA, under RCW Chapter 36.70A, and what "rural" means in that context.

The GMA contains a legislative statement of intent regarding rural lands (RCW 36.70A.011). This statement recognizes the importance of rural lands and rural character to Washington's economy, its people and environment, while respecting regional differences. In addition, the Washington Legislature addresses business development in rural areas by emphasizing flexibility in retaining and expanding businesses. The Legislature mandates that counties formulate a local vision of "rural character" that will balance a number of goals.

What is the GMA?

The Growth Management Act, known as the GMA (Chapter 36.70A RCW), was adopted by the Legislature in 1990. The GMA was adopted because the Washington State Legislature found that uncoordinated and unplanned growth posed a threat to the environment, sustainable economic development, and the quality of life in Washington. In 1991 the GMA was amended to create the Growth Management Hearings Boards to hear and determine appeals of plans required by local jurisdictions to fulfill the requirements of the GMA.

The definition of "rural character" in RCW 36.70A.030 includes patterns of land use and development:

(a) In which open space, the natural landscape, and vegetation predominate over the built environment;

(b) That foster traditional rural lifestyles, rural-based economies, and opportunities to both live and work in rural areas;

(c) That provide visual landscapes that are traditionally found in rural areas and communities;

(d) That are compatible with the use of the land by wildlife and for fish and wildlife habitat;

(e) That reduce the inappropriate conversion of undeveloped land into sprawling, low-density development;

(f) That generally do not require the extension of urban governmental services; and

(g) That are consistent with the protection of natural surface water flows and groundwater and surface water recharge and discharge areas.

In a public meeting in Easton held in March 2005, 42 persons attended. Their desires were summarized as:

- Preserving clean water supply that meets drinking and fire suppression needs;
- Preserving the community values of open space and treed areas between neighbors through retaining the large-lot residential development pattern;
- Preserving rural character; and
- Protecting wildlife.

The **Growth Management Hearing Boards** have issued a variety of opinions that address rural areas, including lot sizes and allowed uses, consistent with the definition of rural lands. Generally, to be found valid, land uses must meet the following criteria (EWGMB 2008):

- Rural lands do not allow development characteristics of "urban growth," including lot sizes that result in intensive use of land that is not compatible with a rural character and that require urban levels of service. Rural character has often been related to lot sizes of 5 acres or greater. However, this is not a "bright-line" rule, and flexibility for smaller lot size is allowed.
- Rural areas must encourage the conservation of productive forest lands and agricultural lands, and discourage incompatible uses through lot sizes that allow at least some agriculture or forest use, as well as not introducing land use that will be incompatible with adjacent resource use.
- Rural lands must further open space and recreation goals, conserve fish and wildlife habitat, increase access to natural resource lands and water, and develop parks and recreation facilities that avoid intense urban development and fragmenting of wildlife habitat.
- Rural lands must include densities and allowed uses that protect the environment, particularly water quality, through avoiding a concentration of septic systems and individual wells.

Responses to questionnaires distributed during the creation of the Upper Kittitas County Vision Plan included consistent statements reflecting the features of the area valued by respondents including:

- Wildlife and amenities related to the natural environment;
- Rural atmosphere; and
- Recreation.

An important resource in identifying the values that current residents of the community associate with rural character can be found in the results of public input both at public meetings and from survey results from the Upper Kittitas County Vision Plan, developed by the Kittitas County Conference of Governments in 2004 and 2005.

The features listed as most important in light of future development included:

- Safeguarding wildlife areas and corridors;
- Protecting the area's "dark skies" from sky glow/light pollution;
- Preserving areas for forest resource activities;
- Preserving important view sheds;
- Preserving areas for agricultural activities, including small acreage lifestyles and animal keeping;
- Preserving and expanding public trail recreation access to areas with significant natural features; and

What is an Urban Growth Area?

Pursuant to RCW 36.70A.110, "Each county …shall designate an urban growth area or areas within which urban growth shall be encouraged and outside of which growth can occur only if it is not urban in nature. Each city that is located in such a county shall be included within an urban growth area. An urban growth area may include more than a single city. An urban growth area may include territory that is located outside of a city only if such territory already is characterized by urban growth.

- Protecting private property rights.

A case study approach that included the small community of Roslyn in western Kittitas County used photo-questionnaires to identify landscape characteristics that residents identified as "rural." The characteristics of the views most closely associated with rural character included farmland, open landscapes with few structures, and the presence of features such as livestock. Reasons given for rating these features as "rural" included the agricultural nature of the scenes, the presence of animals, low-density residential character, peace and quiet, a slow pace, and access to nature. Non-visual features associated with rural character include a sense of community, a sense of history, and opportunities for connection to the land, including the opportunity to pasture animals (Tilt 2007).

Rural Residential Policies are most applicable to the proposed project area, and include the following designation criteria:

Criteria 1. Lands outside UGAs and the Rural Transition designation.

Criteria 2. Lands located outside of the Commercial Agriculture or CF land use designations.

Criteria 3. Lands located within a fire district.

Criteria 4. Lands served by established county and/or state road networks that are in existence or can be logically extended as provided in the Kittitas County Transportation Plan.

Criteria 5. Lands at the time of adoption of the ordinance designated or zoned Rural Residential, Agricultural-3 (Ag-3), Agricultural-5 (Ag-5), R-3, or R-5.

Criteria 6. Lands that are otherwise located adjacent to and are logical extensions of this land use designation.

Criteria 7. Lands that do not require extension or provision of public/urban levels of services. Utility services may be provided by PUDs, and public or private utility providers.

Criteria 8. May include lands which have public values that must be protected under state law including but not limited to:
- Shorelines
- Wetlands
- Sensitive fish and wildlife habitats.

Criteria 9. May include lands which have been mapped as floodway, or which have excessively steep slopes, unstable soils, or where other mapped critical area features predominate.

The **Kittitas County Comprehensive Plan** includes the following general **goals, policies, and objectives (GPO)** that apply to rural lands or uses on those lands:

GPO 8.5 Kittitas County recognizes and agrees with the need for continued diversity in densities and uses on rural lands.

GPO 8.6 An expanded public lands element may be added to the Comprehensive Plan before 1999, which contains strategies for county involvement in decisions and action on public lands within the rural lands designated area.

GPO 8.7 Private owners should not be expected to provide public benefits without just compensation. If the citizens desire open space, or habitat, or scenic vistas that would require a sacrifice by the landowner or homeowner, all citizens should be prepared to shoulder their share of the sacrifice.

GPO 8.8 Voluntary, cooperation-seeking, incentive-based strategies will be sought in directing specific uses or prohibitions of uses on rural lands.

GPO 8.9 Projects or developments which result in the significant conservation of rural lands or rural character will be encouraged.

GPO 8.10 Factors within municipalities that encourage movement onto rural lands should be identified and referred to the municipality.

GPO 8.11 Existing and traditional uses should be protected and supported while allowing as much as possible for diversity, progress, experimentation, development and choice in keeping with the retention of rural lands.

GPO 8.13 Methods other than large lot zoning to reduce densities and prevent sprawl should be investigated.

The following policies apply to the portions of the site adjacent to national forest and other resource lands.

GPO 8.15 All conveyance instruments, including plats, short plats as well as other development activities of a residential nature on or within 1,000 feet of land designated as resource lands, shall contain a notice which states: “The subject property is within or adjacent to existing resource areas on which a variety of activities may occur that are not compatible with residential development for certain periods of limited duration. Resource activities performed in accordance with county, state, and federal laws are not subject to legal action as public nuisances. Kittitas County has adopted Right to Farm provisions contained in Section 17.74 of the Kittitas County Code.”

GPO 8.16 Growth in the rural lands should be managed in a manner that minimizes impacts on adjacent natural resource lands.

GPO 8.17 Support for right-to-farm ordinances should be continued and expanded.

GPO 8.19 Clustering of residential development adjacent to commercial forest and agricultural land should be encouraged. The open space in the clustered development may buffer adjacent natural resource land from development.

GPO 8.20 Development standards for access, lot size, and configuration, fire protection, forest protection, water supply and dwelling unit location should be adopted for development within or adjacent to forest lands.

Rural lands of Kittitas County are home sites for thousands of families and provide a unique quality of life for these people. Residents range from resource producers permanently living and working on their own lands to people visiting out-of-state or out-of-area individuals with recreation and vacation homes in the area. Resident people include retired people or young families with members commuting to out-of-area jobs. Residences may be isolated, located in clustered rural neighborhoods, or part of housing developments located on small lots or large land holdings. These residential lots may be located in dense forest or desert sage, along rivers and lakes, or along main thoroughfares to towns and cities. The best description of residential uses on rural lands is diverse and varied.

The following general goals, policies, and objectives from the Kittitas County Comprehensive Plan apply to residential uses on rural lands.

GPO 8.46 Residential development on rural lands must be in areas that can support adequate private water and sewer systems.

GPO 8.47 Insofar as residences are situated where farming, mining, and forestry exits, particular precaution should be taken to minimize the conflict between new residential developments and farm operations. Farming, forestry and mining cannot be expected to curtail normal operation in the interest of residential development.

GPO 8.48 The possibilities and benefits of cluster residential developments located in rural lands should be retained.

GPO 8.49 Lot size should be determined by provision for water and sewer utilities.

GPO 8.50 In the case of planned unit developments (PUDs), only residential PUDs should be permitted outside of UGAs or UGNs.

GPO 8.51 Innovations in housing developments such as, but not limited to cluster developments, PUDs, mobile home courts, and density bonuses should be encouraged whenever possible.

GPO 8.52 Existing lots of record are vested with the right to construct a single-family dwelling, subject to all applicable requirements in effect at the time of building permit application.

GPO 8.53 Where new residential development may be incompatible with resource production activities, any buffering necessary should be carried out by the new development unless an alternative is mutually agreed upon by adjacent landowners.

The county has a variety of policies for LAMIRDs IN GPO 8.67 to 8.77 that apply to areas so designated in the vicinity. These policies, however, do not apply to the Marian Meadows site.

7 What changes in land use would occur on the site from the proposal and alternatives?

Under the applicant's proposed PUD and under any of the alternatives, changes in land use from undeveloped/forest land to residential development would occur. The extent to which land cover consisting of forest vegetation would change is a function of the portion of a lot that would be cleared and devoted to buildings and non-forest vegetation such as lawn. Accordingly, those alternatives proposing development throughout the site (Alternatives 1, 3, and 4) would result in more significant changes to land use, while those alternatives limiting development to a portion of the site (Alternatives 2 and 5) would result in less significant changes to land use. The alternatives with smaller lot size would result in more change in land cover than alternatives with larger lot size.

8 Are future residents likely to live on the site year-round? Or will they live on the site seasonally?

In assessing potential impacts of the proposed development, the characteristics of future residents are important to consider. Population characteristics affect the amount of time spent in a residence, and age and family size affect the demand for a variety services, including schools, utilities, and transportation needs.

Generally, there are three market sectors in the housing market in the area which reflect the character of the local economy in western Kittitas County:

- Full-time, year-round residents primarily living and working in the area, with the age structure and family tenure typical of the greater Kittitas County;
- Full-time, year-round residents who are retired; and
- Part-time, seasonal residents primarily using the site for winter sports and summer recreation.

Kittitas County had an economy based on agriculture and timber until the 1970s. Since then it has diversified into a number of areas, most significantly the services, trade, and government sectors. Agriculture in the Kittitas Valley continues to be important; its employment accounted for 6 percent of non-farm employment in 2000 and a similar proportion in 2008. The manufacturing sector is also driven by the local natural resource-based industries. The highest manufacturing employment is found in food processing, followed by lumber and wood products.

Services and trade, combined, accounted for approximately 45 percent of non-agricultural employment in Kittitas County in 2000 and a similar proportion in 2008. Most of these workers were employed in relatively low-paying industries, such as restaurants, food stores, and tourist and recreation-related services.

Kittitas County's strongest employment sector is the government, which provides nearly 40 percent of all non-farm jobs. The major government employers are Central Washington State University in Ellensburg, state government offices, county government offices, and school districts.

Recent growth in employment has been primarily in the services sector. The largest sector is health care, which includes employment in hospitals, the offices of physicians and dentists, and nursing homes, etc. The amusement and recreation services sector is the next largest, with social services third. Average wages in the service sector are relatively low (Mesick 2002).

The choice of housing location depends on a number of factors that are weighed by individuals.

For persons in the workforce, primary considerations include:

- Cost in relation to their income.
- Family space needs, which vary by household size.
- Distance to workplace and cost of commuting (which are affected by a variety of personal choices as well as cost and income).
- Personal or cultural factors such as proximity to family and social groups (ethnic, religious, or other groups one may identify with).
- Factors relating to public services such as the character of local schools and the availability of parks and recreation facilities.
- Amenities one may value that relate to the character of the area, such as the size of lots, open space, vegetation diversity, proximity to recreation facilities, and other factors.

More than half of Easton's workforce worked outside the county. This compares with 17 percent for residents of Cle Elum, 15 miles away. Out-of-county workplaces were likely to be located in King County, because the destination was readily accessible to the area via I-90. Locations could range from Snoqualmie Pass, located 15 miles away, to the greater Seattle urban area, located approximately 60 miles away.

All of these criteria may play a part in the individual choice of location of residence. It is very difficult to predict the factors that may weigh on an individual and even more difficult to predict the factors that will lead to a choice of specific development and residence.

Several characteristics of the Easton workforce from the 2000 census provide some insight on this sector of the community:

- The median family income was 82 percent of the state average, as compared to 71 percent for Kittitas County as a whole.
- The percentage of the workforce in management and professional sectors was less than the state or county average.
- The percentage of the workforce in resource-related jobs was more than twice the county average and over four times the state average, but only approximately 10 percent of the area workforce.

- Commute time was greater than 30 minutes for 55 percent of the workforce and 60 minutes or more for 40 percent of the workforce.

A substantial portion of the existing population is willing to commute long distances to live in the Easton community. This fact indicates that a substantial component of full-time residents may be expected for the proposed development, assuming similar attractions are present.

For persons who are retired, the same factors of cost in relation to income are relevant, although distance to workplace and cost of commuting are not a factor. Public services such as medical services, as well as unpredictable factors such as proximity to friends and relatives, tend to be more important to this demographic group. Amenities may also play a greater role in housing choice for retired persons, because they enjoy greater flexibility in location by not being tied to a specific workplace.

For recreational housing, the factors that affect housing choice relate primarily to amenities. In this case, additional amenities that are likely to be important to the attractiveness of the area include:

- Winter sport facilities such as downhill skiing in the Snoqualmie Pass resort area.
- Summer boating and fishing opportunities at Lake Easton State Park, Kachess Lake, Keechelus Lake, and Cle Elum Lake, as well as the Yakima River.
- Summer hiking and other opportunities in the National Forest in the area.

An important resource in identifying the values that current residents of the community value are public meetings and survey results from the Upper Kittitas County Vision Plan, developed by the Kittitas County Conference of Governments in 2004 and 2005, discussed above. Other important resources are the values identified in a public meeting in Easton held in March 2005. The concerns expressed by residents at that time are also summarized above.

For potential residents in the workforce, an important characteristic of the proposal is housing cost. The cost of purchasing a lot and the cost of placing a residence on the land can be a significant factor that can outweigh factors such as commuting cost.

An example of a rural community in which low housing costs have resulted in substantial growth, despite geographic isolation, is the Kendall community in eastern Whatcom County, Washington. This subdivision of several hundred lots was developed in the 1960s as recreational, secondary residences. In the 1980s and 1990s, it grew rapidly with most of the housing stock consisting of low-cost mobile homes. It attracted persons looking for inexpensive housing and notably attracted a high population of immigrants from Russia and Ukraine, which comprise an estimated 30 percent of the community. Seventy-one percent of children enrolled at Kendall Elementary School are now eligible for free or reduced price lunches. In the larger Kendall-North Fork area 24 percent of the population resides in households with incomes below the poverty line (NFCL 2007).

Major out-of-county employment opportunities are located in King County, which is 40 to 60 miles to the west . The long commute times exhibited by current residents indicate that many working residents are willing to commute long distances.

The cost of lots in the proposed Marian Meadows are not likely to be within the affordability range for persons at the lowest end of the housing market because of the cost of new infrastructure, including roads, water systems, and the proposed wastewater treatment plant. These infrastructure costs, in addition to the premium price placed on new developments, would at least partially offset the relatively low raw land costs associated with the development's isolated location and smaller lot sizes.

Factors related to proximity to place of work also do not favor Easton as a location, because most employment opportunities in Kittitas County are in the Ellensburg area, located approximately 40 miles east of the site. Greater employment opportunities are present in King County to the west with the nearest community in North Bend about 40 miles away and larger centers in Issaquah, Bellevue, Seattle, and Renton 55, 65, and 70 miles distant, respectively.

Personal factors such as characteristics of the community are important for individuals and families that can afford to select from a variety of housing options. These factors are likely to be important for both retired and seasonal residents. The proposal, however, has few amenities identified as important by existing residents, or available in other developments in the area. Specifically:

- The small lot sizes of the applicant's proposal reduces the amenities of large lot sizes, including the ability to keep large animals such as horses, the ability to maintain tree cover on the lot, if desired, and the amenity of privacy and distance between neighbors.
- The site lacks mature native vegetation in most of the lower portion and much of the upper portion. Especially in the lower area, the debris of recent logging may be regarded as a visual drawback.
- The site lacks a number of amenities common to other recreation or resort developments in the area including:
  - Open space areas adjacent to housing with forest cover;
  - Access to open space along rivers and/or lakes;
  - Recreational trails through an interconnected open space system; and
  - Access to active recreation facilities such as golf courses.

The area has ready access to winter sports areas at Snoqualmie Pass, located approximately 20 minutes from the site by car. The area also has ready access to formal winter snowmobile trails several miles from the site. There also are informal trails through the site.

Many of these amenities, however, are available within a few miles of the site. In most cases, access requires driving several miles on the local road system and/or on I-90.

The four tenure scenarios that have been developed include:

- **Tenure Scenario 1 – All full-time residents.** This includes 85 percent workforce families composed of full-time year-round residents with the head of household younger than retirement age and 15 percent retired persons reflecting the current census demographics of Kittitas County.
- **Tenure Scenario 2 - Primarily workforce families:** 60 percent workforce families, with 15 percent retired residents, and 25 percent part-time recreational residents.
- **Tenure Scenario 3 – Near Balanced:** 35 percent workforce families, with 30 percent retired residents, and 35 percent part-time recreational residents.
- **Tenure Scenario 4 - Primarily Recreational:** 25 percent workforce families, with 25 percent retired residents, and 50 percent part-time recreational residents.

The potential population under each tenure scenario for each of the alternatives is indicated in Table 3-2.

9 How would construction of the proposal or alternatives affect nearby land uses?

Construction impacts to nearby land uses would include a temporary increase in vehicles accessing the site to deliver persons, materials, and equipment for construction. This increase could result in localized congestion and occasional disruption of traffic flow at intersections in the immediate project vicinity.

Construction-related impacts are not likely to affect the viability of any existing uses or lead to a change in land use.

Table 3-2. Population of Alternatives with Tenure Scenarios

	Tenure of Residents			
Units	**Full-time**	**Retired**	**Seasonal/ Recreation**	**Total**
Alternatives 1 and 2: Applicant's Proposals – 443 Units				
Tenure Scenario 1	85 %	15%	0	
Units	377	66	0	443
FTE Population	1,040	140	0	**1,180**
Tenure Scenario 2	60%	15%	25%	
Units	266	66	111	443
FTE Population	864	140	86	**1,089**
Tenure Scenario 3	35%	30%	35%	
Units	155	133	155	443
FTE Population	504	279	120	**903**
Tenure Scenario 4	255	25%	50%	
Units	111	111	222	443
FTE Population	360	233	172	**764**
Alternative 3A and 3B: Existing Zoning 3-Acre Lots, and Alternative 4: Mitigated with Development on 147 Units				
Tenure Scenario 1	85 %	15%	0	
Units	125	66	0	147
FTE Population	345	46	0	**391**
Tenure Scenario 2	0.6	0.15	0.25	
Units	88	22	37	147
FTE Population	277	46	31	**354**

Table 3-2. Population of Alternatives with Tenure Scenarios

	Tenure of Residents			
Units	**Full-time**	**Retired**	**Seasonal/ Recreation**	**Total**
Tenure Scenario 3	0.35	0.3	0.35	
Units	51	44	51	147
FTE Population	162	93	44	**298**
Tenure Scenario 4	0.25	0.25	0.5	1.000
Units	37	37	74	147
FTE Population	119	77	57	**254**
Alternative 3D: One Unit per 5 Acres in ASZs and Alternative 5: Mitigated with Development on Lower Area only – 113 Units				
Tenure Scenario 1	85%	15%	0	
Units	96	17	0	113
FTE Population	265	36	0	**301**
Tenure Scenario 2	60%	15%	25%	
Units	68	17	28	113
FTE Population	220	36	28	**284**
Tenure Scenario 3	35%	30%	35%	
Units	40	34	40	113
FTE Population	129	71	31	**230**
Tenure Scenario 4	255	25%	50%	
Units	28	28	57	113
FTE Population	92	59	44	**195**
Alternative 3B: 3-Acre Lots in Western Portion of the Site, 33 Units				
Tenure Scenario 1	0.85	0.15	0	
Units	28	5	0	33
FTE Population	77	10	0	88
Tenure Scenario 2	0.6	0.15	0.25	
Units	20	5	8	33
FTE Population	64	10	6	81
Tenure Scenario 3	0.35	0.3	0.35	
Units	12	10	12	33
FTE Population	38	21	9	**67**
Tenure Scenario 4	0.25	0.25	0.5	
Units	8	8	17	33
FTE Population	27	17	13	**57**

10 What are the likely long-term effects on nearby land use associated with the proposal and alternatives?

Alternative 1, the applicant's proposed PUD with 443 units, would result in an increase in total residential lots in the immediate vicinity (the area served by Sparks Road north of I-90 between Kachess Lake to the north, the Yakima River, and the aggregate mine area to the south) from approximately 200 to 643 residential lots.

The proposal would more than triple the current number of existing parcels in the immediate vicinity and more than triple the number of existing residences.

The size and character of the applicant's 443-unit proposal represents a substantial change in density and open space from

the majority of the development in the vicinity, particularly the lots directly adjacent to the site, which are generally greater than 3 acres. The majority of the property in the vicinity consists of lots larger than 3 acres. Of the privately owned land in the vicinity (outside Marian Meadows), about 75 percent is in parcels larger than 3 acres. There are several existing subdivisions of smaller lots totaling approximately 80 lots that account for about 25 percent of the land area. If the Easton State Airport is included, almost 90 percent of the area in the project vicinity consists of 3-acre parcels or larger.

It is not anticipated that there would be any direct impacts to existing land uses on existing parcels in the area.

Approximately 18 large lots located immediately adjacent to the property would no longer be bounded by forest land. Instead, each existing lot would be abutted by three to four smaller lots with associated residences. This would result in a change in the character of the area for those adjacent large lots in terms of the amount of vegetation, the proximity of buildings, the frequency that other people are seen, and proximity impacts such as noise and lights. Most existing residences on adjacent lots are generally 100 feet or more from the new lots and in many cases are substantially screened by existing vegetation, which would reduce visual impacts.

Most residents in the area would experience the proposal and the alternatives in terms of a change in character as described below.

- The landscape in the area would no longer be characterized primarily by natural features and open space. Native forest vegetation would no longer predominate on the site. The size of proposed lots and typical associated clearing would result in elements of the built environment such as buildings and ornamental landscaping being the dominant features.
- The observed visual character of the community would change due largely to the predominance of residences and associated permanent clearing of the forest. Clearing and grading for roads and residences on the upper eastern portion of the site would be readily visible to residents in the area. This would substantially change one of the visual elements that provides a defining characteristic of the community. This element is the forested ridges that frame the Yakima River Valley and provide natural features as the dominant visual character (see Section 3.6, Visual Quality, Light, and Glare for additional discussion of this impact).

Changes to visual character would be especially pronounced on the upper eastern portion of the site as discussed in the visual quality analysis in Section 3.6.

- It is unlikely that forestry use would occur on residential parcels, except cutting of trees for firewood. The uppermost portion of the site could continue to be managed as commercial forest but are likely to provide limited opportunities because of the small area.
- Residents of Marian Meadows would be unlikely to derive significant support from traditional rural resource-based economies, and would likely be predominantly commuters to urban areas or recreational users. This may result in fewer social interactions between members of the community.

- The rural character of the area would change as a result of a substantial increase in the number of people on local streets, in local businesses, and in schools and other public places.
- The conservation of fish and wildlife habitat on-site and in the area would not occur. The site would likely experience a decline in use by wildlife, especially large mammals such as elk, as discussed in more detail in Section 3.15.
- Wildlife movement would be substantially curtailed by the proposal. The location of a large number of small lots along BPA easement together with the mini-storage use proposed along the east side of the easement would result in a substantial barrier to north-south movement of elk across the site from summer habitat areas to the north to winter habitats to the south as discussed in Section 3.15.

Alternative 2, PUD on the western portion of the site with up to 443 units, would result in the same number of units in a smaller area.

The large lots located immediately adjacent to the site to the north of the runway clear zone would be bounded by the same number of lots as in Alternative 1 and would experience similar impacts. Adjacent lots to the southwest and south would be bounded by open space within the airport safety zone or in areas excluded because of flow hazards. The residents in these lots would experience little or no change from the existing forest cover.

Most residents in the area would experience Alternative 2 similarly to Alternative 1.

- The landscape in the area would no longer be characterized primarily by natural features and open space due to clearing of the lots where elements of the built environment would become the dominant feature. This change would be especially true for the multi-family development.
- The observed visual character of the community would change due largely to the predominance of residences and associated permanent clearing of forest, but it would be apparent largely to persons living close to the site or passing through the site. The visual character of forest cover on the ridge would be preserved.
- It is unlikely that forestry use would occur on residential parcels, except cutting of trees for firewood. The open space areas on the lower portion of the site and the entire upper portion of the site could continue to be managed as commercial forest.
- Residents of the multi-family areas would be less likely to be seasonal (NAR 2008); therefore, a higher proportion of full-time residents commuting to jobs in urban areas or retired residents can be expected. This occurrence may increase the number of people on local streets, in local businesses, schools, and other public places as compared to Alternative 1.
- The lower portion of the site would likely experience a greater decline in use by wildlife, especially large mammals such as elk, but wildlife use on the upper portion of the site would be greater, as compared to Alternative 1.

- The smaller lots on the west side of the BPA easement, together with mini-storage use proposed along the east side of BPA easement would result in a substantial barrier to movement of elk across the site from summer habitat areas to the north to winter habitats to the south. Impacts would be similar to Alternative 1.

Alternative 3A, No Action with Uniform 3-acre Lots over the entire property, and **Alternative 3B: No Action with 3-Acre Lots with Exclusions** would have similar impacts. The difference between the two is the exclusion in 3B of 40 acres from residential development that could be devoted to mini-storage. The major difference would be about 12 fewer lots in 3B. These alternatives would increase the total residential lots in the immediate vicinity from approximately 200 to about 350, a little more than half of the total proposed by Alternatives 1 and 2, but a substantial increase over the existing amount.

The large lots located immediately adjacent to the site would be bounded by lots similar in size to the existing. Residences would likely be set farther from the boundaries of the plat than Alternatives 1 and 2 resulting in less clearing apparent to the adjacent lots and less impact of noise and lights nearby.

Other residents in the area likely would experience the following:

- The landscape in the area would no longer be characterized primarily by natural features and open space. Native forest vegetation would no longer predominate on the site. The size of lots and typical associated clearing would be typical of existing large lots in the area. Elements of the built environment such as buildings and ornamental landscaping would be more prominent, but more native vegetation would be retained than Alternatives 1 and 2.
- The observed visual character of the community would change due to a larger component of residences and associated permanent clearing of forest cover, but to a less extent than Alternatives 1 and 2. Clearing and grading for roads and residences on the upper eastern portion of the site would be readily visible to residents in the area. Road clearing would be similar, but the number of residents would be less than Alternatives 1 and 2. This development would substantially change one of the visual elements that provides natural forest as the dominant visual character of this portion of the Yakima River Valley (see Section 3.6).
- It is unlikely that forestry use would occur on residential parcels, except cutting of trees for firewood.
- As with other alternatives, residents would likely be predominantly commuters to urban areas or recreational users. The amenities of large lots may attract more persons desiring a community with a rural character. The similarity with the value of existing community members may result in more social interactions among members of the community.

Under Alternative 4, the number of residential lots in the immediate vicinity would almost double but the increase would be about half that of Alternatives 1 and 2.

- The increase in the number of people on local streets, in local businesses, and in schools and other public places would be less than Alternatives 1 and 2.
- The site would likely experience a decline in on-site use by wildlife, especially large mammals such as elk, but use by smaller wildlife species likely would be greater than Alternative 1 because of the potential habitat provided on large lots.
- The 3-acre lots in Alternative 3A located along the west side of BPA easement could result in a substantial barrier to north-south movement of elk across the site from summer habitat areas to the north to winter habitats to the south unless substantial buffer areas of native vegetation were retained to provide a buffer to reduce disturbance from the view of human occupancy, noise and disturbance by lights and disturbance by domestic animals. In the absence of an effective buffer, development would discourage use of the corridor, especially by the most sensitive component of the population, cows with calves. The impact on elk herds and overall populations in the area could be substantial because of the lack of other corridors for north-south movement in the area due to topography, human residential development, and the barrier produced by the I-90 corridor.

The mini-storage use in Alternative 3B along the east side of BPA easement would be a substantial barrier to north-south movement of elk across the site from summer habitat areas to the north to winter habitats to the south even with fewer lots on the west side of the corridor and the retention of a buffer on the west side that could be accommodated with larger lots. Location of a commercial storage site fronting on the east side would discourage movement because of the close proximity of buildings and human activity similar to Alternatives 1 and 2.

Alternative 3C: No Action with 3-Acre Lots Excluding the Eastern Portion of the Site would result in a reduction in total lots to about a third of those in Alternatives 3A or 3B to about 33 lots. This would result in similar impacts as Alternatives 3A and 3B to existing development in the vicinity, but result in a reduction in impacts on rural character related to the total number of units or to development on the steep eastern portion of the site.

The large lots located immediately adjacent to the site would be bounded by lots similar in size to the existing as with Alternatives 3A and 3B.

Other residents in the area likely would experience the following:

- The views of the landscape in the area would be characterized by natural features and open space to a greater extent than Alternatives 3A and 3B because native forest vegetation would characterize the upper slopes most visible from existing residences. Clearing and grading for roads and residences on the upper eastern portion of the site would be

Under Alternative 4, the number of residential lots in the immediate vicinity would almost double but the increase would be about half that of Alternatives 1 and 2.

avoided. Elements of the built environment such as buildings and ornamental landscaping would be more prominent than at present, but apparent only from near proximity. More native vegetation would be retained than Alternatives 1 and 2.

- It is likely that forestry use would continue on the eastern portion of the site, although it is unlikely to occur on residential parcels, except cutting of trees for firewood.

- As with other alternatives, permanent residents would likely be predominantly commuters to urban areas and part-time residences would likely be recreational users. The amenities of large and fewer lots with a large component of the site preserved in forestry may attract more persons desiring a community with a rural character. The similarity with the value of existing community members may result in more social interactions among members of the community.
- The increase in the number of people on local streets, in local businesses, and in schools and other public places would be substantially less than Alternatives 3A and 3B and orders of magnitude less than Alternatives 1 and 2.
- The site would likely experience a decline in on-site use by wildlife, especially large mammals such as elk, but use by smaller wildlife species likely would be greater than Alternative 1 because of the potential habitat provided on large lots.
- The 3-acre lots in Alternative 3A located along the west side of BPA easement could result in a substantial barrier to north-south movement of elk across the site from summer habitat areas to the north to winter habitats to the south unless substantial buffer areas of native vegetation were retained to provide a buffer to reduce disturbance from the view of human occupancy, noise and disturbance by lights and domestic animals. In the absence of an effective buffer, development would discourage use of the corridor, especially by the most sensitive component of the population, cows with calves. The impact on elk herds and overall populations in the area could be substantial because of the lack of other corridors for north-south movement in the area due to topography, human residential development, and the barrier produced by the I-90 corridor.
- The mini-storage use along the east side of BPA easement would be a substantial barrier to north-south movement of elk across the site from summer habitat areas to the north to winter habitats to the south even with fewer lots on the west side of the corridor and the retention of a buffer on the west side that could be accommodated with larger lots. Location of a commercial storage site fronting on the east side, the only linear open space corridor on the site, together with large lot residential development on the west side would discourage use because of the close proximity of buildings, human activity, and features such as security lights that would result in avoidance of the corridor, especially by the most sensitive component of the population, cows with calves. The impact on elk herds and overall populations in the area could be substantial because of the lack of other corridors for north-south movement in the area due to topography, human residential development, and the barrier produced by the I-90 corridor.

Alternative 3D: No Action with 5-Acre Lots in the Airport Safety Zones (ASZs) including both the western and eastern portions of the site with 3-acre lots to the east outside the ASZs would result in a reduction in total lots to about 75 percent of those in Alternatives 3A or 3B to about 113 lots. This would result in similar impacts as Alternatives 3A and 3B but at a slightly lower level due to the reduced number of lots and slightly larger lots.

The existing large lots located immediately adjacent to the site would be bounded by 5-acre lots more similar in size to the existing. Residences would likely be set farther from the boundaries of the plat than Alternatives 3A, 3B and 3C and much less than Alternatives 1 and 2, resulting in less clearing apparent to the adjacent lots and less impact of noise and lights nearby.

Other residents in the area likely would experience the following:

- The landscape in the area would no longer be characterized primarily by natural features and open space. Native forest vegetation would no longer predominate on the site. The 5-acre lots within the ASZs and the 3-acre lots outside the ASZs would retain somewhat more native vegetation, but elements of the built environment such as buildings and ornamental landscaping would be substantial.
- The observed visual character of the community would change to a similar extent as Alternatives 3A and 3B, but to a lesser extent than Alternatives 1 and 2. Clearing and grading for roads and residences on the upper eastern portion of the site would be about the same as Alternatives 3A and 3B because of the prevalence of 3-acre lots, and would be readily visible to residents in the area. The number of residents would be substantially less than Alternatives 1 and 2, and slightly less than Alternatives 3A and 3B. Like Alternatives 3A and 3B, Alternative 3D would substantially change one of the visual elements that provides natural forest as the dominant visual character of this portion of the Yakima River Valley (see Section 3.6).
- It is unlikely that forestry use would occur on 5-acre residential parcels, except cutting of trees for firewood.
- As with other alternatives, residents would likely be predominantly commuters to urban areas or recreational users. The amenities of larger lots may attract more persons desiring a community with a rural character. The similarity with the value of existing community members may result in more social interactions among members of the community.
- The increase in the number of people on local streets, in local businesses, and in schools and other public places would be slightly less, though similar, to Alternatives 3A and 3B, but much less than Alternatives 1 and 2.
- The site would likely experience a decline in on-site use by wildlife, especially large mammals such as elk, even with 5-acre lots on the west side of the BPA easement. The location of the mini-storage

on the east side of the corridor would be a similar impediment to movement with similar potential impacts on herds and populations.

Alternative 4, PUD with Reduced Density on the Entire Site, was developed to illustrate elements that would incorporate mitigation measures while retaining development on both the flat western portion of the site and the steep eastern portion. About 147 lots are shown in the conceptual layout in Figure 2-4. (Other potential layouts could result in more or fewer lots.) This alternative results in an increase in total residential lots in the immediate vicinity from about 200 to about 350 or a little more than half of the total proposed by Alternatives 1 and 2, about the same as in Alternatives 3A and 3B.

Under Alternative 4, the development would include lots that are somewhat smaller than existing large lots in the area, particularly those directly adjacent to the development. The interior lots would be slightly larger than the existing subdivisions in the vicinity with the smallest lots about .25 acre in size, or about twice as large as the densest development in the vicinity such as the Easton Village plat to the southwest.

The existing large lots located immediately adjacent to the site would be bounded by smaller lots, except within the ASZ 4 where no residential lots are proposed. This layout provides an area for mini-storage development in the ASZ 4 where it is considered a compatible non-residential use. Adjacent existing lots to the southwest and south would be bounded by open space in the airport safety zone or in areas excluded because of debris flow hazards.

The majority of residents in the community would experience the alternative in terms of the following:

- The landscape in the area would no longer be characterized primarily by forest cover. A substantial area of native forest vegetation would be preserved in the airport safety zone, in the hazard avoidance areas, and on the highest upper slopes. The extent to which the built environment predominates would vary by lot size. For persons passing through the area on roads, elements of the built environment such as buildings and ornamental landscaping would be dominant in developed areas, but more native vegetation would be retained in open space areas than Alternatives 1 and 2.
- The observed visual character of the community would change in areas of residential development and associated permanent clearing of the forest cover, but this character would be preserved in open space areas. The visual character for people not living in direct proximity would be primarily affected by clearing and grading for roads and by residences on the western portion of the site. On the steep eastern portion of the site, there would be less clearing and grading from roads. Residences would be lower on the ridge, and therefore less visible to residents in the area. The changes to the most visible higher portions of the forested ridges that frame the Yakima River Valley and contribute to the rural character of the area would be less than Alternatives 1, 3A,3B, and 3, but more than Alternatives 2 and 5 (see Section 3.6).
- It is unlikely that forestry use would occur on residential parcels, except cutting of trees for firewood. The open space areas on the lower portion of the site and portions of the upper portion of

the site could continue to be managed as commercial forest, as could open space in ASZs and other open space.

- The mix of lot sizes may attract all components of potential residents including full-time workforce residents, retired persons, and recreational users. The amenities of large lots or open space may attract more persons desiring a community with a rural character. The similarity with the value of existing community members may result in more social interactions among members of the community.
- The increase in the number of people on local streets, in local businesses, and in schools and other public places would be less than Alternatives 1 and 2 and about the same as Alternatives 3A and 3-B.
- The site would likely experience a decline in on-site use by wildlife, especially large mammals such as elk, but wildlife use would likely be greater because of the potential habitat provided in open space areas.
- The deeper lots located along the west side of BPA easement would accommodate a permanent buffer of native vegetation that together with elimination of mini-storage on the east side of the corridor would provide a somewhat effective corridor for north-south movement of elk across the site. Provision of a native vegetation buffer would lessen disturbance from the view of human occupancy, noise, and lights. Disturbance by domestic animals likely would continue.

Alternative 5, PUD with All Development Clustered on the Western Portion of the Site could have up to 113 lots allowed in the Kittitas County ASZ. Up to 147 lots would be allowed in a PUD by existing zoning without bonus provisions. The western portion of the site, however, is entirely within ASZs and therefore is limited to 3 units per acre. This would result in an increase in total residential lots in the immediate vicinity from approximately 200 to between 325 and 350 residential lots, a little less than Alternative 3.

Under Alternative 5, the development would include a mix of lot sizes with all lots smaller than the existing large lots in the area. The interior lots would be only slightly larger than the smallest lots in the area such as in the Easton Village subdivision. The large lots located immediately adjacent to the site are indicated in the conceptual layout (Figure 2-5) similar to Alternative 4, adjacent lots to the southwest and south would be bounded by open space in the airport safety zone or in areas excluded because of debris flow hazards. The smallest lots would be in the interior of the site.

The majority of residents in the community would experience the alternative in terms of:

- The landscape in the area would no longer be characterized primarily by natural forest cover. A substantial area of native forest vegetation would be preserved in the airport safety zone and hazard avoidance areas and on the eastern portion of the site. In developed areas, the extent to which the built environment predominates would vary by lot size. For persons passing through the area on roads, elements of the built environment such as buildings and ornamental landscaping would be

dominant in developed areas, but more native vegetation would be retained in open space areas than other alternatives.

- The observed visual character of the community would change in areas of residential development and associated permanent clearing of the forest cover, but the character would be preserved in open space areas. The visual character for people not living in direct proximity would be preserved by the avoidance of development and associated clearing and grading for roads and residences. The forested ridges that frame the Yakima River Valley and contribute to the rural character of the area would be preserved (see Section 3.6).
- It is unlikely that forestry use would occur on residential parcels, except cutting of trees for firewood. The open space areas on the lower portion of the site and the entire upper portion of the site could continue to be managed as commercial forest.
- The mix of lot sizes may attract all components of potential residents including full-time workforce residents, retired persons, and recreational users. The amenities of large lots or open space may attract more persons desiring a community with a rural character. The similarity with the value of existing community members may result in more social interactions among members of the community.
- The increase in the number of people on local streets, in local businesses, and schools and other public places would be substantially less than Alternatives 1 and 2 and slightly less than Alternative 3.
- The lower western portion of the site would likely experience a decline in on-site use by wildlife, especially large mammals such as elk, but wildlife use would likely be greater than other alternatives because of the potential habitat provided in open space areas and the preservation of the eastern portion of the site in commercial forest.

11. What are the likely cumulative impacts with development of nearby land at rural densities?

Cumulative impacts of the project in the immediate vicinity (north of I-90 and served by Sparks Road) under the existing 3-acre minimum lot size were analyzed based on the potential increase in development based on lot sizes according to the Kittitas County Assessor's records (Figure 3-6).

Currently, about two-thirds of the lots in the area are larger than 3 acres each. Under the 3-acre minimum lot size, only lots greater than 6 acres in size were considered subdividable. The Easton State Airport was excluded. Division of those lots would result in creation of an additional 130 lots. In addition, there are about 80 existing vacant parcels in the area that could be developed with single-family residences with submittal of building and septic tank applications. There are about 120 existing residences. The total would result in up to 330 lots outside the Marian Meadows development.

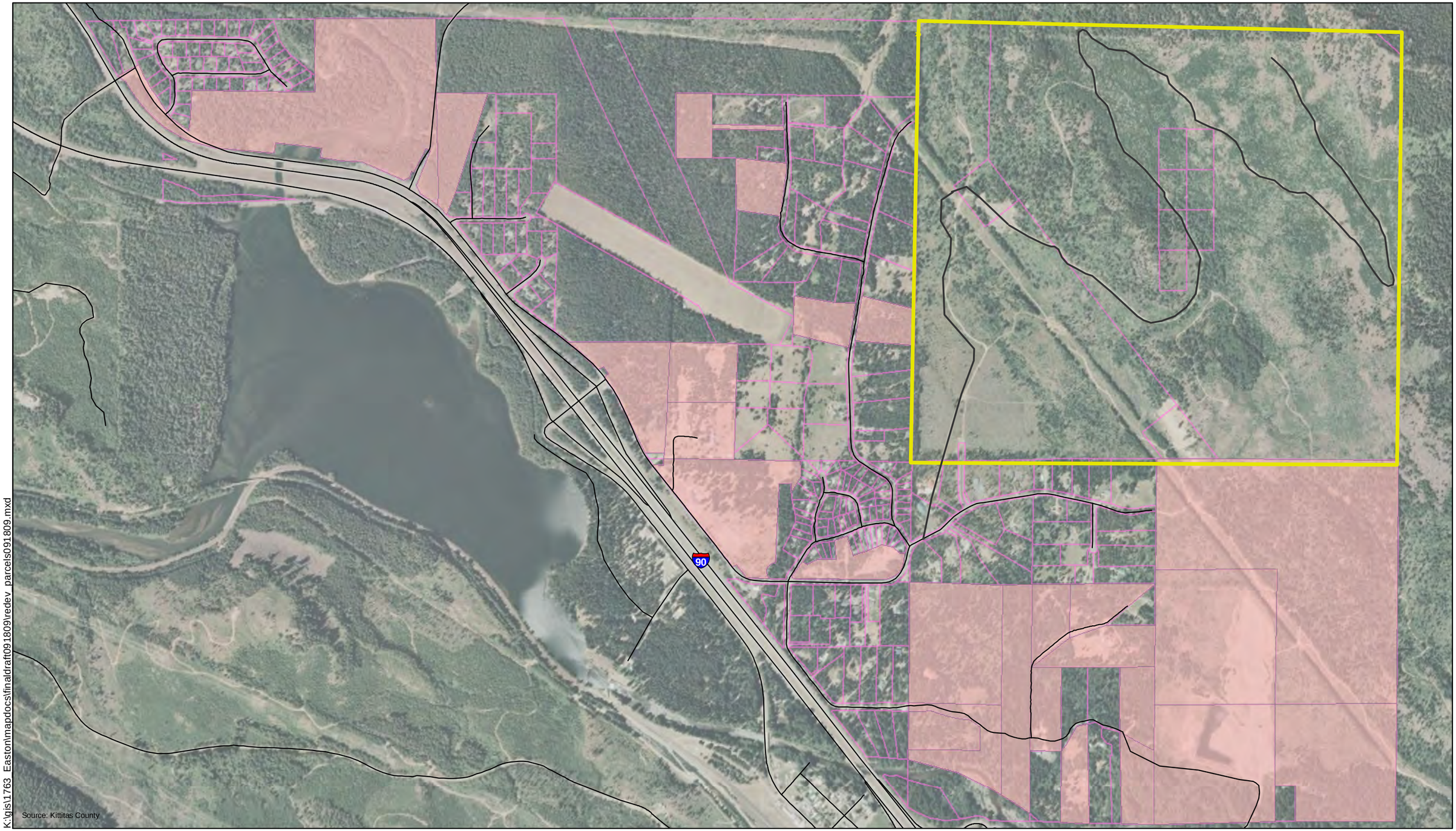
Potential cumulative impacts with the alternatives for the Marian Meadows site are as follows:

- The **Alternative 1 and 2 PUDs** with 443 lots would result in a total of about 770 single-family lots in the area. The majority of the area would be in large lots greater than 3 acres, but the largest number of lots would be smaller than 1 acre, with the Marian Meadows development contributing nearly 60 percent of the total lots. Under Alternative 2 the Marian Meadows site would contain the only multi-family development in the area.
- Under **Alternatives 3A and 3B,** the No Action Alternatives with 3-acre lots and also with **Alternative 4,** on both the east and west portions of the site, there would be about 147 lots within the proposal, and a total of about 470 lots would be developed in the area. This amounts to about 60 percent of the cumulative number of lots with Alternatives 1 and 2. The majority of development in the area under Alternatives 3A and 3B would be in large lots of 3 acres in size or larger. Under Alternative 4, the majority of lots in the area would be less than 1.5 acres in size.
- Under **Alternative 3C** with 33 lots within the proposal, a total of about 360 lots would be developed in the area. This amounts to about 47 percent of the cumulative number of lots with Alternatives 1 and 2. The majority of development in the area would be in large lots of 3 acres in size or larger.
- Under **Alternative 3D and Alternative 5** with 113 lots, a total of about 443 lots would be developed in the area. This amounts to about 58 percent of the cumulative number of lots with Alternatives 1 and 2. With Alternative 3D, the majority of development in the area would be in large lots of 3-acres in size or larger. With Alternative 5, the majority of development in the area would be in small lots less than one acre in size.

Table 3-3 indicates the potential population associated with the cumulative increase in lots for each of the tenure alternatives.

Depending on the proportion of full-time versus part-time residences and the proportion of retirees, a FTE population was calculated with an average household size of 3.25 for full-time seasonal occupancy and a household size of 2.1 for retired. Seasonal FTE population was based on occupancy of units about a quarter of the time. (This would be equivalent to occupancy every weekend, or about 50 percent of weekends and four full weeks per year, or a variety of other combinations.) Under the various tenure scenarios, the area served by Sparks Road could vary in FTE population from 2,300 to about 800. During peak weekend periods the maximum population would be occasionally expected, regardless of the mix of full-time and seasonal occupants.

Alternatives 1 and 2 FTE cumulative population would vary between 2,060 full-time residents and 1,300 full-time and seasonal residents depending on the tenure scenario. For comparative purposes, this population would range from 110 percent larger than the 2009 population of Cle Elum (1,870) to about 70 percent of the size of Cle Elum. Comparable cities in Washington at the higher end of the range would include Leavenworth in Eastern Washington, or Westport on the Pacific Coast. The smaller end of the range would include Winlock in Lewis County or Sumas near the U.S.-Canadian border in Whatcom County.



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Parametrix

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Scale in Feet

Legend

- Parcel > 6 acres
- Other Parcel
- Project Site
- Roads

Figure 3-6
Marian Meadows
Parcels Subject to Redevelopment
Under Existing Zoning

Alternatives 3A, 3B, and 4 with 147 lots would have a FTE cumulative population that would vary between 1,270 full-time residents and 823 full-time and seasonal residents depending on the tenure alternative. For comparative purposes, this population would range from about 70 percent of the size of Cle Elum to about 45 percent of the size of Cle Elum. Comparable cities in Washington at the higher end of the range would include Napavine (1,690) in Lewis County, or Kettle Falls (1,665) in Spokane County; the smaller end of the range would include Tekoa (830) in Ferry County or Naches (765) in Yakima County.

Alternative 3C with 33 lots would have FTE cumulative population that would vary between 970 full-time residents and 625full-time and seasonal residents depending on the tenure alternative. For comparative purposes, this population would range from about 50 percent of the size of Cle Elum to about one-third the size of Cle Elum. Comparable cities in Washington at the higher end of the range would include Twisp and Odessa and at the lower end, Rosalia and Carbonado.

Alternatives 3D and 5 with about 113 lots would have a FTE cumulative population that would vary between 1,180 full-time residents and 764 full-time and seasonal residents. For comparative purposes, this population would range from about 63 percent of the size of Cle Elum to about 40 percent of the size of Cle Elum. Comparable cities in Washington at the higher end of the range would include Kittitas or Watervill and at the lower end Rustin or Naches.

The area as a whole would take on an increasingly small town or suburban community character and the existing rural characteristics would be reduced. The result would be a setting in which:

- Open space, the natural landscape, and vegetation have a less predominant role as compared to elements of the built environment.
- Forest resource activities would be reduced.
- There would likely be less forest cover and more clearing for small acreage ranches with associated animal keeping.
- Opportunities to see wildlife on a daily basis would be reduced as wildlife habitat would be greatly decreased with smaller lot sizes.
- The extension of governmental services more consistent with urban uses would be required.

It is possible that the increased population under scenarios with larger components of full-time residents may support additional commercial development in the immediate vicinity or in the Easton townsite. The factors leading to additional commercial development are very complex and greatly influenced by existing shopping patterns and opportunities provided in nearby communities. The population needed to support a use such as a large modern grocery store is generally larger than would be present in the area. The existing commercial development in the larger communities of Cle Elum, Roslyn, and the Suncadia Resort currently serve residents of the area and would likely expand before new centers were developed. In addition, a substantial portion of the service needs of the upper Kittitas Valley are currently met by

residents making trips to the larger commercial center of Ellensburg approximately 30 miles to the east. In order for a local grocery store to be practical, it would need to serve the larger areas of Snoqualmie Pass to Cle Elum, as well as the smaller towns such as Roslyn and resort developments such as Suncadia. It is unlikely that this location could compete with alternative sites in Cle Elum or Roslyn's Suncadia, given the latter location is near a larger population and resort center.

If commercial development occurred in the immediate vicinity, it is more likely to be oriented to the high volumes of traffic passing by on I-90 or provide the types of items found in a convenience store.

12. What are the likely cumulative impacts with development of nearby land at densities similar to the proposal?

If Alternatives 1 or 2 PUD were approved for this property, it could provide the precedent for similar development of other properties in the vicinity. The potential for subdivision of existing lots based on the average of one unit per acre was analyzed based on existing lot sizes according to Kittitas County Assessor's records as shown in Figure 3-7. If properties in the vicinity were developed at the same intensity as the applicant's PUD proposal, an additional 546 lots could be developed (this includes 80 existing developed and vacant lots). Cumulative development impacts are briefly outlined below.

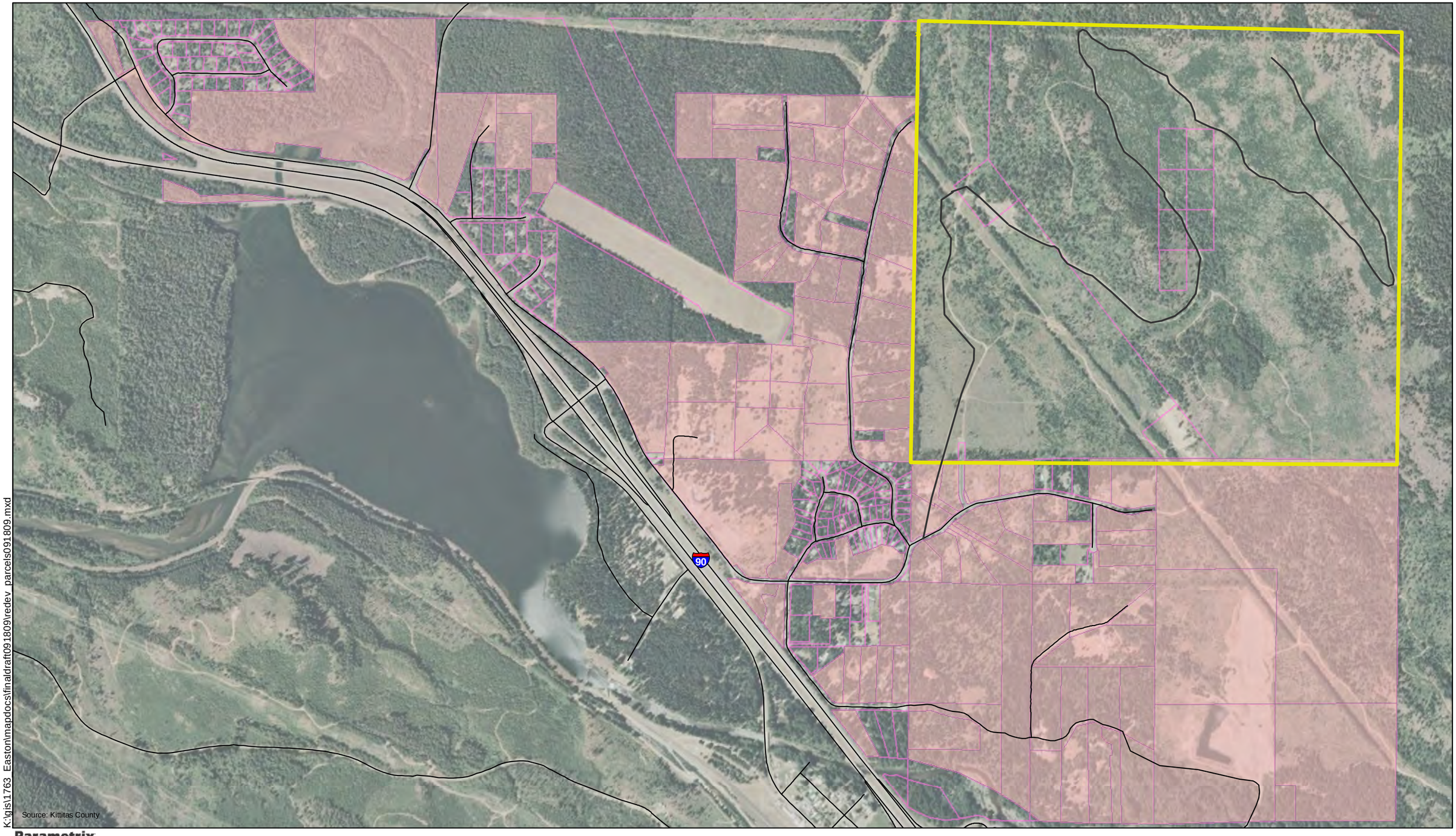
- **Alternatives 1 and 2 PUDs** would result in a total of about 990 single-family lots in the area (including the 443 lots included in PUD alternatives). The majority of the area would be in lot sizes of 1 acre or more, but the largest number of lots would be smaller than 1 acre with the Marian Meadows development contributing about 45 percent of the total lots. The lots within the development would be smaller than the average in the area and Alternative 2 would contain the only multi-family development in the area.

Other alternatives would not be at the bonus density at up to 3 times the base density allowed by PUD provisions and would not provide the precedent for similar development of other properties at densities higher than one unit per 3 acres in in the vicinity. The potential number of lots and population is provided in Table 3-3 for comparison only.

Depending on the proportion of full-time versus part-time residences and the proportion of retirees, a FTE population was calculated with an average household size of 3.25 for full-time seasonal occupancy and a household size of 2.1 for retired residents. Seasonal FTE population was based on occupancy of units about a quarter of the time as outlined above. Under the various tenure scenarios the project vicinity could vary in FTE population from 2,630 to about 1,200. During peak weekend periods, the maximum population could be occasionally expected, regardless of the mix of full-time and seasonal occupants.

Table 3-3. Population of Cumulative Development Scenarios

	Rural Density 330 Units				PUD Density 546 Units			
	Full	**Retired**	**Recreation**	**Total**	**Full**	**Retired**	**Recreation**	**Total**
Alternatives 1 and 2: Applicant's Proposals – 443 Units								
Tenure Scenario 1	**0.85**	**0.15**	**0**		**0.85**	**0.15**	**0**	
Units	657	116	0	**773**	841	148	0	**989**
FTE Population	1,815	243	0	**2,059**	2,322	312	0	**2,634**
Tenure Scenario 2	**0.6**	**0.15**	**0.25**		**0.6**	**0.15**	**0.25**	
Units	464	116	193	**773**	593	148	247	**989**
FTE Population	1,507	243	150	**1,901**	1,929	312	192	**2,432**
Tenure Scenario 3	**0.35**	**0.3**	**0.35**		**0.35**	**0.3**	**0.35**	
Units	271	232	271	**773**	346	297	346	**989**
FTE Population	879	487	210	**1,576**	1,125	623	268	**2,016**
Tenure Scenario 4	**0.25**	**0.25**	**0.5**		**0.25**	**0.25**	**0.5**	
Units	193	193	387	**773**	247	247	495	**989**
FTE Population	628	406	300	**1,333**	804	519	383	**1,706**
Alternative 3A and 3B : Existing Zoning, 3-Acre Lots – 147 Lots **Alternative 4: Mitigated with Development on Both Upper and Lower Areas**								
Tenure Scenario 1	**0.85**	**0.15**	**0**		**0.85**	**0.15**	**0**	
Units	405	72	0	477	589	104	0	693
FTE Population	1,120	150	0	1,270	1,627	218	0	1,846
Tenure Scenario 2	**0.6**	**0.15**	**0.25**		**0.6**	**0.15**	**0.25**	
Units	286	72	119	477	416	104	173	693
FTE Population	930	150	92	1,173	1,351	218	134	1,704
Tenure Scenario 3	**0.35**	**0.3**	**0.35**		**0.35**	**0.3**	**0.35**	
Units	167	147	167	477	243	208	243	693
FTE Population	543	301	129	972	788	437	188	1,413
Tenure Scenario 4	**0.25**	**0.25**	**0.5**		**0.25**	**0.25**	**0.5**	
Units	119	119	239	477	173	173	347	693
FTE Population	388	250	185	823	563	364	269	1,195
Alternative 3D: One Unit per 5 Acres in ASZs and Alternative 5: Mitigated with Development on Western Portion of Site – 113 Units								
Tenure Scenario 1	0.85	0.15	0		0.85	0.15	0	
Units	377	66	0	443	560	99	0	659
FTE Population	1,040	140	0	1,180	1,547	208	0	1,755
Tenure Scenario 2	0.6	0.15	0.25		0.6	0.15	0.25	
Units	266	66	111	443	395	99	165	659
FTE Population	864	140	92	1,096	1,285	208	134	1,627
Tenure Scenario 3	0.35	0.3	0.35		0.35	0.3	0.35	
Units	155	133	155	443	231	198	231	659
FTE Population	504	279	120	903	750	415	179	1,344
Tenure Scenario 4	0.25	0.25	0.5		0.25	0.25	0.5	
Units	111	111	222	443	165	165	330	659
FTE Population	360	233	172	764	535	346	255	1,137
Alternative 3C: Existing Zoning, 3-Acre Lots Western Portion of Site – 33 Units								
Tenure Scenario 1	0.85	0.15	0		0.85	0.15	0	
Units	309	116	0	425	492	87	0	579
FTE Population	852	114	0	967	1,360	182	0	1,542
Tenure Scenario 2	0.6	0.15	0.25		0.6	0.15	0.25	
Units	218	54	91	363	347	87	145	579
FTE Population	708	114	92	915	1,129	182	134	1,446
Tenure Scenario 3	0.35	0.3	0.35		0.35	0.3	0.35	
Units	127	109	127	363	203	174	203	579
FTE Population	413	229	98	740	659	365	157	1,180
Tenure Scenario 4	0.25	0.25	0.5		0.25	0.25	0.5	
Units	91	91	182	363	145	145	290	579
FTE Population	295	191	141	626	470	304	224	999



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Parametrix

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Scale in Feet

Legend

- Parcel > 2 acres
- **Other Parcel**
- Project Site
- **Roads**

Figure 3-7
Marian Meadows
Parcels Subject to Redevelopment
Under PUD Densities

Alternatives 1 and 2 cumulative FTE population would vary between 2,630 full-time residents and 1,700 full-time and seasonal residents depending on tenure. For comparative purposes, this would range from 140 percent larger than the 2009 population of Cle Elum (1,870) to about 90 percent of the size of Cle Elum. Comparable cities in Washington at the higher end of the range would include Moxee (2,525) in the Yakima Valley or Warden (2,650) in the Columbia Basin. The smaller end of the range would include Kettle Falls (1,655) in Stevens County or Ritzville (1,740) in Adams County and would be about 160 percent larger than Roslyn (1,015).

Cumulative development impacts on land use at the proposed PUD densities of about one unit per acre would include residential lots at a density similar to the smaller residential sites in the area. Existing larger lots with more extensive forest cover would be divided into a lot size that would result in residences and accessory buildings comprising the primary use, with forest cover an incidental feature.

The area as a whole would take on an increasingly suburban character and existing rural characteristics would be reduced. The result would be a setting in which:

- Open space, the natural landscape, and vegetation have a less predominant role as compared to elements of the built environment and ornamental vegetation.
- Forest resource activities would be reduced and nearby residential use would likely interfere to some extent with commercial forestry activities, even with local policies designed to protect resource use.
- There would be little opportunity for small acreage ranches and associated animal keeping.
- Opportunities to see wildlife on a daily basis would be decreased as wildlife habitat would be greatly reduced with smaller lot sizes.
- The extension of governmental services more consistent with urban uses would be required.

It is possible that the additional population under scenarios with larger components of full-time residents would support additional commercial development in the immediate vicinity or in the Easton townsite. The factors leading to additional commercial development are very complex and greatly influenced by existing shopping patterns and opportunities provided in nearby communities. It is likely that existing commercial development in the larger community of Cle Elum/Roslyn's Suncadia would expand before new centers were developed. However, the amount of additional population would encourage additional commercial services in the vicinity. A substantial portion of the service needs of the upper Kittitas Valley would likely continue to be met by residents making trips to the larger commercial center of Ellensburg.

13 What measures could reduce the effects of the proposal and alternatives on land use?

The alternatives considered illustrate a range of potential mitigating measures for land use including:

- Development of larger 3-acre lots consistent with the existing zoning and existing large lot developments that predominate in the area as illustrated in Alternatives 3A, 3B, and 3D. These alternatives provide:
  - A landscape that is characterized to a larger extent by natural features such as native forest vegetation is accomplished to the extent that larger lots would not be completely cleared. Alternative 3D with larger 5-acre lots would accomplish this to a somewhat greater extent than Alternatives 3A and 3B. The rural character of the area would be altered less by addition of fewer people in the area as a whole.

  However, the following effects would still occur as a result of development under Alternatives 3A, 3B, and 3D, even though it would be large lot development consistent with existing zoning:
  - A person traveling through the area would observe a substantial presence of elements of the built environment such as buildings and ornamental landscaping.
  - These alternatives all have substantial development on the upper portions of the site and would result in readily visible structures and lights at night that would substantially change the visual character of the upper slopes of the valley from being dominated by natural features to having a substantial man-made component.
  - The large rural lots would not support forestry or agricultural use and few residents would be likely to be economically supported by traditional rural resource-based economies.
  - Lot sizes of 3 acres would provide very limited opportunities for productive wildlife habitat. The larger lots alone would not prevent the site from becoming a barrier to the movement of wildlife, especially large mammals such as elk, without specific mitigation measures such as lot depth and buffers.
- Preservation of open space areas in forest resource use with limited areas of smaller lots that are clustered as illustrated in Alternatives 4 and 5. Alternative 3C also provides for preservation of the eastern portion of the site, although with 3-acre lots on the eastern portion without clustering. These alternatives provide a mix of residential opportunities while preserving areas of resource use and wildlife habitat. Benefits include:
  - These alternatives all have areas of open space that contribute to retention of natural vegetation. Alternatives 3C and 5 would avoid development on the upper eastern portions of the site and preserve the natural vegetation that is the dominant character of the valley.

- The clustered lots in Alternatives 4 and 5 would not support forestry use, but large blocks of open space retained outside of areas subdivided would further resource uses in those open space areas. Alternatives 2, 3C and 5 would preserve the eastern portion of the site, which provides the greatest potential for continued resource use among the alternatives.
- The clustered lots or 3-acre lots would not support wildlife habitat, but large blocks of open space retained outside of areas subdivided would provide habitat areas, albeit of generally less productivity, for most species because of elevation and steepness. Mountain goats are well adapted to this type of terrain and would benefit from fewer proximity impacts from developed areas. Alternatives 3C and 4 provide lot sizes and depth that would allow greater potential for buffer areas between developed portions of the lots and the potential corridor.

However:

- The area in the immediate vicinity of clustered smaller lots in Alternatives 4 and 5 would be dominated by elements of the built environment such as buildings and ornamental landscaping.
- Alternative 4 (as well as the other alternatives) would locate roads, structures and night lighting in the most visible areas that frame the valley and add a substantial encroachment of man-made features.
- Wildlife corridors through the site would be adversely affected by the number and configuration of lots adjacent to the BPA easement that provides the further resource uses in those open space areas.

- A smaller number of residential units that result in a smaller overall rural population resulting in less change in the character of the community and less need for public services and utilities typical of more urban areas.
  - Alternative 3C with 33 lots provides the fewest number of lots and would result in the least change to the existing rural character of the area.
  - Other alternatives provide varying numbers of lots (113 lots in Alternatives 3D and 5, 147 lots in Alternatives 3A, 3B and 4, 443 lots in Alternatives 1 and 2), which results in proportionally greater changes in population and resulting change in the rural character of the community.

3.2 TRANSPORTATION

3.2 1 Transportation – Surface System

The surface transportation system consists of roadways and pathways that people use to travel on. Users and uses of this transportation system vary, and include work-based trips, non-work-based trips, freight trips, and recreational trips. The surface transportation system includes passenger cars, freight trucks, bicycles, pedestrians, and recreational vehicles, but excludes the air and water modes of travel.

What types of trips use the surface transportation system?

Traffic engineers and planners have categorized several different types of trips to determine which trips are essential and predictable.

Work-based trips refer to the trips to and from work; trips to and from school are also sometimes included in this category.

Non-work-based trips are all of the other trips that are not associated with work, such as going to the grocery store, dry cleaners, restaurants, gas stations, etc.

Freight refers to the movement of commercial goods and excludes the movement of people.

1 What area was studied with respect to transportation?

The area studied to identify the proposal's potential impacts to the surface transportation system generally includes the I-90 Easton interchange and Sparks Road from Railroad Street to Norton Road. Within this study area, seven intersections were studied to evaluate the local transportation system. These intersections represent the key locations where the project's effects would be most noticeable and include:

- I-90 eastbound ramps/Railroad Street;
- I-90 westbound ramps/Railroad Street;
- Sparks Road/Railroad Street;
- Sparks Road/Turtle Town area;
- Sparks Road/Pit Way/Hawthorn Lane;
- Sparks Road/Country Drive; and
- Sparks Road/West Sparks Access.

These intersections are shown on Figure 3-8 and additional detail on the roadways within the study area is provided under Question 2 below.

2 What are the characteristics of the existing transportation system?

The surface transportation system is often characterized by the types of roadways, non-motorized system, transit service and facilities, maintenance, and how well the system functions. Public transit service is not provided in the study area and has therefore not been evaluated. The functions of the system can be further evaluated with several sub-parameters and are detailed under Question 3 below.

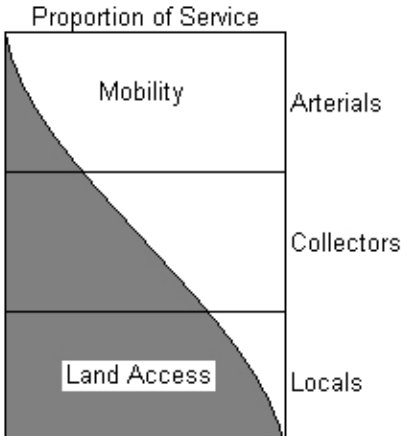
3 What roadways currently serve the area?

The study area is served by several roadways with different functional classifications and uses. Functional classifications are described differently depending on which public agency owns and maintains the roadway. These roadways are shown in Figure 3-8 and include:

- **I-90** is Washington's primary east-west interstate and is classified by WSDOT as a Rural-Interstate (R5) within the study area. This section of I-90 has two lanes in each direction and the posted speed limit is 70 miles per hour (mph). The average daily traffic (ADT) is approximately 27,000 vehicles per day (vpd) (2006 count).
- **Railroad Street** is classified by Kittitas County as a Rural Local Access (class 9) road and provides access between I-90 from Exit 70, the town of Easton, and the project site (via Sparks Road). This roadway has one lane in each direction and the posted speed limit is 35 mph. South of the I-90 Exit 70 eastbound ramps, the ADT is approximately 550 vpd (2008 count).
- **Sparks Road** is classified by Kittitas County as a Rural Local Access (class 9) road and serves as the primary route to I-90 (via Railroad Street) for traffic on the north side of I-90 with one lane of travel for each direction. The posted speed limit is 35 mph and the ADT is approximately 250 vpd west of Railroad Street and 1,250 vpd east of Railroad Street (2008 count).
- **Pit Way/Hawthorn Lane** is not classified by Kittitas County with respect to functional classification. This two-lane roadway provides residential access and connects to Sparks Road with a posted speed limit of 15 mph. The ADT is roughly 75 vpd (estimated from 2006 and 2008 counts).

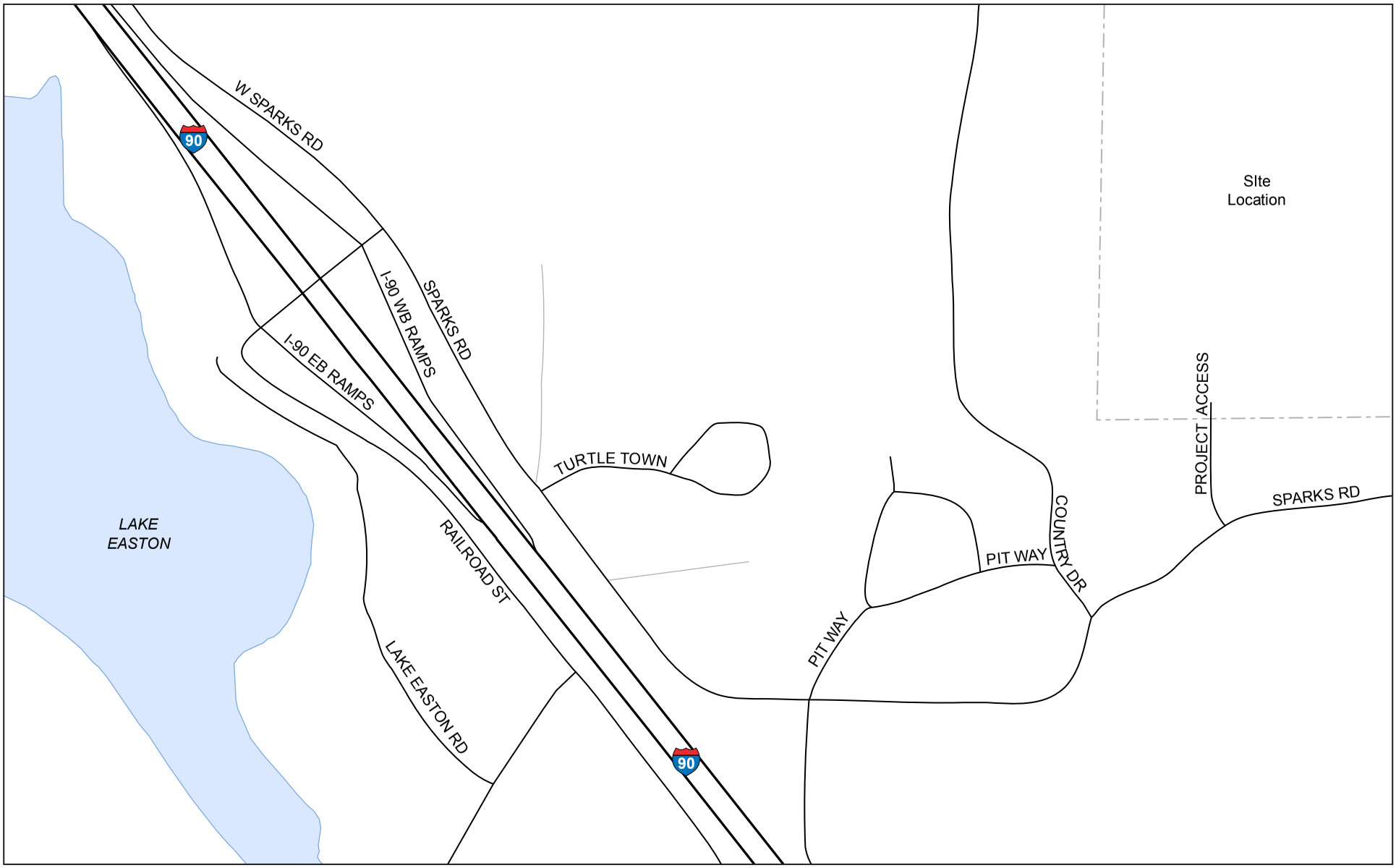
What is functional classification?

Functional classification is the division of roadways into groups having similar characteristics of providing mobility and land access. Public agencies define functional classifications differently, but, in general, arterials provide the most mobility and least direct property access, collectors provide an approximate balance between mobility and direct property access, and local roads emphasize direct property access in lieu of mobility.



What is ADT used for?

Transportation planners use existing and projected average daily traffic (ADT) to evaluate the consistency between the roadway's design and use. A roadway with an ADT that is higher than the functional classification standards indicates improvements may be needed.



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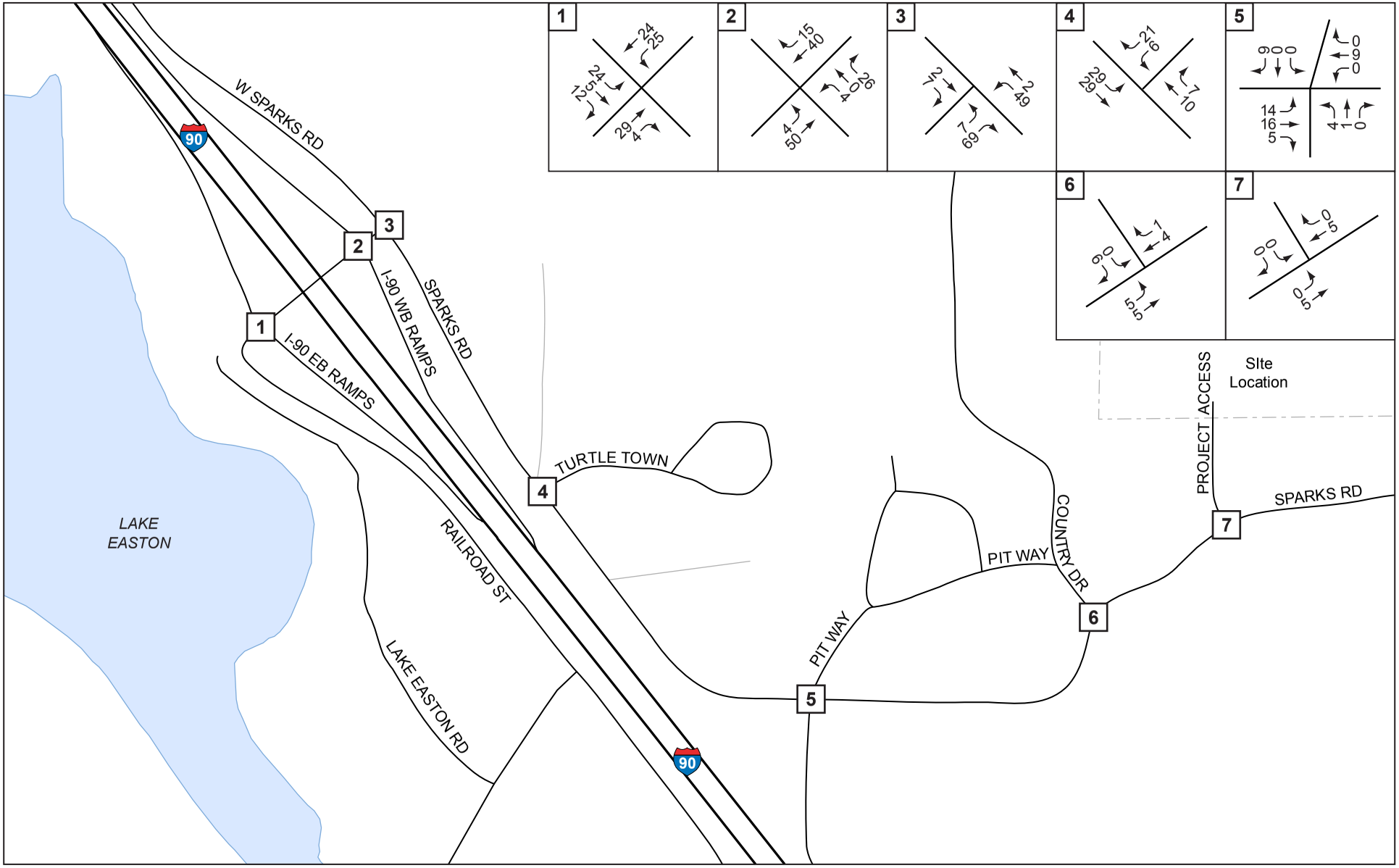
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SCALE IN FEET

Site Location

Figure 3-8
Marion Meadows
Transportation Study Area



Parametrix 557-1763-007/04(04) 12/10 (B)

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SCALE IN FEET

Site Location

Figure 3-9
Marion Meadows
2008 PM Peak Hour
Traffic Volumes

- **Country Drive** is a publicly dedicated, privately maintained two-lane road that is not classified by Kittitas County. The posted speed limit is 15 mph and has an ADT of approximately 100 vpd (estimated from 2006 and 2008 counts). Unlike all other roads analyzed, Country Drive is a gravel road to which a bituminous treatment is applied in the summer for dust control.

4 What pedestrian, bicycle, and other off-road facilities are currently available?

Within the study area and general vicinity there are no separate designated pedestrian, bicycle, and other off-road vehicle (ORV) facilities. Wide lanes and shoulders are present on Railroad Street close to I-90 and some portions of Sparks Road can accommodate non-motorized travel; however, the non-motorized system in general is not delineated. Where shoulders are present they are discontinuous, sloped, and have uneven surfaces that may be difficult for some bicycles, strollers, roller skates, and skateboards.

There are no formal trails on the site or adjacent to the site. Established informal off-road vehicle and snowmobile trails were established along the BPA transmission line easement and on logging roads when the land was owned by Plum Creek Timber Company, which had an "open lands" policy allowing recreation use. Use of those trails continues, although some "no trespassing" signs are located on the property. Off-site trails are discussed in more detail in Section 3.3, Parks and Recreation.

Snowmobile use is allowed by KCC 10.32 on a number of county roads in the area including Railroad Street (from Easton State Park eastern), Sparks Road, and West Sparks Road. Use of ORVs not licensed for use on public roadways is not legal on public roads.

5 Who maintains existing roadways and other facilities and how much does it cost?

The major roadways within the study area, including Railroad Street and Sparks Road, are maintained by Kittitas County with funding from the County Road fund, which is a property tax assessed on all unincorporated properties.

Country Drive and Pit Way are publicly dedicated, but privately maintained roadways. These roadways have gravel surfaces and require semi-regular spot resurfacing to fill in pot holes, as well as annual grading. They are also treated annually with a dust suppressant and are snow plowed in the winter. The association of local residents hires contractors for maintenance, dust suppression, and snow plowing. The annual cost of dust suppression for the Easton Village subdivision consists of oiling at about $4,000 per application, and typically one or two applications are performed per year. The cost of snow plowing averages approximately $5,000 per year; however, in a year with heavy snow, such as the winters of 2007 and 2008, costs can be substantially higher and were about $9,000 each year. Based on the length of roads in the subdivision, the average cost per mile is about $10,000 for dust suppression and about $6,200 to $11,000 for snow plowing.

6 How well does the existing surface transportation system function?

The function of a transportation system can be evaluated with respect to several parameters including consistency with the community, level of service (LOS), and safety.

7 How do local roads currently fit into the character of the local community?

Roadways serve a continuum of functions. Roadways that are primarily oriented towards mobility are designated as arterials and those that emphasize direct property access in lieu of mobility are often designated as local streets. Within rural areas, low traffic volume roadways generally serve many functions, but are not designated with multiple classifications.

With the exception of I-90, all roadways within the study area are classified as Rural Local Access (class 9) roads or are unclassified and provide direct access to adjacent properties. As a result, these roadways are often used as extensions of front yards where children play.

Numerous studies have emphasized that local roadways are generally used by local residents as an integral part of social interactions within the community. A number of studies have shown that social interactions take place regularly across and within roadways where traffic volumes are low (Appleyard 1963). The use of streets with low traffic volumes for children's play is widespread. Researchers have noted that streets are used for play even if there are alternative recreation facilities in the vicinity because they are immediately available, they are natural meeting places, and they provide a large linear space that is often much larger than is available on residential lots (Whyte 1980). In recognition of this function, many communities have moved toward local street design in residential areas that emphasize the shared use of streets; moreover, streets are designed to be shared by low speed vehicles as well as to accommodate a variety of social functions. Another approach is "traffic calming" that

What is level of service (LOS)?

Level of service (LOS) is a means of characterizing the operating conditions and driver comfort at roads and intersections. LOS is reported in terms of grades from A through F, much like a school report card.

LOS A **provides the greatest driver comfort. At intersections, there is little delay, generally less than 10 seconds at signalized intersections or stop signs.**

LOS B **provides a high degree of driver comfort. At intersections, there is little delay, generally between 10 and 20 seconds at signalized intersections and 10 to 15 seconds at stop signs.**

LOS C **provides a generally acceptable level of comfort for most drivers. At intersections, there is minor delay, generally between 20 and 35 seconds at signalized intersections and 15 to 25 seconds at stop signs. At LOS C, the system moves traffic efficiently, despite less driver comfort.**

LOS D **provides a decreased comfort level for most drivers. At intersections, there is substantial delay, generally between 35 and 55 seconds at signalized intersections and 25 to 35 seconds at stop signs. At LOS D, the system can move large volumes of traffic, but with lower driver comfort.**

LOS E **represents unstable flow with substantial restriction and delay. The system is at or near capacity. Driver frustration is high. Delay is between 55 and 80 seconds at signalized intersections and between 30 and 50 seconds at stop signs.**

LOS F **represents traffic moving under forced flow or breakdown conditions. It creates a very high level of frustration for most drivers. At intersections, there are long delays, generally more than 80 seconds at signalized intersections and more than 50 seconds at stop signs. At LOS F, the system moves very little traffic.**

Kittitas County and the Washington State Department of Transportation have adopted a LOS standard of LOS C within the study area.

introduces a number of features into street design to slow traffic and render streets safer for local residents (Gilman 2007).

In addition to use by adjacent residents, roads in the area serve a variety of transportation modes. Snowmobiling is a popular winter activity of local residents and others. Rental opportunities for visitors are also provided by local outlets. Snowmobiling is permitted along Sparks Road and Railroad Street with a 25-mph posted speed limit. A number of formal and informal snowmobile trails are used in the vicinity.

All-terrain vehicles (ATVs) are popular during the spring, summer, and fall seasons and often use Sparks Road to access other areas. Similar to snowmobiles, residents and visitors on ATVs are common throughout the study area.

Although not specifically designed for or encouraged, other non-motor vehicle uses of the local roads is generally considered acceptable given the low traffic volumes, weather conditions, and proximity to vacationing areas that promote outdoor activities.

8 What are the existing standards that define "acceptable" traffic conditions?

Within the study area, the acceptable standards for traffic conditions are defined by the LOS. Kittitas County and WSDOT identify LOS C or better as their standard for acceptable operations in rural areas, such as the study area. LOS is an estimate of the quality of performance of transportation system operations. The most common industry standard for evaluating traffic operations is based on the Transportation Research Board's (TRB) Highway Capacity Manual (HCM), Special Report 209 (TRB 2000). Using this methodology, traffic conditions are assessed with respect to the average intersection delay (in seconds of delay per vehicle) and uses the letter "A" to describe the least amount of congestion and best operations and the letter "F" for the highest amount of congestion and worst operations. The 2000 HCM LOS ratings and criteria for signalized and unsignalized intersections are shown in Table 3-4.

Table 3-4. Level of Service (LOS) Ratings for Signalized and Unsignalized Intersections

LOS Rating	Average Delay for Signalized Intersections (seconds/vehicle)	Average Delay for Unsignalized Intersections (seconds/vehicle)
A	0 – 10	0 – 10
B	> 10 – 20	> 10 – 15
C	> 20 – 35	> 15 – 25
D	> 35 – 55	> 25 – 35
E	> 55 – 80	> 35 – 50
F	> 80	> 50

Source: HCM (2000)

9 What are the existing level of service conditions?

Seven intersections were studied to evaluate how well the local transportation system operates. These intersections represent the key locations where the project's effects would be most noticeable.

One of these intersections is at Turtle Town located off Sparks Road that includes a gas station, restaurant, convenience store, and RV park. This area is not accessed by a specific roadway intersection; rather, turns into and out of the area are made along a stretch of undelineated parking areas. For the purposes of this study, all vehicles turning into and out of the Turtle Town area are analyzed as an intersection.

The PM peak hour LOS analysis was conducted for these seven intersections in the study area to determine existing operating conditions. Results are summarized in Table 3-5. Existing 2008 PM peak hour volumes are shown in Figure 3-9.

As shown in Table 3-5 all of the study intersections currently operate acceptably above the LOS C standard.

Table 3-5. Existing 2008 PM Peak Hour LOS Summary

	LOS	Delay (sec/veh)
I-90 Eastbound/Railroad Street	A	9.3
I-90 Westbound/Railroad Street	A	8.8
Sparks Road/Railroad Street	A	9.2
Sparks Road/Turtle Town	A	8.7
Sparks Road/Pit Way	A	9.1
Sparks Road/Country Drive	A	8.4

10 Are there currently high numbers of collisions or hazardous roadway conditions in the area?

Collisions can occur as a result of a variety of reasons and at any location. By studying the frequency, types, severity, and other characteristics of collisions, trends may appear to help identify ways to reduce the potential for collisions and increase safety.

Collision data were provided by Kittitas County and analyzed for the study area for the last 3 consecutive and complete years of data (2005 to 2007). Between 2005 and 2007, one collision occurred at the Railroad Street/Sparks Road intersection, and two collisions occurred along Sparks Road near the Turtle Town area. The small number of collisions suggests that traffic safety

How much collision data should be studied?

One industry-accepted practice for collision data analysis is to study the last 3 complete and consecutive years. Collision data older than the last 3 years may be associated with out-of-date roadway configurations and/or travel patterns and can make recent trends in the causes of collisions less apparent. Studying less than 3 years of data may not provide an accurate depiction of the collision history.

is not a high concern. Given that two of the three collisions occurred in the Turtle Town area, the collision history could suggest that the lack of formal and delineated access could contribute to collisions; however, no conclusions can be clearly drawn because the total number of collisions is low.

An additional source of traffic hazards in the area relates to the nature of the road system in recent plats. These are generally private roads with public rights of use. Because they are not public roads state laws relating to operation of motor vehicles do not apply. As a result, children of varying ages routinely use the roads for recreational vehicle use. These children have varying understanding of traffic safety, and operate within a range of parental oversight. Because of these factors, the potential for conflicts between automobile and recreation vehicle use is increased.

11 What policies and standards govern the transportation system function?

The GMA provides a general framework for transportation planning through two basic requirements:

- A transportation element in the Comprehensive Plan that implements, and is consistent with, the land use element and includes adoption of LOS to serve as a gauge to judge performance of the system; forecasts of traffic, and identification of system needs to meet LOS standards;
- A discussion of how additional funding will be raised, or how land use assumptions will be reassessed to ensure that LOS standards will be met, if probable funding falls short of meeting identified needs.
- A mandate to adopt and enforce ordinances which prohibit development approval if the development causes the level of service to decline below the standards, unless transportation improvements or strategies to accommodate the impacts of development are made concurrent with the development.

The following policies adopted by Kittitas County are relevant to consideration of new development requests:

Multi-Modal Transportation System, Arterial System, and System Maintenance

GPO 4.1 To develop and maintain a safe, efficient and environmentally sound multi-modal transportation system in accordance with local, state, and federal requirements.

GPO 4.3 To create a transportation system that provides reasonable circulation for all users throughout the County.

GPO 4.4 Kittitas County shall provide a transportation system that enhances the safety of the community and which maximizes the use of the existing road system by maintaining a system of arterials, collectors, and local access roads that forms an interconnected network for vehicular circulation.

GPO 4.5 To provide all-weather, all-season use of the arterial system for the movement of goods and services.

GPO 4.9 To identify and encourage preservation of transportation corridors for future rights-of-way by identifying corridors to be preserved as part of the overall transportation plan, by requiring right-of-way dedication or easements as part of development approval, and by acquiring right-of-way for future needs through purchase from willing sellers.

GPO 4.10 Kittitas County will place the appropriate emphasis on maintenance activities in order to preserve the capital investment in the transportation system by dedicating maintenance funding through the annual budgeting process and by developing performance measures to demonstrate the cost savings associated with appropriately scheduled maintenance activities.

GPO 4.11 Encourage and initiate Road Improvement Districts and arterial road building projects with the capital facilities six-year plan to meet concurrency requirements of anticipated growth.

GPO 4.13 Kittitas County shall require new development that reduces County road LOS below the LOS standards to mitigate their impacts.

GPO 4.14A To recognize non-motorized travel as a viable transportation mode by developing a countywide non-motorized system plan and by improving and maintaining existing non-motorized facilities.

GPO 4.14B Encourage new development to provide for safe transportation alternatives.

Land Use, Environment and Economic Development

GPO 4.16 To provide a transportation system that corresponds to and is consistent with patterns of land development in accordance with the adopted land use plans.

GPO 4.16A To adopt plans and regulations in compliance with RCW 36.70.547, or as amended thereafter, to protect airport operations.

GPO 4.18 To ensure the transportation system can support new development and that new development finances all new construction and improvements that might be necessary.

GPO 4.19 Kittitas County shall evaluate the merits of a proposed land use action against the potential impacts on the transportation system by reviewing development proposals for potential impacts to the transportation system and requiring developments to identify and mitigate their transportation impacts through SEPA or other local regulatory actions.

Level of Service (LOS) and Concurrency

GPO 4.25 To implement LOS standards that evaluates the adequacy of transportation facilities, which are measurable, understandable, and appropriate to the services and/or facilities being considered under local conditions.

GPO 4.26 Kittitas County shall utilize the Highway Capacity Manual (HCM) methodology to measure the effectiveness of the arterial system at arterial intersections by evaluating all arterial/arterial intersections (including state highways) to identify existing service levels and by developing a transportation model to evaluate the impacts of future land use alternatives on arterial/arterial intersections. Intersections, which fall below level of service "C" in rural areas and "D" in federal urban areas, shall be considered deficient.

GPO 4.27 To ensure that necessary transportation facilities and services to maintain adopted LOS standards are available when the impacts of development occur.

GPO 4.28 Kittitas County shall develop and implement a concurrency management system, which identifies existing deficiencies, funded improvements, and system capacity balances.

GPO 4.29 To develop a LOS standard that corresponds to land development goals and policies as expressed in the overall Comprehensive Plan for Kittitas County.

GPO 4.30 To encourage land use development patterns and support technology infrastructure, which reduce the demand for increased capacity on roadways.

12 What scenarios were analyzed for the future?

Two future alternatives were analyzed: the No Build Alternative and Alternative 1, Tenure Scenario 1, which has the highest trip generation. Both alternatives were analyzed for the year 2020, which represents the time when the project is expected to be constructed and fully occupied.

- **No Build 2020** – This is a future alternative that does not include any development from the proposed project. A background growth rate of 1.43 percent was used to forecast future year 2020 traffic volumes. This background growth rate was obtained from a traffic impact study prepared previously for the project and agreed on by the County (TENW 2006).
- **Alternative 1, Tenure Scenario 1 2020** – This is a future alternative that includes development of the proposed project with full time residents. This alternative has two options that vary by the amount and location of area developed.
    - ***Current subdivision*** – This option considers impacts of the current subdivision proposal on the western portion of the property and would consist of 226 single-family housing units.
    - ***Entire PUD*** – This option would develop both the lower western portion and the eastern sloping portion of the project area and would consist of 443 single-family housing units.

Vehicle trips generated by the future 2020 Alternative 1, Tenure Scenario 1 scenarios were based on the trip generation data provided for single-family residences in the Institute of Transportation Engineers (ITE) Trip Generation, 7th Edition. The PM peak hour trips generated are summarized in Tables 3-6 and 3-7.

Table 3-6. Alternative 1 – 226 Lot Subdivision PM Peak Hour Trip Generation

Proposed Land Use	Quantity		ITE Code	Net New Trips		
				Total	In	Out
Project – Single-Family Detached Housing	226	DU	210	223	140	83
Total Development				223	140	**83**

Table 3-7. Alternatives 1 and 2 – PUD Development of 443 Units PM Peak Hour Trip Generation

Proposed Land Use	Quantity		ITE Code	Net New Trips		
				Total	In	Out
Project – Single-Family Detached Housing	443	DU	210	409	258	151
Total Development				409	258	**151**

The net new trips were distributed to the transportation network based on the surrounding land uses and existing travel patterns. Ten percent of the project trips are expected to use Country Drive to access the development and the other 90 percent are expected to use the proposed access road from the property to Sparks Road. The following trip distribution percentages were obtained from a previously prepared traffic impact study (TENW 2006) and were used to assign the new trips to the study area:

- 35 percent to/from Railroad Street
- 35 percent to/from eastbound I-90
- 30 percent to/from westbound I-90

Based on this trip generation and distribution, traffic volumes would substantially increase in the study area. Under the No Build Alternative (Figure 3-10), the PM peak hour traffic volume along Sparks Road at Railroad Street is expected to be 144 vph in 2020, a negligible increase over existing volumes. For a 226-lot subdivision, this volume is expected to increase to 367 vph as indicated in Figure 3-11, which is about two and a half times greater than the existing volume. With full buildout of the PUD, the PM peak hour volume along Sparks Road would reach 552 vph as shown in Figure 3-12, or about three and a half times greater than the existing volume.

13 How would the proposal and alternatives change how the future transportation system functions?

This section describes how the 226 lot subdivision and 443 lot PUD would affect how well the transportation system functions relative to the No Build Alternative. Other alternatives are not analyzed in detail because the trip generation of Alternative 1 is greater than all other alternatives and therefore provides a "worst-case" analysis.

14 Would the roadways that serve the area change in the future?

No changes are contemplated in the circulation system in the area that uses Sparks Road as the single road providing access to and across I-90. The desirability of additional roadways is discussed in the fire impact analysis in subsection 3.4.2.

All project roadways are required to be designed to County standards. Roadway grades are especially applicable to the project because steep grades can reduce the response times for fire trucks and emergency medical service (EMS) vehicles. Similarly, the County in coordination with the local EMS providers may prohibit certain circulation configurations, such as cul-de-sacs, which can be problematic for oversized EMS vehicles.

15 What changes to future level of service conditions are expected?

The new trips generated from the project would increase the traffic volumes on the transportation network and would change the LOS conditions. Accounting for the land use development assumptions and traffic volume forecasts described under Question 5 above, the 2020 future year LOS conditions for the No Build and Alternative 1 were analyzed. The results are summarized and compared to the existing conditions in Table 3-8. PM peak hour volumes for the No Build and Alternative 1, Tenure Scenario 1, are shown in Figures 3-10 to 3-12.

As shown in Table 3-8, the study intersections are expected to experience relatively small increases in delay in 2020, even with the worst-case Alternative 1, Tenure Scenario 1with buildout of the proposed 443 units with all full-time residents. All of the study intersections would continue to operate better than the LOS C standard. Other alternatives and tenure options would have lower trip generation. Occasional peak traffic with other alternatives involving seasonal recreational use may approximate these levels at peak weekends.

16 How would collisions and/or hazardous roadway conditions change in the future?

The collision history described under Question 3 above indicated that the frequency of collisions and presence of hazardous roadway conditions are currently not problematic. Although the number of collisions over the last 3 years is low (three collisions from 2005 to 2007), no trends were apparent.

Table 3-8. Existing 2008, No-Build 2020, and Build 2020 LOS Summary

Intersection Name	Existing 2008 PM Peak Hour		No-Build 2020 PM Peak Hour		Build 2020 226 Units PM Peak Hour		Build 2020 443 Units PM Peak Hour	
	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)
I-90 Eastbound/Railroad Street	A	9.3	A	9.5	B	11.5	B	14.4
I-90 Westbound/Railroad Street	A	8.8	A	8.9	A	9.8	B	10.8
Sparks Road/Railroad Street	A	9.2	A	9.3	B	10.7	B	12.4
Sparks Road/Turtle Town	A	8.7	A	8.7	A	9.5	B	10.3
Sparks Road/Pit Way	A	9.1	A	9.2	B	11.0	B	13.1
Sparks Road/Country Drive	A	8.4	A	8.4	A	8.8	A	9.2
Sparks Road/Project Access	NA	NA	NA	NA	A	8.6	A	8.9

sec/veh = seconds per vehicle

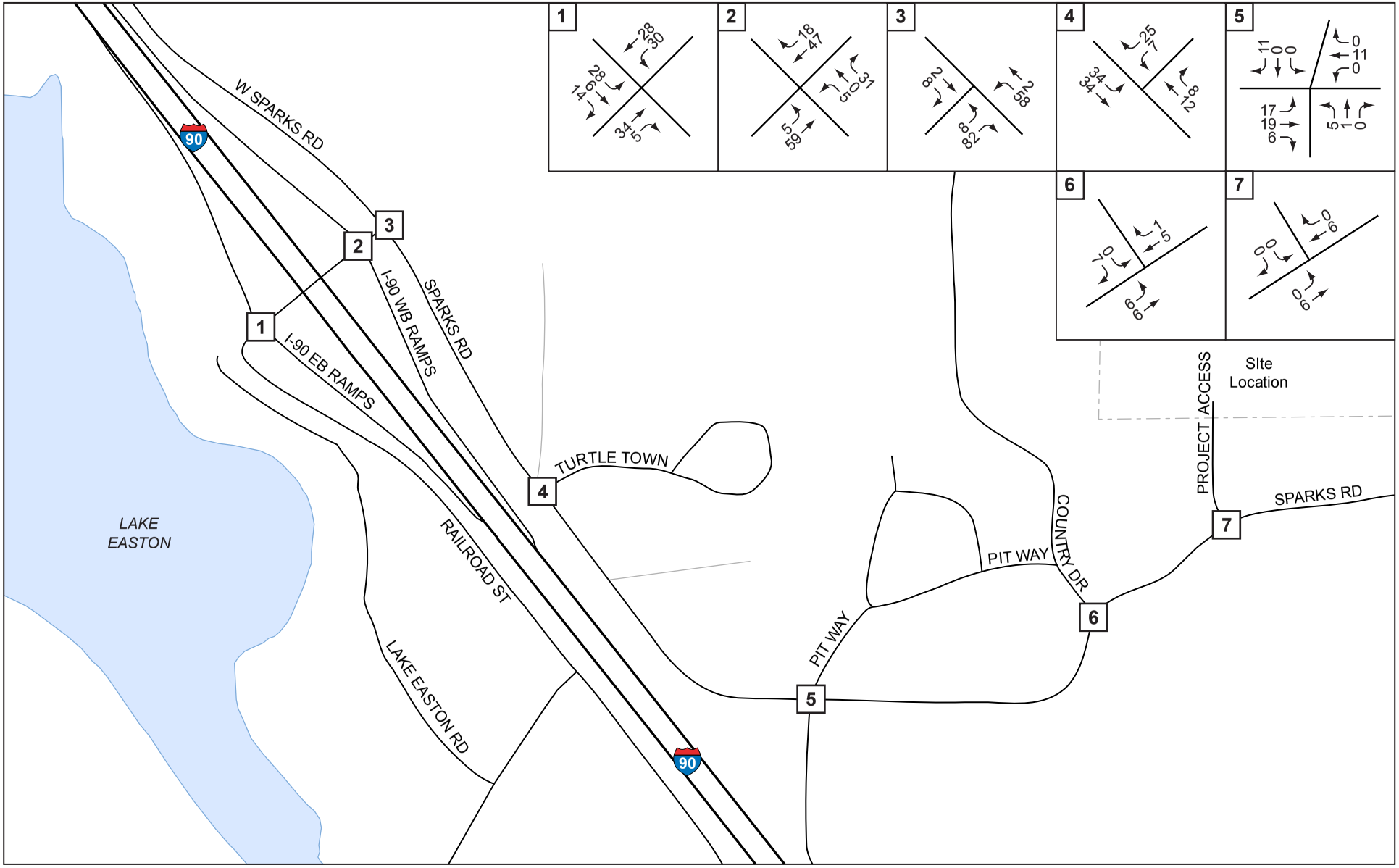
Because collisions result from several environmental and driver factors, there is no collision forecasting methodology that is accepted industry-wide. In general, however, the potential for collisions increases as traffic volumes increase. While the frequency of collisions in the study area can be expected to increase in the future, without the project and more so with the project, quantifying the magnitude of increase is not practical. Nonetheless, based on the total traffic volumes and existing collision frequency (0.66 collisions per year) that is substantially below a level of concern, traffic safety is not expected to be a substantial problem in the future with or without the project.

17 Would pedestrian, bicycle, and other off-road use and facilities be affected?

There are no planned non-motorized improvement projects identified within the study area that would be affected by the project alternatives. Therefore, without or with the project, the future non-motorized system within the study area is expected to be similar to the existing conditions.

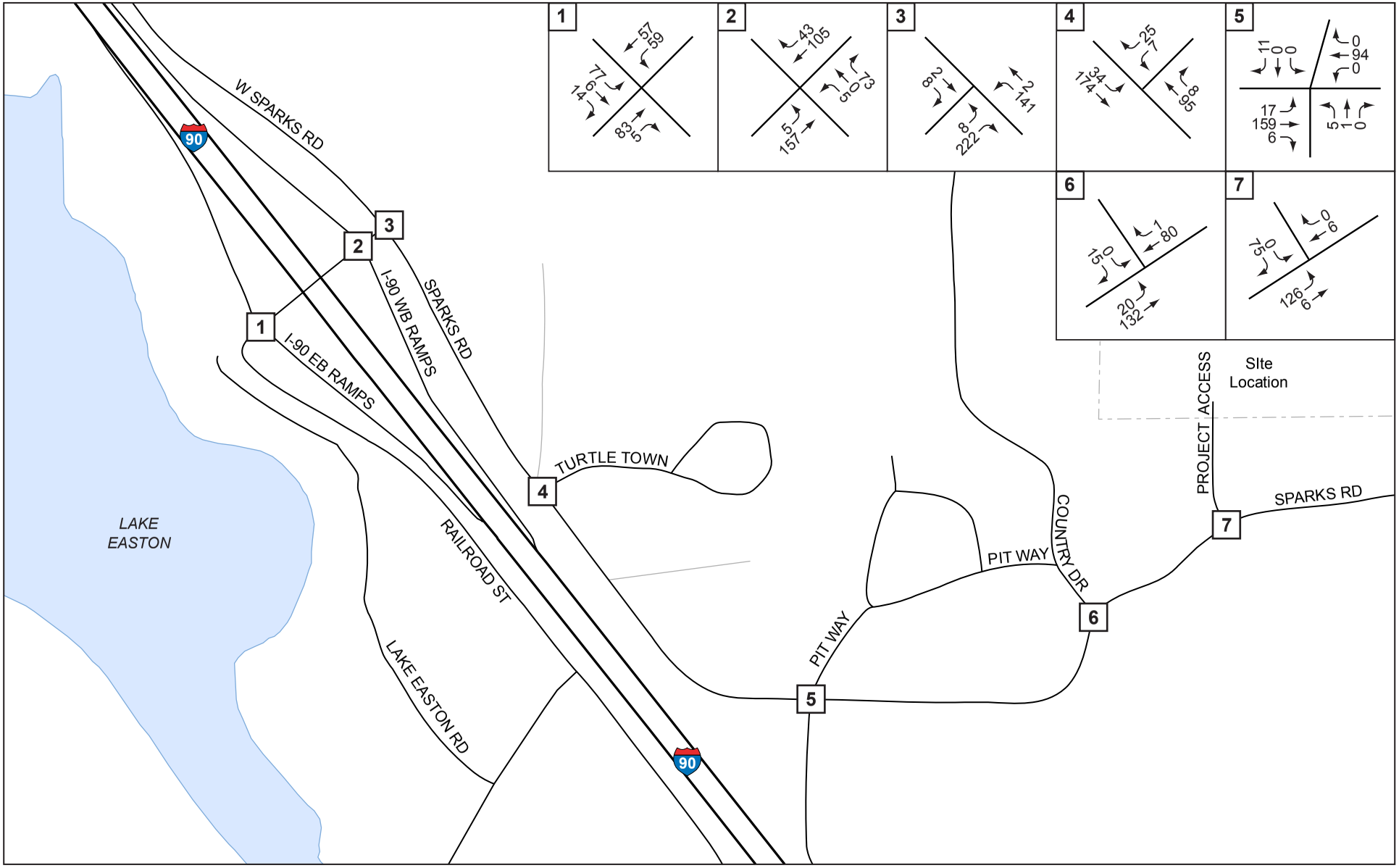
With the substantial increases in traffic volumes, roadways previously shared by motorized and non-motorized travel modes could pose safety concerns. Although the amount of non-motorized activity in the study area is relatively low, the demand from this development and others may increase non-motorized demand in the future. This may be especially pronounced in Alternative 2 with a multi-family component. To accommodate pedestrians and children on bicycles, sidewalks and signage may become desirable to reduce the potential for vehicle-to-pedestrian collisions. State law (RCW 58.17.110) requires that subdivisions provide safe public walkways for school children from residences to schools or to bus stops.

Traffic hazards are especially a concern for winter snowmobile use when plowed road areas are narrow and both vehicle and snowmobiles may be operating at speeds that do not allow adequate stopping distance or effective avoidance in cases of imminent collision.



Parametrix 557-1763-007/04(04) 12/10 (B)

Figure 3-10
Marion Meadows
2020 No-Build PM Peak Hour
Traffic Volumes



Parametrix 557-1763-007/04(04) 12/10 (B)

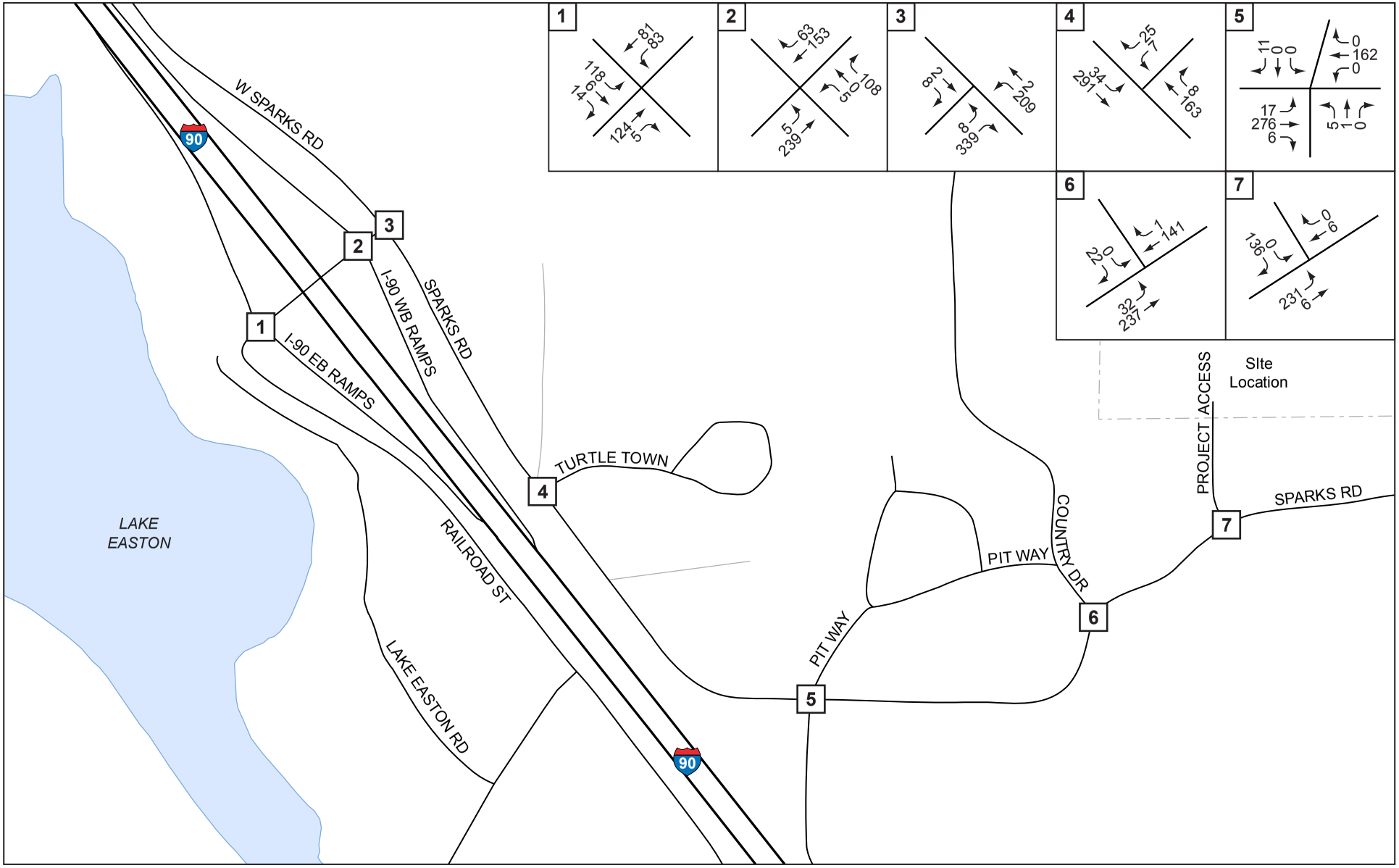
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0 650

SCALE IN FEET

Site Location

Figure 3-11
Marion Meadows
2020 Alternative 1 Scenario 1
PM Peak Hour Traffic Volumes



Parametrix 557-1763-007/04(04) 12/10 (B)

N

0 650

SCALE IN FEET

Site Location

Figure 3-12
Marion Meadows
2020 Alternative 1 Scenario 2
PM Peak Hour Traffic Volumes

Development of the project could result in a loss of areas that are informally used by ATVs and snowmobiles such as the BPA transmission line easement. Loss of these informal areas would likely result in more use of formal and designated areas and routes for ATV and snowmobile usage, as well as displacement of informal use to adjacent National Forest and other public lands.

County road standards for rural areas do not require sidewalks; however, sidewalks or trails constructed on the outside banks of the roadside ditch could be developed to enhance pedestrian safety. Alternatively, an off-road system of trails could be developed that may better serve both pedestrians and off-road vehicles by separating them from conflict with vehicular traffic.

18 How would future maintenance responsibilities and costs change?

Without the project, maintenance responsibilities and costs would generally be similar as they are today. Railroad Street and Sparks Road would continue to be maintained by Kittitas County and costs would be paid by the County road fund. All other roads would be privately maintained. However, if substantial increases in traffic occur from the development, resurfacing to fill pot holes and dust suppression treatments along Country Drive and Pit Way could become more frequent and costs could increase slightly.

Kittitas County maintenance of paved roads such as Railroad Street and Sparks Road are partially related to traffic volumes but also are affected by winter conditions, particularly frost heaving that degrades the road subsurface and surface. Additional traffic volumes would not necessarily result in a proportional increase in maintenance needs but would have some effect.

Maintenance of gravel roads is directly affected by traffic volumes that tend to combine with weather conditions to increase road surface failures resulting in increased pot holes. Additional traffic also increases the dust generated. Both of these factors would degrade the driving experience or adversely affect adjacent residences and increase costs. Gravel roads in the area are maintained by homeowner associations. With the project, traffic volumes on Country Drive and Pit Way would increase and result in an associated maintenance cost increase. Cost impacts depend on the extent to which the project is required to participate in upgrading the roads to avoid impacts or pay a proportional cost of maintenance.

The effects on snow removal needs and costs would be relatively low because snow removal is determined by snowfall. Additional development might decrease the cost per residence if all residences are required to contribute to the cost.

The project's homeowner association would be responsible for all road maintenance on the site. Roads would be required to be paved initially; therefore, maintenance costs would be relatively low for a period of years until roads began to deteriorate. After that point, bituminous surface treatment would be required every few years to maintain roads in optimum condition. Less frequent maintenance would result in gradual deterioration of roads. In addition, snow removal would be the complete responsibility of the residents and would be paid for by a homeowner association. The cost of snow removal on the upper

portion of the site is likely to be much higher than the lower portion. The relative difficulty of snow removal may result in longer road closures in that area due to delays in clearing roads. The difference in the amount and cost of snow removal within the development may be addressed by higher charges for higher elevation areas.

19 Would there be changes to how local roads fit into the character of the local community?

As described above, roadways in the study area currently provide several functions, including general mobility, freight transportation, direct property access, play areas for children, and recreational facilities (e.g., ATV and snowmobile routes).

The character of shared use roadways would change over time. Without or with the project, roadways would likely be used more by motor vehicles compared to other uses and the build scenarios would further increase motor vehicle usage. Although the proportionate share of motor vehicles using the roadways would increase, the functional classifications and general character of shared use roadways are not expected to change. General mobility, freight transportation, direct property access, and recreational usage would be maintained. Roadways could still serve as extensions of front yard and play areas; however, the increase in traffic volumes may tend to lead to less use. Within the existing Easton Village subdivision, volumes on Country Road are projected to increase more than four-fold with 10 percent of project trips presumed to take that route. If more project trips chose that route, the increase would be greater. The total number of trips is relatively low, but it may be great enough to change perceptions of safety for children playing in the area.



20 What mitigation is needed for the alternatives?

Level of Service mitigation

From the traffic operations perspective, all of the study intersections under Alternative 1, Tenure Scenario 1with 443 units and full-time residents operate acceptably above the LOS C standard. Therefore, no mitigation is needed with respect to traffic operations.

The potential need for left-turn lanes were examined along Sparks Road at Pit Way, Country Drive, and the project access point (West Sparks Access) where the left turns are highest. WSDOT provides guidance (not standards, regulations, or criteria) on when a left-turn lane should be constructed in the WSDOT Design Manual, Exhibit 1310-12a. In this exhibit, the need for a turn lane is based on the volume of left-turns compared to the total through-movement volume of the roadway and the posted

speed limit. Based on that guidance, no left-turn lanes are needed. Turn lanes may also be implemented under special circumstances, such as when visibility is poor; however, in this case the sight distance is adequate.

Mitigation for collisions

Although the potential for collisions would increase due to higher traffic volumes, the existing low collision frequency and relatively low future traffic volumes suggest that the amount of collisions in future would not rise to a level of concern. However, based on the shared-use character of Sparks Road, warning signs may be desirable to reduce the potential for vehicle-to-pedestrian collisions in areas around curves in the roadway, where sight distance is reduced, and/or where pedestrian activity is relatively high.

Mitigation for pedestrian, bicycle, and other off-road use

With the substantial increases in traffic volumes, roadways previously shared by motorized and non-motorized travel modes could pose safety concerns. Pedestrian and non-motorized transportation modes could be accommodated on sidewalks or a trail system placed behind the standard ditch section on a rural roadway. Such facilities should be designed in consultation with the local school district to ensure they provide safe public walkways for school children from residences to schools or to bus stops in new subdivisions (RCW 58.17.110). Motorized off-road trails are often preferred as a separate trail system because of potential hazards to slow moving and non-motorized vehicles such as bicycles or cross-country skiers. Off-road trails for snowmobiles are often preferred because plowed roads are narrow, collisions are difficult to avoid, and may lead to serious injuries. For winter use, off-road trails are also preferred because clearing for driveways interrupts sidewalks or trails next to the road and makes them unusable. Off-road trails do not require plowing and remain functional throughout the winter. Local communities must decide if trails shared by non-motorized users such as pedestrians, bicycles, and motorized users such as off-road vehicles and snowmobiles are acceptable. In most cases, shared trails must be wider to serve both motorized and non-motorized users.

Maintaining or formalizing existing off-road trails through the site on the BPA transmission line easement would serve the residents of the development as well as other users in the vicinity and avoid displacement of informal use to adjacent National Forest and other public lands.

Mitigation for the character of the local community

Use of local streets as part of the pattern of social interactions within the community, including as a play area for children, may change as the result of perceived increases in traffic. The community most likely to be affected is the Easton Village subdivision of small lots through which Country Road passes. It may be that residents would restrict children's use of the roads due not only to vehicles but off-road vehicle use. Traffic volumes on Country Road by Marian Meadows residents may be reduced by restricting the access to emergency use only; however, this would affect overall circulation patterns in the area. To reduce impacts of increased traffic volumes, signage could be installed on the roadway advising drivers of

"children at play" or speeds could be reduced by "traffic calming" features introduced into the street design.

Mitigation for the maintenance needs and costs

Maintenance needs and costs can be most influenced by the construction standards for new facilities. In general, the higher the standards for subsurface, drainage, and road surface, the more durable they are, and the less they are subject to failure, including reduced life-cycle maintenance costs. Effective maintenance requires preventative measures to avoid failure. This includes controlling the action of water, which can erode ditches, roads, and repairs to the road surface.

Mitigation of road maintenance costs in the development would be most affected by the standards to which the roads are built and the quality of ongoing maintenance. The county controls the implementation of initial standards and the homeowner association would control ongoing maintenance. The extent to which homeowners choose to assess themselves for the cost of preventative maintenance is the largest determinant of future road quality and the lifecycle cost of maintaining road serviceability.

Mitigation of Kittitas County costs of maintaining Sparks Road is largely related to whether an increase in traffic volumes of the magnitude of the project would have an identifiable impact on road surface maintenance needs or costs. In the case of mountain roads, frost heave, and other sources of damage and wear is likely to be as significant as additional traffic. Snow removal by the county is related primarily to the amount of snowfall and is not directly affected by the number of residences served. The cost of maintenance would increase, but may be offset by increased revenues to the County road fund, which is the additional tax base provided by new residences.

Maintenance costs of gravel roads such as Country Road and Pit Lane are more directly affected by traffic volumes that lead to deterioration of the road surface and summer dust. Upgrading the road to a paved surface would increase survivability and reduce dust but may increase maintenance costs in the future due to the need for periodic resurfacing or "chip seals." The additional costs associated with traffic from the proposal could be mitigated by requiring that project residents contribute to maintenance costs.

21 What are the likely cumulative impacts on surface transportation with development of nearby land?

Cumulative impacts account for potential development in nearby areas that are not related to the proposed project. Analysis of the cumulative impacts assumes that the surrounding areas in Easton would be developed under its existing zoning or that approval of the project would provide the precedent for development of other land under PUD density. The following options were analyzed:

- *226-Lot Subdivision with Rural Density Development* – This scenario includes development of the lower bench area of the proposed project as a subdivision plus development occurring in the surrounding areas under the existing zoning.

- *226-Lot Subdivision with PUD Density Development* – This scenario includes development of the lower bench subdivision plus development occurring in the surrounding areas under PUD density.
- *443-Unit PUD with Rural Density Development* – This scenario includes development of the entire project area plus development occurring in the surrounding areas under the existing rural zoning.
- *443-Unit PUD with PUD Density Development* – This scenario includes development of the entire proposed project area plus development occurring in the surrounding areas under PUD density.

Trips generated by the four cumulative scenarios were estimated and are summarized in Tables 3-9 to 3-12. Traffic volumes would substantially increase in the study area as indicated in Figures 3-13 to 3-16. Under the No Build scenario the 2020 PM peak hour volume along Sparks Road is estimated to be approximately 144 vph. This would increase with the buildout of the area at rural intensities to 552 vph (see Figure 3-14). For the cumulative Scenario 2 with PUD density, which represents the worst-case scenario, the peak hour volume increases to 1,267 vph (see Figure 3-16), almost nine times as much as existing traffic.

Table 3-9. Cumulative 226 Units with Existing Rural Zoning Trip Generation

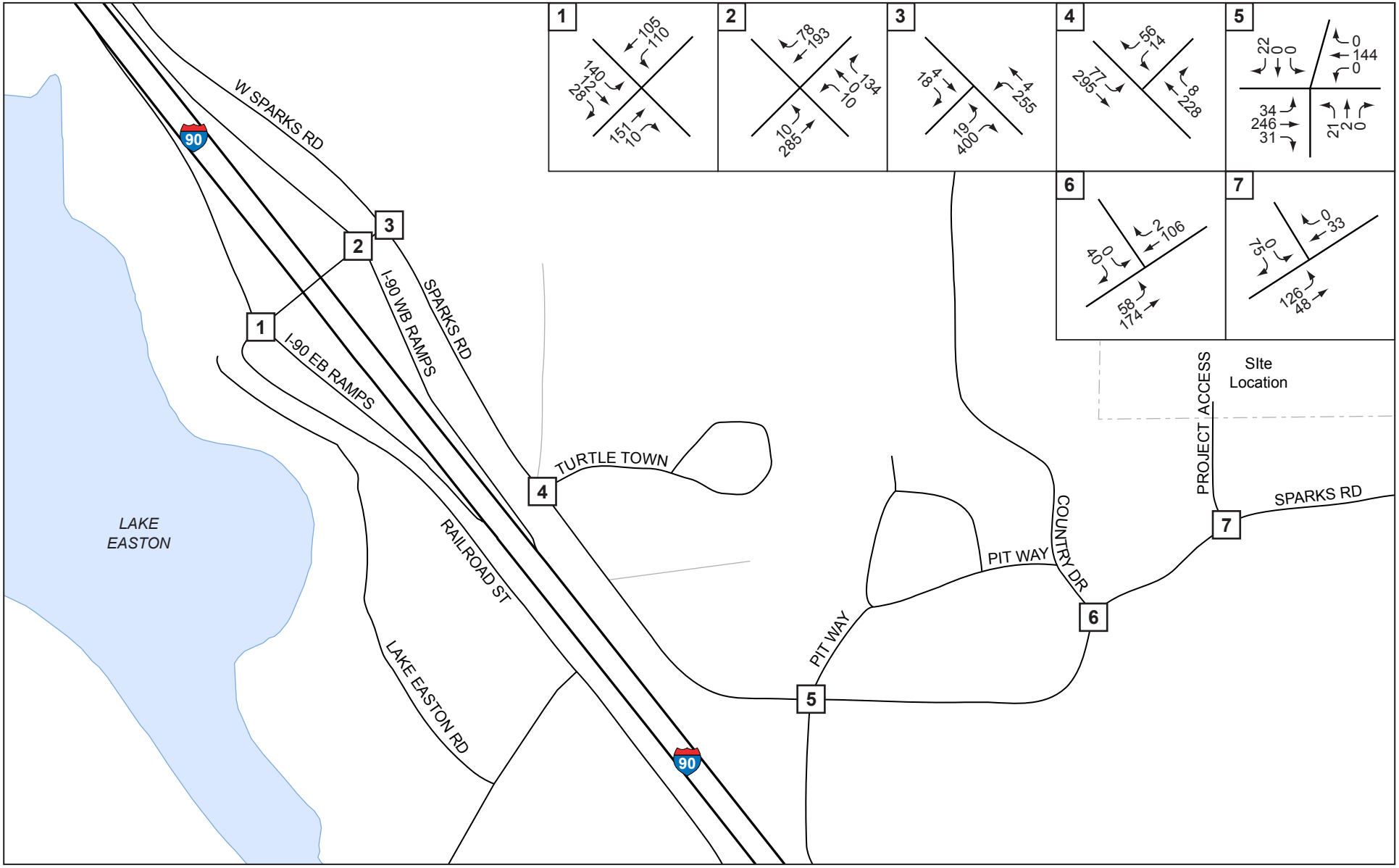
Proposed Land Use	Dwelling Units	ITE Code	Net New Trips		
			Total	In	Out
Project – Single-Family Detached Housing	226	210	223	140	83
Cumulative - with Existing Rural Zoning	131	210	157	99	58
Total Development			**380**	**239**	**141**

Table 3-10. Cumulative 226 Units with PUD Density Trip Generation

Proposed Land Use	Dwelling Units	ITE Code	Net New Trips		
			Total	In	Out
Project – Single-Family Detached Housing	226	210	223	140	83
Cumulative - with PUD Density	567	210	584	368	216
Total Development			**807**	**508**	**299**

Table 3-11. Cumulative 443 Units with Existing Zoning Trip Generation

Proposed Land Use	Dwelling Units	ITE Code	Net New Trips		
			Total	In	Out
Project – Single-Family Detached Housing	443	210	409	258	151
Cumulative - with Existing Rural Zoning	131	210	157	99	58
Total Development			**566**	**357**	**209**



Parametrix 557-1763-007/04(04) 12/10 (B)

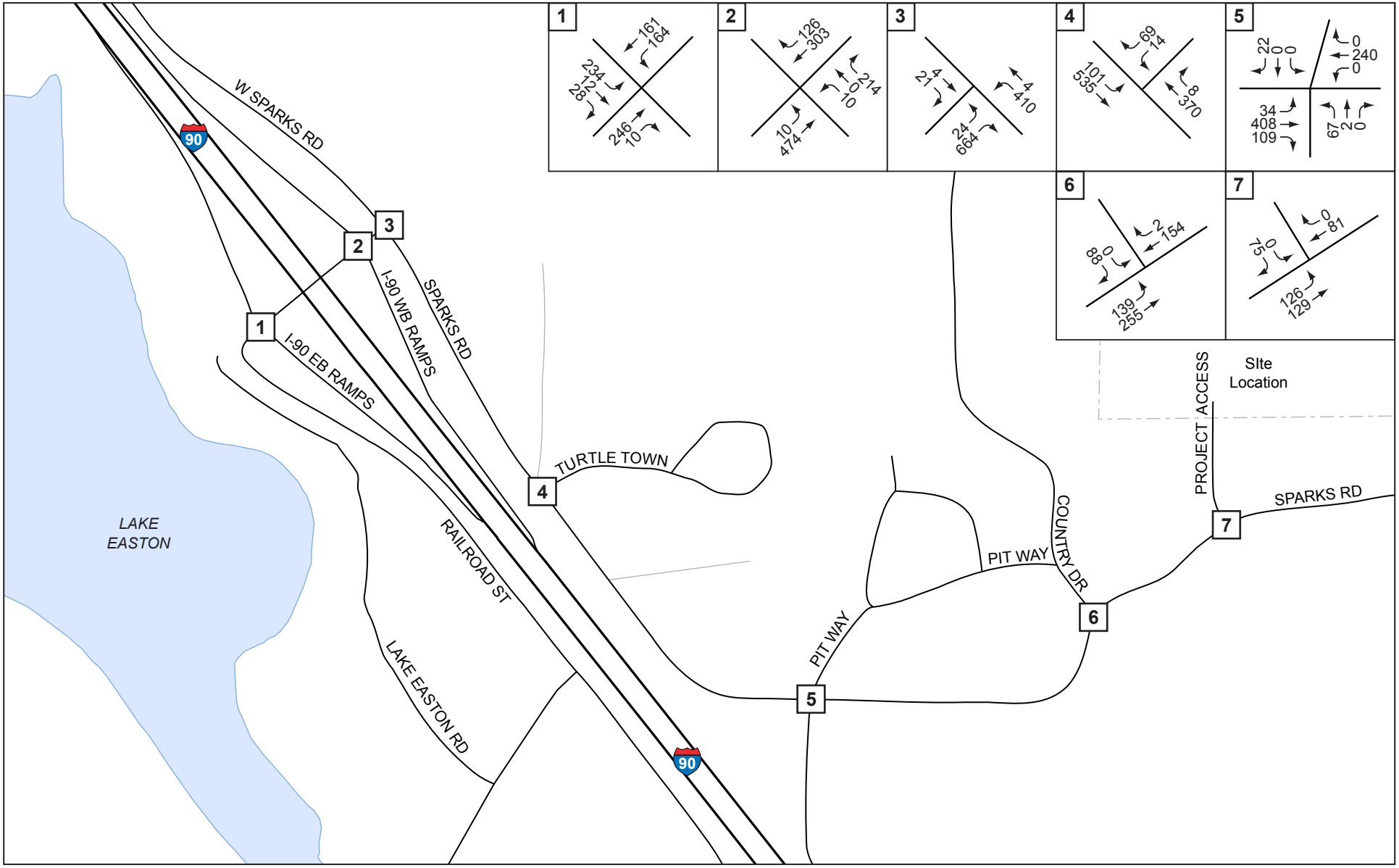
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SCALE IN FEET

Site Location

Figure 3-13
Marion Meadows
2020 Cumulative with Alternative 1 Scenario 1 and Rural Density PM Peak Hour Traffic Volumes



Parametrix 557-1763-007/04(04) 12/10 (B)

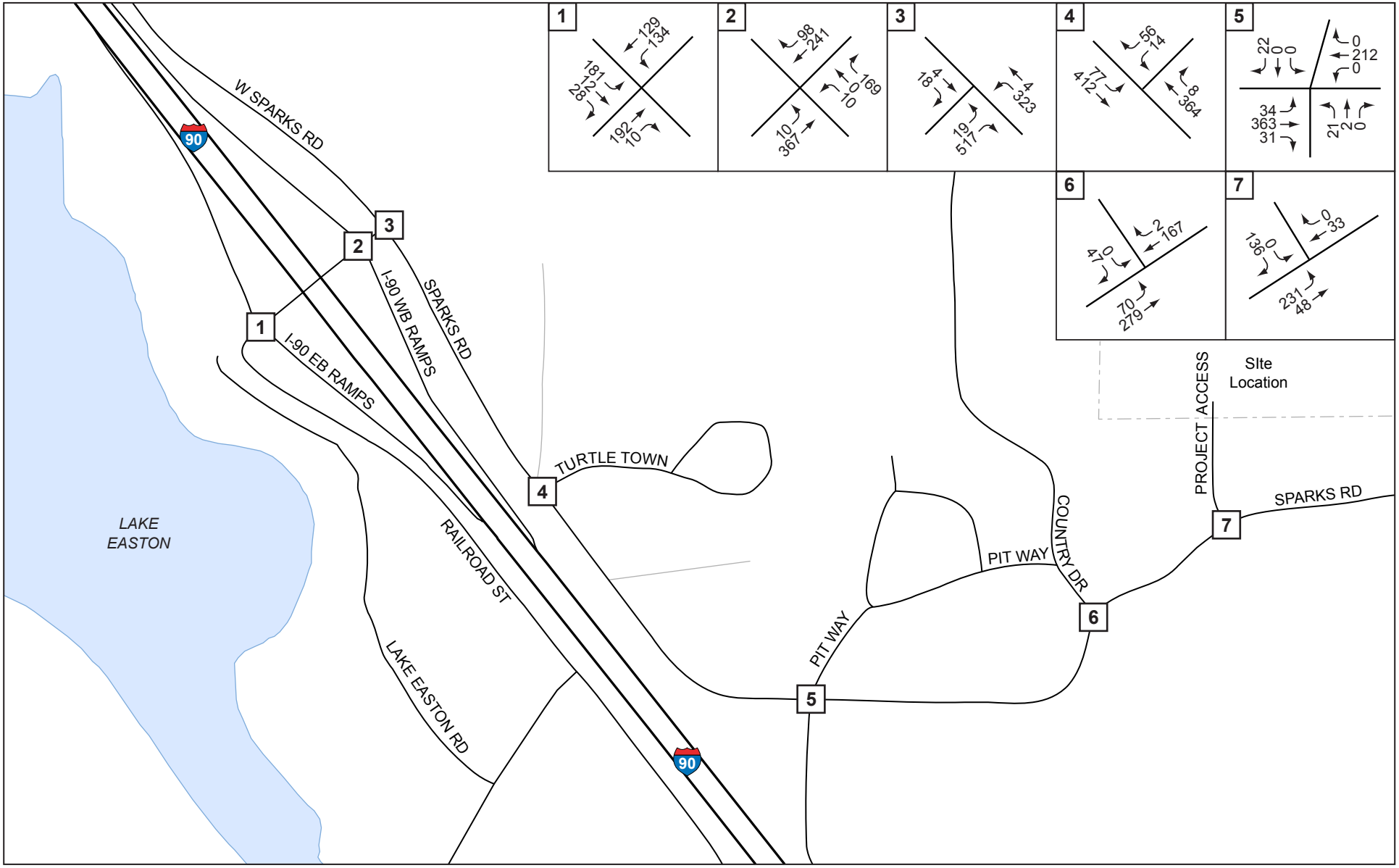
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Site Location

Figure 3-14
Marion Meadows
2020 Cumulative with Alternative 1 Scenario 1 and PUD Density PM Peak Hour Traffic Volumes



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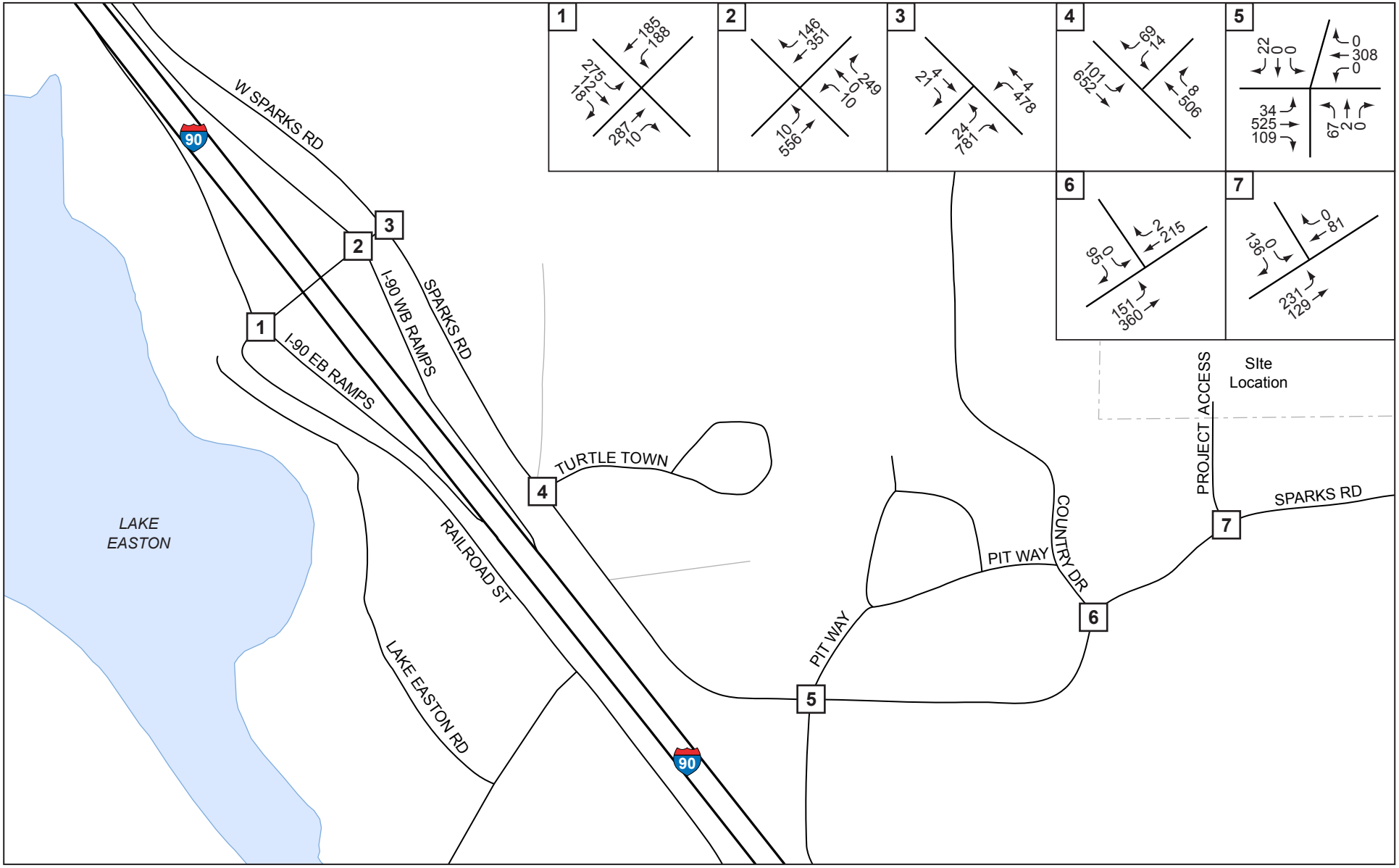
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SCALE IN FEET

Site Location

Figure 3-15
Marion Meadows
2020 Cumulative with Alternative 1 Scenario 2 and Rural Density PM Peak Hour Traffic Volumes



Parametrix 557-1763-007/04(04) 12/10 (B)

Figure 3-16
Marion Meadows
2020 Cumulative with Alternative 1 Scenario 2 and PUD Density PM Peak Hour Traffic Volumes

Table 3-12. Cumulative 443 Units with PUD Density Trip Generation

Proposed Land Use	Dwelling Units	ITE Code	Net New Trips		
			Total	In	Out
Project – Single-Family Detached Housing	443	210	409	258	151
Cumulative - with PUD Density	567	210	584	368	216
Total Development			**993**	**626**	**367**

22 Would the cumulative effects change the roadways that serve the area?

As described above, when considering the cumulative effects of the project, traffic volumes in the study area would increase and the magnitude of increase would vary greatly depending on the tenure scenario and whether or not the adjacent areas are assumed to be developed under the existing rural zoning or PUD density.

Depending on the amount of growth and development within the study area, it is possible that some roadways could warrant a change in functional classification to be consistent with traffic volumes that are using the roadways. Substantial increases in traffic volumes could result in minor designations being changed to major classifications. However, because the transportation system would be used in a similar fashion with respect to general mobility, direct property access, roadway network, travel patterns, etc., and the need for improvements would likely be limited to one or two intersections, it is unlikely that the functional classifications would require changes. Therefore, despite substantial traffic volume increases, the functional classifications of the roadways in the study area are expected to remain the same as today.

23 Would the cumulative effects change the expected level of service?

The new trips generated from the project and development of nearby areas would increase the traffic volumes on the transportation network and would change the LOS conditions. Accounting for the land use development assumptions of the project and the surrounding areas, and traffic volume forecasts described under Question 5, the 2020 future year LOS conditions for cumulative conditions were analyzed. The results are summarized and compared to the No Build 2020 conditions in Table 3-13. PM peak hour volumes for all the cumulative scenarios are shown in Figures 3-13 to 3-16.

Table 3-13. No Build 2020 and Cumulative 2020 LOS Summary

Intersection	No Build 2020		Cumulative 2020 with Rural Density			
			226-Lot Subdivision Plus Existing Rural Zoning		443-Unit PUD Plus Existing Rural Zoning	
	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)
I-90 Eastbound/Railroad Street	A	9.5	C	19.2	D	34.1
I-90 Westbound/Railroad Street	A	8.9	B	12.0	B	14.0
Sparks Road/Railroad Street	A	9.3	C	15.5	C	22.1
Sparks Road/Turtle Town	A	8.7	B	11.7	B	14.3
Sparks Road/Pit Way	A	9.2	B	13.8	C	17.3
Sparks Road/Country Drive	A	8.4	A	9.1	A	9.5
Sparks Road/W Sparks Access	NA	NA	A	8.8	A	9.1
Intersection	**No Build 2020**		**Cumulative 2020 with PUD Density**			
			226-Lot Subdivision Plus PUD Zoning		443-Unit PUD Plus PUD Zoning	
	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)
I-90 Eastbound/Railroad Street	A	9.5	F	139.2	F	> 200
I-90 Westbound/Railroad Street	A	8.9	C	18.8	D	26.8
Sparks Road/Railroad Street	A	9.3	F	60.4	F	153.5
Sparks Road/Turtle Town	A	8.7	C	15.7	C	21.0
Sparks Road/Pit Way	A	9.2	C	24.4	E	36.6
Sparks Road/Country Drive	A	8.4	A	9.7	B	10.3
Sparks Road/West Sparks Access	NA	NA	A	9.1	A	9.4

With buildout of the proposed PUD with cumulative development of surrounding areas at current zoning densities, delays at intersections would generally increase by up to 12.8 seconds/vehicle and continue to operate above LOS C, which is the standard adopted by Kittitas County. The one exception is the I-90 eastbound ramps/Railroad Street intersection, which degrades to LOS D. Although other Alternatives 1 and 2 tenure options may reduce weekday trips due to seasonal residences, this scenario is considered relevant to potential impacts of end-of-weekend trip generation exiting the project vicinity.

The cumulative effects of buildout of the proposed PUD with PUD density development of other land in the vicinity results in delay increases of up to 144.2 seconds/vehicle and four intersections would operate worse than the LOS C standard:

- I-90 eastbound ramps/Railroad Street – LOS F;
- I-90 westbound ramps/Railroad Street – LOS D;
- Sparks Road/Railroad Street – LOS F; and
- Spark Road/Pit Way – LOS E.

The I-90 eastbound ramps/Railroad Street intersection is currently stop-controlled for the eastbound off-ramp only and a high eastbound left-turn volume (275 vph) is the primary contributor to high delays.

Westbound approach vehicles experience increased delays as a result of higher through-movement volumes at the I-90 westbound ramps/Railroad Street intersection.

At the Sparks Road/Railroad Street intersection, both the eastbound and westbound approaches (Sparks Road) are stop-controlled while Railroad Street is a free movement. The high-volume (478 vph) westbound left movement is the primary cause of delays.

At Pit Way, high delays are associated with the northbound left movements (67 vph) that are unable to find adequate gaps in the traffic stream due to relatively high through-movement volumes.

24 Would the cumulative effects change collision frequencies and/or hazardous roadway conditions?

Increased traffic volumes inherently increase the collision potential and existing hazardous roadway conditions can become exacerbated. Because the recent collision history indicates that traffic safety is not a concern (approximately 0.66 collisions/year compared to a 5.0 collisions/year guiding criterion), it is difficult to conclude if traffic safety is expected to be problematic in the future.

All of the intersections in the study area are one-way/two-way stop-controlled. At these types of unsignalized intersections, the most common collisions occur between vehicles turning into and out of the minor approach with vehicles traveling through the intersection (versus rear-end collisions, sideswipes, or head-on). Conflicts between these vehicles generally arise as the result of aggressive driver behavior due to long minor street delays. Because the LOS of one-way/two-way stop-controlled intersections is defined by the minor street, a loose correlation can be drawn between the amount of minor street delay and collision potential.

Although operating conditions may degrade beyond the LOS standards, five of the study intersections are not expected to experience excessive delays and the increases in traffic volumes associated with the cumulative effects are not expected to increase the collision potential to a level of concern.

At the I-90 eastbound ramps/Railroad Street intersection, the eastbound left-turning movement would experience high delays, with a moderate level of traffic volume (275 vph). This eastbound left movement conflicts with three other movements that have moderate volumes, including the southbound left (188 vph), southbound through (185 vph), and northbound through (287 vph). Based on the high minor street delays and moderate traffic volumes of several conflicting movements, this intersection could experience a collision frequency at a level of concern. Additionally, the type of likely collisions (at-angle) could result in severe injuries.

At the Sparks Road/Railroad Street intersection, which is expected to operate at LOS F, the collision potential would increase; however, approximately 96 percent of the total traffic entering the intersection reflect non-conflicting movements (781 northbound right turns and 478 westbound left turns). Therefore, while the collision potential at the Sparks Road/Railroad Street intersection would increase, it is not likely that the increase would be substantial.

25 Would the cumulative effects change pedestrian, bicycle, and other off-road use or facilities?

With the substantial increases in traffic volumes from cumulative development, roadways previously shared by motorized and non-motorized travel modes could pose safety concerns. This is especially the case for winter snowmobile use when plowed road areas are narrow and both vehicles and snowmobiles may be operating at speeds that do not allow adequate stopping distance in cases of imminent collision.

The cumulative effects of the project development in combination with the surrounding areas could result in additional loss of areas that are informally used by off-road vehicles and snowmobiles. Loss of these informal areas would likely result in more formal and designated areas and routes for off-road vehicle and snowmobile usage.

The cumulative population of the area could include development of neighborhood schools, which would require safe public walkways for school children from residences to schools or to bus stops in new subdivisions as required by RCW 58.17.110.

26 Would the cumulative effects change maintenance responsibilities and costs?

The cumulative effects of the project and development of surrounding areas would increase maintenance costs related to traffic volumes and may lead to demand for a higher level of ongoing maintenance.

Kittitas County maintenance of paved roads such as Railroad Street and Sparks Road are partially related to traffic volumes but also are affected by winter conditions, particularly frost heaving that degrades the road subsurface and surface. Additional traffic volumes would not necessarily result in a proportional increase in maintenance needs but would have some effect. The nine-fold increase in traffic volumes may not increase maintenance costs by the same factor but likely would result in the need for more frequent maintenance and also would likely result in more persons requesting higher standards of maintenance. The cost of maintenance would increase, but may be offset by increased revenues to the County Road fund, which is the additional tax base provided by new residences.

Maintenance needs of gravel roads are directly affected by traffic volumes that tend to combine with weather conditions to increase road surface failures resulting in increased pot holes. Additional traffic also increases the dust generated. Both of these factors would degrade the driving experience or adversely affect adjacent residences and increase costs. Gravel roads in the area are maintained by homeowner associations. With cumulative growth, traffic volumes on Country Drive, Pit Way, and Hawthorn Lane would increase, as well as maintenance costs. Cost impacts depend on the extent to which development is required to participate in upgrading the roads to avoid impacts or pay a proportional cost of maintenance. Homeowner associations that maintain many roads in the area have little ability to collect from additional traffic generated off site unless specific agreements are in place to assess other properties that would contribute a fair share of the costs. Providing for such agreements as a condition of approval of new development would provide such a mechanism.

The cumulative effects on snow removal needs and costs are relatively low because snow removal is determined by snowfall. Additional development might decrease the cost per residence if all residences are required to contribute to the cost.

27 Would the cumulative effects change how roadways fit into the character of the local community?

Development of the project and surrounding areas would increase traffic volumes in the study area substantially. The multiple functions of the local roadway system, including general mobility, freight transportation, direct property access, and recreational usage (i.e., ATVs and snowmobiles) would generally be preserved, but would be heavily dominated by passenger traffic. Use of Sparks Road as play areas would be substantially diminished as a result of the potential for vehicle-to-pedestrian collisions.

Although roadway capacity improvements (i.e., widening) would not be necessary, the substantial increase in traffic volumes may warrant a change in the functional classification from a Rural Local Access (class 9) to a collector. Additionally, some channelization improvements would be needed at four of the study intersections to achieve acceptable operating conditions (see Question 10 below for a discussion of the mitigation). Furthermore, the current perception of Sparks Road being a small community access road would change and could be viewed as a "major" roadway in the study area. The amount of traffic on Sparks Road would be inconsistent compared to the existing small community, but consistent with the level of development in the future.

28 What mitigation is needed for the cumulative impacts?

Level of Service Mitigation

The level of mitigation needed for the cumulative effects depends primarily on the buildout assumption of the surrounding areas. No mitigation is required for cumulative impacts with existing rural zoning. With the PUD density of the surrounding areas, together with PUD development of the proposal at maximum density, several intersections exceed LOS standards. This mitigation may or may not be needed in the future, depending on the scope of future development in the area.

To mitigate the I-90 eastbound ramps/Railroad Street intersection, a simple change from one-way stop-control to an all-way stop-control would improve the LOS from LOS F with > 200 seconds/vehicle of delay to LOS C with 18.4 seconds/vehicle of delay.

At the I-90 westbound ramps/Railroad Street intersection, widening the off-ramp approach to include a left-turn pocket would improve operations from LOS D with 26.8 seconds/vehicle to LOS C with 22.8 seconds/vehicle.

Mitigation at the Sparks Road/Railroad Street intersection would be more complex. At this intersection, approximately 96 percent of the total entering volume is non-conflicting; 781 vph for northbound right from Railroad Street to Sparks Road and 478 vph for westbound left from Sparks Road to Railroad Street.

Widening the northbound approach (Railroad Street) to include a left-turn lane and eliminating the stop signs on the eastbound approach (Sparks Road) and northbound approach to allow through movement from Railroad Way to Sparks Road would improve operations to LOS C and with 15.8 seconds/vehicle of delay. However, this configuration may be confusing to some drivers and the eastbound approach movements would need to yield to multiple other movements and could pose safety concerns. Alternatively, construction of a roundabout would allow the high-volume non-conflicting movements to move freely through the intersections while concurrently accommodating the other low-volume movements. With the roundabout, operations at this intersection would improve from LOS F and 153.5 seconds/vehicle of delay to LOS A with 6.0 seconds/vehicle of delay.

Addition of a median refuge (merging area) for southbound left movements from Pit Way onto Sparks Road would improve this intersection's operations from LOS E to acceptable LOS C with 17.3 seconds/vehicle of delay.

The potential need for left-turn lanes at the on Sparks Road intersection with Pit Way/Hawthorn Lane was examined in detail. The left-turn volume from Sparks Road to Pit Lane is relatively low (because it continues to serve only the existing subdivision) and does not justify a left-turn lane. Under the cumulative growth scenario, the critical movement is the northbound turn movement from Hawthorn Lane into Sparks Road. The potential mitigation would be a median refuge lane on Sparks Road for these left turns. This feature was evaluated with respect to the WSDOT guidance in Exhibit 1310-12a. At Pit Way, the left-turn volume is 34 vph, which represents roughly 4 percent of the through-movement volume and would not justify a refuge lane. (Exhibit 1310-12a guidance is limited to roads with speed limits of 40 mph, which is slightly higher than Sparks Road, but may represent actual operating conditions). The need for construction of a left-turn lane should be monitored based on actual volumes experienced in the future.

At Country Drive, the left-turn volume increases to 151 vph because this roadway serves as a primary access point to the project. With this volume, which represents approximately 26 percent of the through-movement volume, a left-turn lane would be desirable. At the West Sparks Access point, the left turns, 231 vph, constitute the majority of the total entering volume, but the opposing through-movement volume, 81 vph, is very low and therefore a turn lane would not be needed.

Mitigation for collisions

Although traffic volumes are expected to substantially increase, and therefore increase the collision potential, the primary safety concerns are at intersections where delays are excessively high and people drive more aggressively. By mitigating the operational deficiencies at the I-90 eastbound ramps/Railroad Street and Sparks Road/Railroad Street intersections, potential traffic safety concerns would also be mitigated.

Maintenance

Maintenance needs and costs are most influenced by the construction standards for new facilities. In general, the higher the standards for subsurface, drainage, and road surface, the more durable they are, the less they are subject to failure, and the life-cycle maintenance costs are less. Effective maintenance requires preventative measures to avoid failure. This effort includes controlling the action of water, which can erode ditches, roads, and repair work to the road surface.

The cumulative effects of the project and development of the surrounding areas would increase maintenance costs related to traffic volumes and may lead to demand for a higher level of ongoing maintenance responsibilities.

Kittitas County maintenance costs on Railroad Street and Sparks Road could be reduced somewhat by upgrading of those facilities as the result of contributions by new development. This can be done by an impact fee system, which the county does not currently have, or by mitigation required under SEPA authority for larger projects. The latter approach would not address impacts of exempt development, including subdivision into four or fewer lots, which would be likely for development of many lots in the area.

Construction of new roads to higher standards and reconstruction of existing roads to provide bituminous surface treatment would improve serviceability with related increases in maintenance costs. The cost per residence would increase under the cumulative scenario with rural development, but the effect would be less with PUD densities because of the greater number of lots assessed. Upgrading existing roads affected by PUD density development, such as Country Drive and Hawthorn Lane, to include all-weather pavement would reduce the effects of additional traffic on a gravel road including pot holes and dust. However, this upgrade may be difficult to accomplish because multiple parties use the roads and not all are legally obligated to contribute to maintenance or upgrading.

Additional development in the area may lead to a desire by local residents to have Kittitas County assume maintenance because their ability to assess all users their fair share is limited by current maintenance agreements.

A key element in ensuring road maintenance with the existing county policy that requires homeowner associations to maintain many of the roads is to require agreements to participate in maintenance, with clear means of assessing costs and resolving disputes as a condition of approval of new development.

Improvements of the overall road system in the area could be accomplished through a county road improvement district for the acquisition of rights-of-way, improvement of county roads, and improvement of existing private roads that would become county roads as a result of the improvement district process. Such a system of improvements might reduce overall maintenance costs of multiple homeowner associations; however, the long-term costs to the county probably would be increased because of the additional life-cycle costs of maintaining additional road-miles. The state does not allow formation of special districts to pay for road maintenance.

Costs of snow removal are related to snowfall and not to the number of residents. For roads maintained by homeowners, the cost per residence may decrease if more residences are built, provided that all residents served are required to contribute.

Pedestrian, bicycle, and other off-road use

With the substantial increases in traffic volumes from cumulative development, roadways previously shared by motorized and non-motorized travel modes could pose a higher level of safety concerns because of higher vehicular volumes. Pedestrian and non-motorized transportation modes could be accommodated on sidewalks or a trail system placed behind the standard ditch section on a rural roadway. Such facilities should be designed in consultation with the local school district to ensure they provide safe public walkways for school children from residences to schools or to bus stops in new subdivisions (RCW 58.17.110). This is likely to be needed for much of Sparks Road where traffic volumes are highest but also may be warranted for other roads. Motorized off-road trails are often preferred as a separate trail system because of potential hazards to slow moving and non-motorized vehicles such as bicycles or cross-country skiers. Off-road trails for snowmobiles are often preferred because plowed roads are narrow, collisions are difficult to avoid, and may lead to serious injuries. In some communities, shared trails are acceptable to the community if they are wide enough to serve both motorized and non-motorized users. For winter use, off-road trails are preferred because clearing for driveways interrupts sidewalks or trails next to the road and makes them unusable. Off-road trails do not require plowing and remain functional throughout the winter.

Maintaining or formalizing existing off-road trails through the site on the BPA transmission line easement would serve the residents of the development as well as other users in the vicinity and avoid displacement of informal use to adjacent National Forest and other public lands.

Mitigation for the character of the local community

Use of local streets as part of the pattern of social interactions within the community, including the street as a play area for children, may change as the result of perceived increases in traffic. The community most likely to be affected is the Easton Village subdivision of small lots through which Country Road passes. It may be that residents would restrict children's use of the roads due not only to vehicles but off-road vehicle use. Traffic volumes on Country Road by Marian Meadows residents may be reduced by restricting access to emergency use only; however, this would affect the overall circulation patterns in the area. To reduce impacts of increased traffic volumes, signage could be installed on the roadway advising drivers of children at play or speeds could be reduced by "traffic calming" features introduced into the street design.

3.2.2 Transportation - Aviation

1 What existing airports are in the area?

The Easton State Airport is located about 0.25 mile west of the development site. The airport was constructed in the 1930s by the federal government as an emergency field for aircraft crossing the Cascade Mountains through Snoqualmie Pass. It was acquired by the State of Washington in 1958. The airport runway is composed of 2,640 feet of turf and has medium intensity lighting. Trees surround the airport, and there are trees in both approaches.

The WSDOT Aviation Division estimates that the airport is visited by approximately 30 to aircraft per month, including use by recreation groups and for pilots training for mountain flying/soft field practice. Glider and flying clubs are reported to frequently use the field during the summer (Wolfe 2010).

The airport is classified by WSDOT as a Rural Essential Airports which is a classification for airports that serve the narrowest scopes of general aviation. An airport in one of these two classifications typically develops due to geographic circumstances, rather than demand from the population within its service area. This classification includes all land-based airports that are open to public use, but do not meet the threshold criteria for Commercial Service, Regional Service, Community Service, or Local Service Airports. Rural Essential Airports and Seaplane Bases have no service objectives and few facility objectives, reflecting the lower level of facilities and services needed at these airports compared to the other classifications. An important function of the Easton Airport is to provide for emergency landings for general aviation aircraft crossing the Cascade Mountains. The airport is used periodically for firefighting access largely limited to small planes and helicopters in mountainous or other areas (Wolfe 2010).

The Easton Airport has the potential for limitations on use during hot summer days due to its elevation. Air density decreases with increasing temperature and altitude. Lower air density reduces the amount of lift generated by the wings of an airplane or the rotors of a helicopter, which may hamper an aircraft's performance. Under these conditions, known as “high and hot” airplanes require a longer takeoff run, potentially exceeding the amount of available runway. In addition, low air density hampers an aircraft's ability to climb. In some cases, an aircraft may be unable to climb rapidly enough to clear terrain surrounding a mountain airport. When these conditions are in effect, the normal safety zones along the axis of an airport runway may not be adequate to ensure airplane safety or safety of persons on the ground (Welch 1999). The National Transportation Safety Board (NTSB) has recorded three aircraft accidents related to takeoffs or landings at the Easton State Airport. Two of the accidents took place on the runway itself. The other accident occurred during a July 10, 2007 emergency landing of a two-engine plane about 0.50 mile east of the extended airport centerline and about 0.25 mile south. After impact, the plane erupted into intense flames.

2 What mandates or standards for airports have been established and how are compatible land uses adjacent to airports determined?

The GMA, under RCW 36.70A.510 and RCW 36.70.547, provide that comprehensive plans and development regulations discourage the siting of *incompatible uses* adjacent to general aviation airports. Prior to siting uses near airports, formal consultation is required with the Aviation Division of WSDOT, which also provides technical assistance in developing plans and regulations.

The WSDOT Aviation Land Use Compatibility Program focuses on:

- Hazards to aircraft operation, generally including:
  - Obstructions to the airspace required for flight to, from, and around an airport;
  - Wildlife hazards; and
  - Other forms of interference with safe flight, navigation, or communication.
- Hazards to persons and property from aircraft operations.
- Noise impacts on persons and property from aircraft operations.

The major issues regarding hazards to aircraft relate to obstructions that affect flight, takeoff, and landing.

The WSDOT Aviation Division accepts the height hazards indicated in the Federal Aviation Administration standards under 14 Code of Federal Regulations (CFR) Part 77, Objects Affecting Navigable Airspace. These regulations establish a three-dimensional space in the air above an airport. Any object that penetrates this volume of airspace is considered to be an obstruction and may affect the aeronautical use of the airspace. This three-dimensional space is also known as an "imaginary surface." The size of these imaginary surfaces is based on the category of each runway according to the current approach, and to any future approach planned for that runway.

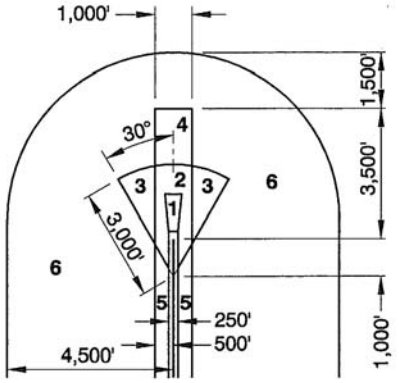


Figure 3-17 Aviation Safety Zones

For a "visual approach" runway such as the Easton State Airport, the length of the approach surface at the east end of the runway is defined as 5,000 feet with a 20 horizontal to 1 vertical (20:1) slope from the end of the runway. The maximum height allowed at the end of the 5,000-foot radius would be about 250 feet. The allowed height about 1,500 feet from the runway, at the edge of the development site, would be about 75 feet. Native evergreen trees at the edge of the WSDOT airport property, approximately 200 feet from the end of the runway, exceed the height defined by the "imaginary surface" at that point. Outside the 5,000-foot length of the "imaginary surface," Easton Ridge rises about 2,500 feet at a distance of about 10,000 feet from the runway, an overall slope of about 4:1.

Birds are the most common wildlife hazard near airports. The risk of bird strikes is most serious along the corridors for takeoffs and landings. However, the concern extends to elsewhere in the airport vicinity where a collision may affect aircraft operations. Natural attractions to birds that are not regulated "artificial attractors" include:

- Sanitary landfills.
- Water bodies that may attract birds, including golf course water hazards, drainage detention and retention basins, created wetlands, and waterbodies created as a landslide feature.
- Wildlife refuges that include measures to increase the attraction of birds.
- Agriculture, especially cereal grains.

Wildlife other than birds can also be a concern if they block runways. Deer grazing on grass runways such as Easton's are a typical concern, as are cattle in an open range area.

Other flight hazards include:

- Visual hazards that obscure the runway or are distractions (particularly lights that can be confused with airfield lights), glare, and smoke.
- Electronic hazards such as devices that interfere with aircraft instruments or radio communication.

The major **hazards to persons and property** are from aircraft accidents.

Based upon historical data from the NTSB, the areas adjacent to airports are more susceptible to aircraft accidents. According to the NTSB, approximately 47 percent of all air carrier and commuter accidents and approximately 64 percent of all general aviation accidents occurred during approach, descent, landing, and takeoff phases at an airport.

In the 1990s, a study sponsored by the California Transportation Institute surveyed 400 general aviation aircraft accidents occurring within 5 miles of an airport. Results, including plotting locations in relation to safety zones, related to clusters of accident sites as they relate to components of flight actions taken in aircraft landing and takeoff.

Table 3-14 and Figure 3-17 illustrate the results of the study.

As can be seen from Table 3-14 indicating the capture rates for different zones, the potential hazard on a per incident basis for Zone 1 and Zone 6 is roughly equal. The potential hazard on a per acre basis is much lower in Zone 6 by several orders of magnitude because Zone 6 is almost 90 times as large as Zone 1. The potential hazard exposure on a per acre basis for Zone 6 is much less than Zone 1, by several orders of magnitude.

The recommendations of the WSDOT Aviation Division for compatible land use as well as the provisions of Kittitas County zoning are indicated in Table 3-15 and generally provide for less density and less exposure of persons to risk as the magnitude of risk decreases. For the Easton Airport, the negative effects of high altitude and temperature on aircraft lift present additional hazards along ASZs 1, 2, and 4 along the axis of the runway that warrant more attention to avoidance of exposure by uses on the ground.

Aircraft noise is often an issue for residents near airports. A detailed discussion of noise impacts in included in Section 3.7. The state standards for land use near airports emphasize land uses that are less sensitive to noise, such as forestry, agriculture, industrial, or commercial use. Residential uses sensitive to airport noise are recommended to be avoided.

Kittitas County has adopted the following Comprehensive Plan policies relating to airports:

GPO 4.15D To recognize air transport and airports as an important element.

GPO 4.15E Recognize public-use airports as essential public facilities.

GPO 4.15F Protect Kittitas County Airport (Bowers Field), Cle Elum Municipal, DeVere Field and Easton State airports from adjacent incompatible land uses and/or activities that could impact the present or future use of the airports as essential public facilities.

GPO 4.15G A notice to title or disclosure statement should be required for new or substantial redevelopment of lots, buildings, structures, and activities located adjacent to public-use airports. The notice should indicate that the property is located adjacent to the airport and may experience low overhead flights, odor, vibrations, noise and other similar aviation impacts.

GPO 4.14H Protect public-use airports from height hazards by developing a height overlay district that will prohibit buildings or structures from penetrating the Federal Aviation Regulations (FAR) Part 77 “Imaginary Surfaces.”

Kittitas County Zoning restricts uses in the ASZs as indicated in Table 3-15.

Table 3-14 Accident Safety Zones and Capture Rates for Aircraft Accidents

Zone	Zone Name	Dimension (Runway less than 4,000 feet)	Zone Size (acres)	Arrivals		Departures		Total	
				Percent of Accidents	per Acre Factor	Percent of Accidents	per Acre Factor	Percent of Accidents	per Acre Factor
1	Runway Protection Zone	S =1,200 feet	8	31	3.88	20	2.46	24	3.01
2	Inner Safety Zone	T = 1,500 feet	16	10	0.63	9	0.61	10	0.62
3	Inner Turning Zone	R = 2,500 feet	113	8	0.07	16	0.14	13	0.11
4	Outer Safety Zone	U = 2,500 feet	26	3	0.13	1	0.04	2	0.07
5	Sideline Safety Zone	E = 500 feet	72	18	0.25	34	0.48	28	0.39
6	Traffic Pattern Zone	F = 4,000 feet	700	8	0.01	13	0.02	11	0.016
			935	**78**		**93**		**88**	

Table 3-15. Aviation Risk Land Use Recommendations

Zone	Zone Name	Dimension (Runway less than 4,000 feet)	Zone Size (acres)	WSDOT Aviation Recommendation[a]	Kittitas County Zoning KCC 17.58.050n[b]
1	Runway Protection Zone	S =1,200 feet	8	Prohibit all residential land uses	1. Land uses, which by their nature will be relatively unoccupied by people should be encouraged (mini-storage, small parking lots, etc.) 2. Schools, play fields, hospitals, nursing homes, and churches are prohibited.
2	Inner Safety Zone	T = 1,500 feet	16	Prohibit all residential land uses	1. Schools, play fields, hospitals, nursing homes, and churches are prohibited. 2. One dwelling unit per 3 acres.
3	Inner Turning Zone	R = 2,500 feet	113	Prohibit all residential land uses	1. Schools, play fields, hospitals, nursing homes, and churches are prohibited. 2. Flammable and combustible liquids and fuel storage per International Fire Code (IFC) standard 3. One dwelling unit per 3 acres.
4	Outer Safety Zone	U = 2,500 feet	26	Less than 4000 feet of runway: Prohibit all residential uses	1. Schools, play fields, hospitals, nursing homes, and churches are prohibited. 2. One dwelling unit per 3 acres.
5	Sideline Safety Zone	E = 500 feet	72	Less than 4000 feet of runway: 1 du/5 acres in rural or urban areas	1. All aviation related uses are permitted. 2. Schools, play fields, hospitals, nursing homes, and churches are prohibited.
6	Traffic Pattern Zone	F = 4,000 feet	700	Prohibit all residential land uses	1. All aviation related uses are permitted within airport property. 2. One dwelling unit per 3 acres.

[a] Airports and Compatible Land Use, Vol. 1, WSDOT, Feb. 1999.

[b] Kittitas County Code;du = dwelling unit

Table 3-16 Exposure Scores for Aircraft Accidents for the Alternatives

				Alternative 1		Alternative 2		Alternatives 3A and 3B	
Zone	Zone Name	Percent of Accidents	per Acre Factor	Number of Lots	Exposure	Number of Lots	Exposure	Number of Lots	Exposure
1	Runway Protection Zone	24	3.01	0	0	0	0	0	0
2	Inner Safety Zone	10	0.62	0	0	0	0	0	0
3	Inner Turning Zone	13	0.11	16	1.76	21	2.31	0	0
4	Outer Safety Zone	2	0.07	56	3.93	0	0	8	0.56
5	Sideline Safety Zone	28	0.39	0	0	0	0	0	0
6	Traffic Pattern Zone	11	0.016	282	45.12	422	67.52	92	14.72
		Exposure Score			**50.**		**69.83**		**15.28**

				Alternative 3C		Alternative 3D		Alternatives 4 and 5	
Zone	Zone Name	Percent of Accidents	per Acre Factor	Number of Lots	Exposure	Number of Lots	Exposure	Number of Lots	Exposure
1	Runway Protection Zone	24	3.01	0	0	0	0	0	0
2	Inner Safety Zone	10	0.62	0	0	0	0	0	0
3	Inner Turning Zone	13	0.11	0	0	0	0	0	0
4	Outer Safety Zone	2	0.07	9	0.99	6	0.42	0	0
5	Sideline Safety Zone	28	0.39	0	0	0	0	0	0
6	Traffic Pattern Zone	11	0.016	24	3.84	60	9.6	113	18.08
		Exposure Score			**4.83**		**10.02**		**18.08**

3 How will the proposal and alternatives affect the future use of the airport or result in hazards to aviation?

Neither the applicant's proposed alternative nor any of the other alternatives proposes construction in the runway protection or inner safety zones.

None of the alternatives are likely to create "artificial attractors" that would increase the number of birds in the vicinity that are potential hazards to aircraft.

The alternatives are not likely to increase general populations of wildlife such as deer or elk that might graze on the grass runways at the Easton State Airport. The additional population in the area and the direct connection between the airport site and the National Forest to the north may increase the likelihood that deer and elk would use the airport site as part of their range while avoiding developed areas such as the project site. If a sewer system were developed with an open basin used to discharge effluent into groundwater, this might attract additional birds to the vicinity of the approach patterns where they could increase risks to airplanes.

The alternatives for development of the site may introduce additional visual hazards, particularly lights and reflected glare, according to the number of units in the alternative and whether development is included in the higher elevation areas in the eastern portion of the site.

4 How will use of the airport result in potential hazards to persons living on the project site?

The extent to which use of the airport would result in potential hazards to persons living in the project site can be roughly approximated by the extent to which an alternative includes residential units located in ASZs and are therefore exposed to a higher risk from aviation accidents.

None of the alternatives proposes residential land development in Zone 1 - Runway Protection or Zone 2 - Inner Safety. However, some of the alternatives do propose development in Zone 3 - Inner Turning and Zone 4 - Outer Safety. The number of residences to be developed in either Zone 3 – Inner Turning or Zone 4 – Outer Safety is identified by alternative below. Table 3-16 indicates the relative difference in exposure to risk based on the percent of accidents in each ASZ together with the number of acres in each resulting in an exposure factor per acre. The alternatives with the greatest number of lots and the greater density have higher scores.

Alternative 1, the applicant's proposed PUD**,** would result in 60 lots located completely or partially in the outer safety zone and 25 lots located completely or partially in the inner turning zone as indicated in Figure 3-18. This alternative has the highest exposure to risk resulting from the number of lots in ASZ 4 and farther east along the alignment of the runway and the higher density overall. The potential for "high and hot" reducing lift and performance extends additional hazards to an additional 9 lots along the runway axis farther to the east.

Alternative 2, PUD on the western portion of the site, would result in no lots being located completely or partially in the outer safety zone. Up to 27 lots are located partially in the inner turning zone; however, building areas are provided entirely outside of the ASZs. This alternative has a substantially lower exposure to risk compared to Alternative 1 resulting from elimination of lots in the higher probability ASZ 4, even though the total number of lots in ASZ 6 increases, reflecting the lower exposure in that ASZ.

Alternative 3A and 3B, No Action Alternatives with up to 147 lots of 3 acres or greater in size would comply with current Kittitas County land use regulations. It would result in seven lots being located completely or partially within the outer safety zone and nine lots located completely or partially within the inner turning zone. Of these 15 lots (some lots are in both zones) ,seven would have building areas outside the safety zones, resulting in a net increase of eight lots with future residents exposed to the higher risk from aviation accidents represented by the safety zones. The location of fewer lots in ASZ 4 and the lower density results in a much lower exposure to risk compared to Alternative 1.

Alternative 3C with 3-acre lots has fewer overall lots at 33 in all ASZs with 9 in ASZ 4 and 24 in ASZ 6. The fewer lots results in a lower exposure to risk than the larger number of lots in Alternatives 3A and 3B and a substantially lower risk than Alternative 1.

Alternative 3D with 5-acre lots in all ASZs has a lower resulting risk because of the lower number of lots and potential building areas in ASZs 3 and 4 and the lower density as indicated in Table 3-16. This alternative has a substantial number of 3-acre lots to the east outside of the ASZs.

Alternatives 4 and 5, mitigation alternatives with about 147 and up to 113 lots, respectively, have a building area for all lots entirely outside of ASZs 3 and 4, which have the highest risk of accidents. The clustering of development in ASZ 5 substantially reduces the risk exposure as indicated in Table 3-16 as compared to Alternatives 1 and 2. The larger number of lots in ASZ 6 and smaller lots, however, result in a greater exposure than Alternatives 3A and 3B, which have a substantial component of their lots outside of the ASZs.

For all the alternatives, there still remains the potential for aviation accidents outside the safety zones.

5 What are the likely cumulative impacts with development of nearby land at existing zoning densities?

A total of 57 existing lots are located within the ASZs. Five lots in the Easton Acres neighborhood, six lots in the Silver Creek neighborhood, and nine other lots appear to lie within the Outer Safety Zone ASZ 4. Nine lots in the Silver Creek neighborhood, 13 lots in the Easton Village neighborhood, and 15 other lots are within the inner turning zone (ASZ 3). None of these parcels are large enough to be further subdivided under the 3-acre minimum lot size in existing zoning and therefore hazard exposure in ASZs 1-4 is not likely to increase. Almost the entire area considered for cumulative land use impacts in Section 3.1 is within ASZ 6, resulting in the potential for up to 130 additional lots in that area.

6 What are the likely cumulative impacts with development of nearby land at densities similar to the proposal?

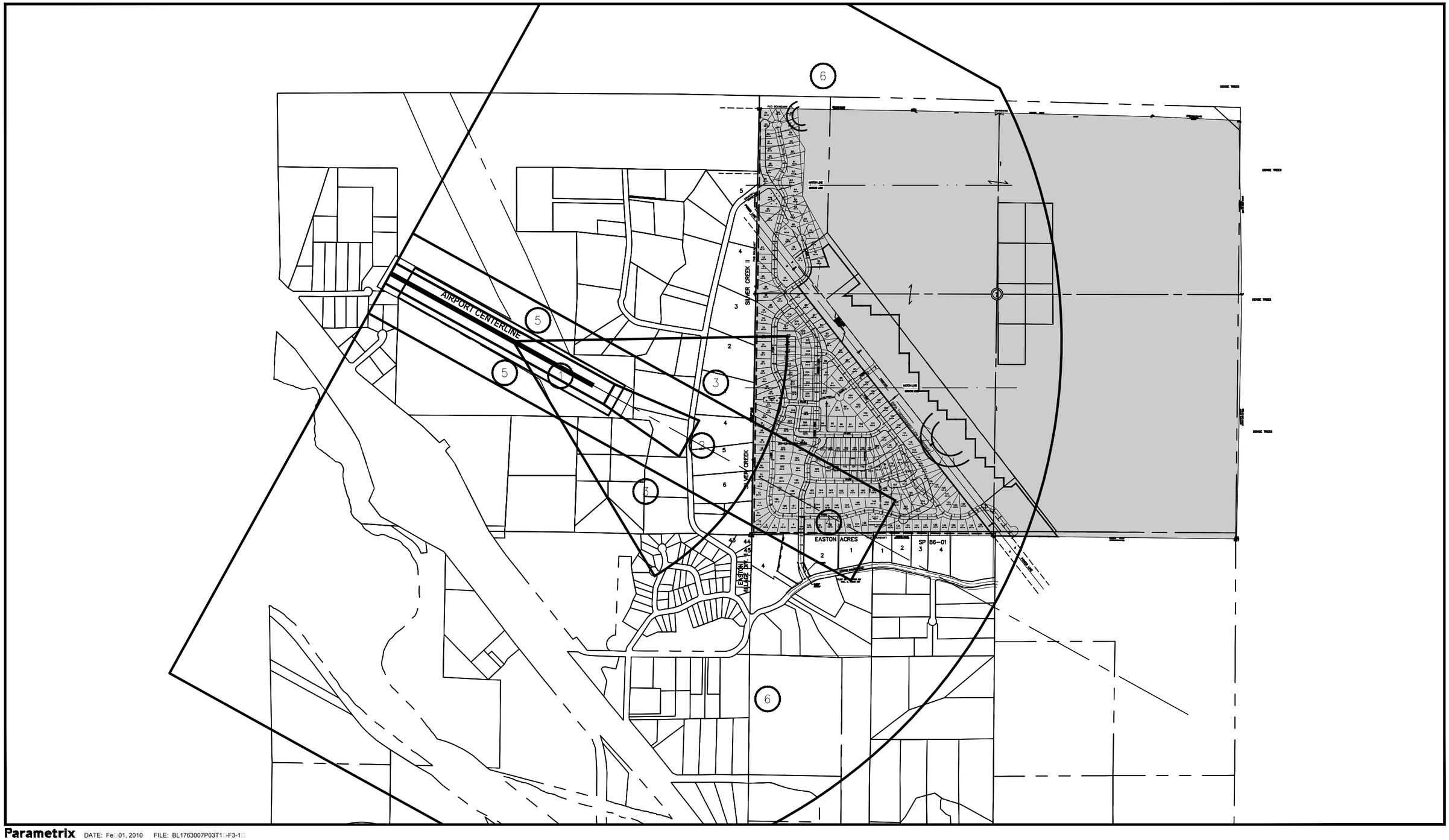
There are 16 lots outside Marian Meadows and within airport safety zone (ASZ) 4 at the southeast end of the runway that potentially could be subdivided into approximately 40 lots, or 24 additional lots. This would represent an increase in exposure of about 40 percent as compared to the 57 existing lots within the safety zones. Within ASZ 6, which covers almost the entire area considered for cumulative land use impacts in Section 3.1, development at the densities represented by maximum PUD bonus density would result in the potential for up to 460 additional lots in that area.

7 What measures could reduce or mitigate impacts of the proposal and alternatives on the airport, or impacts of the airport on the people living on the project site?

Avoidance of building in the ASZs incorporated in Alternatives 2, 4, and 5 have the greatest potential for reducing risk to persons living on the site of the Marian Meadows development. It also would be practical to allow reduced density development within the zones. If developed at one unit per 3 acres (as provided in KCC 17.58.050), the impacts would be similar to Alternative 3 and result in seven lots located completely or partially within the outer safety zone and nine lots located completely or partially within the inner turning zone. If developed at one unit per 5 acres (per WSDOT guidelines), about four to five lots would be located completely or partially within the outer safety zone with four to six lots located completely or partially within the inner turning zone.

An additional measure to reduce potential impacts to airport use would be to require that outdoor lights are shielded so that they do not aim above the horizon. This measure, however, would be difficult to enforce in a situation where most outdoor lights are likely to be purchased and installed by landowners who may not be aware of the desirability of shielding. In addition, this may not matter much for the Easton Airport except in evening hours because the airport is not lit and is not currently used at night.

Noise mitigation is addressed in Section 3.7.



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Kittitas County Marian Meadows Estates EIS

Figure 3-18
Aviation Safety Zones, Alternative 1

3.3 PARKS AND RECREATION

1 What park and recreation facilities and services are currently provided in the area?

Recreational use of the site by the public was established when it was owned by Plum Creek Timber Company, which has an "open lands" policy allowing the public to use its lands in Washington and Oregon for passive recreation uses such as hiking and hunting. Recreational trails for snowmobiles and off-road vehicles were established through the site on the BPA transmission line easement and on logging roads. Recreational use of the site has continued despite the sale of the land to the current owner and posting of no trespassing signs at some access points.

The project is located in a predominantly rural area, surrounded by a number of recreational opportunities. Many of the facilities and services offered in the area are unimproved or not solely dedicated as park land. However, there are several opportunities in the immediate vicinity provided by the National Forest Service and Washington State Parks.

Facilities in the immediate vicinity of the site include an informal trail along the BPA easement on the site that that was established under the "open lands" recreation practice of the previous owner, Plum Creek Timber Company. This informal trail is used extensively by ORVs and snowmobiles. The trail extends to the north into current Forest Service land and to the south across former DNR which was recently sold to a private party. It extends over both private and Forest Service lands to the south. There also is extensive ORV and snowmobile use of former logging roads on the steeper eastern portion of the site. ORV use on old logging roads may continue over Easton Ridge to the north into National Forest Land, including the Roslyn watershed.

There is a system of informal horse trails on private land, on the Easton State Airport site owned by Washington State and on adjacent federal Forest Service lands. The horse trails are used by local residents and by visitors of Silver Creek Ranch, a private facility that provides equestrian oriented camping and recreation (Silver Creek Ranch 2008). DNR land around the Easton Airport allows ORV use on roadways (WAC 332-52-400) and allows snowmobiles use when there is adequate snow cover to prevent resource damage (WAC 332-52-420).

Snowmobile use is allowed by KCC 10.32 on a number of county roads in the area, including Railroad Street (from Easton State Park eastern), Sparks Road, and West Sparks Road. Use of ORVs not licensed for use on public roadways is not legal on public roads.

The project site is bordered to the north and east by the Wenatchee National Forest (WNF) (Figure 3-1).

Hiking Trails: There are numerous hiking trails throughout the WNF. The portions of the WNF near the site include two formal trails that begin near the Silver Creek Dam. The Katchess Ridge Trail (No. 1315 extends to the north. The Easton Ridge Trail extends to the southeast and is tangent to the northwest

corner of the site and also intersects informal trails on old logging roads on WNF lands that connect to the site. These trails are closed to motorized use. (WNF 2009a)

Off-road vehicle (ORV) use on federal lands is governed by Executive Order 11644 of Feb. 8, 1972, which requires federal agencies to establish policies and regulations to ensure that the use of ORVs on public lands will be controlled and directed so as to protect the resources of those lands, to promote the safety of all users of those lands, and to minimize conflicts among the various uses of those lands. A concern expressed by the City of Roslyn is the use of ORVs on their watershed within the National Forest and potential impacts of erosion on water quality. The Forest Service is currently developing a Motorized Travel Management program. After adoption, off-road or off trail use of ORVs or snowmobiles would be prohibited as well as use on restricted trails. The current proposal would provide for ORV use in the vicinity only of Forest Service 4818 along the east side of Lake Kachess (WNF 2009b) which would prohibit use of the existing BPA transmission line informal trails on Forest Service lands.

Local Parks and Recreation Facilities

There are no County-owned parks or County-owned open spaces within the vicinity. However, there are numerous recreational opportunities accessible from the project site or within a short distance. For example, there are numerous designated fishing locations noted by Kittitas County within the area.

Easton School District provides a playground on the south side of I-90, in the Easton townsite, which is available to local residents for recreation when not used by the school. This facility, however, is separated from the site by several miles and I-90.

Kittitas County Park and Recreation District No. 1, also known as the Upper County Park District, was formed in 2005. The district currently includes the area of the Cle Elum-Roslyn School District, except the Teanaway and Swauk areas. It has proposed to expand into the Teanaway, Swauk, and Easton areas, which requires voter approval. The district has adopted a Park and Recreation Comprehensive Plan that was accepted by the state Recreation and Conservation office to qualify for state and federal grant programs. The district has applied for grant funding to continue detailed planning into a second phase that will make more detailed plans for potential trail systems within the district, including the Easton and Teanaway areas. The district has not yet developed facilities (Musso 2008).

Washington State Parks

There are two parks that are owned and maintained by Washington State Parks and Recreation Commission (WSPRC). In addition, WSPRC maintains a system of winter recreation facilities in the project area, including Sno-Park parking areas that provide access to trails for snowmobiling, skiing, snowshoeing, dog sledding, and a variety of winter sports.

Lake Easton State Park is located less than 1 mile southwest of the project site, surrounding Lake Easton, adjacent to the south side of I-90. The park provides year-round activities, ranging from weekly interpretive programs during the summer to cross-country skiing during the winter.

Summer activities include 2 miles of biking trails, 2 miles of hiking trails, an amphitheater, a basketball court, horseshoe pits, boat launches, docks, a playground, horse trails, and picnic sites. The Easton State Park also includes 95 standard campsites, 45 campsites with utilities, four restrooms with four showers, and a dump station. Winter activities include a designated Sno-Park located near the boat launch area, which features 40 parking spaces.

Iron Horse State Park is located along the south side of I-90, less than 1 mile from the project site at its closest. Iron Horse State Park is located on the abandoned Milwaukee Road railroad right-of-way. The park consists of a non-motorized trail connecting Iron Horse State Park to Lake Easton State Park. This trailhead is also accessible from Easton via Railroad Street. For the areas near the project site, the trail is used for hiking, biking, snowshoeing, and dog sledding as well as passive activities such as bird watching and enjoyment of nature. There are a number of additional trails that connect with Iron Horse State Park, including several cross-country skiing trails and routes to fishing locations.

Sno-Park Winter Recreation Sites

The WSPRC program provides cleared parking areas for winter recreationists in proximity to groomed and/or backcountry trails. The state maintains two kinds of Sno-Parks:

Snowmobile Sno-Parks are funded by snowmobile registration fees, a percentage of the state fuel tax, Sno-Park permit revenue, and volunteer hours. The program includes snow removal, trail grooming, sanitation facilities, mapping, trail signs, safety education, and enforcement.

Non-motorized Sports Sno-Parks are funded primarily by Sno-Park permit revenue, state fuel tax, and volunteer hours. Facilities accessed from Sno-Parks include cross-country skiing, dog sledding, snowshoeing, and snow play.

The closest Sno-Park is at Lake Easton State Park, about a mile from the site.

Snowmobiling Routes

A number of snowmobile routes are designated in the area by federal and state agencies as well as local clubs and merchants and include:

- Airport Route;
- Dam Road Route;
- East Kachess Route;
- Easton State Park Route;
- Easton/U-Fish Route;
- Reload Sno-Park Area; and
- Easton/Taneum-Tie Route, BPA transmission line easement corridor.

Cross-County Skiing

There is a cross-country ski trail in Lake Easton State Park accessible from the Sno-Park. In addition, there is a network of trails accessible from the Cabin Creek Sno-Park and the Kachess Lake Sno-Park. The ski trail extends 6.5 miles from the Cabin Creek South Sno-Park and ends at Lake Easton State Park. This ski trail is also known as the Lake Easton State Park Trail.

Dog Sledding

A number of dog sledding trails have been designated by the State Parks Winter Recreation Program and include:

- Kachess Lake to Gold Creek Dog Sledding Route;
- Road #4818 Dog Sledding Route;
- Trail of 1,000 Creeks Dog Sledding Route; and
- Lake Easton and I-90.

Public fishing and limited recreation use is provided at the WDFW-maintained Easton Ponds on a 10-acre site that was a borrow pit for construction materials for I-90. The ponds are stocked with trout for public fishing. In addition, the site has portable toilets, picnic facilities, and a children's play area (BPA 2000). The site is about 3 road-miles from the proposal site.

There are also opportunities for fishing at numerous locations where roads provide access to streams at bridges or where pull-offs have been developed on public lands or timber company lands.

National Forest Service

The project site is bordered to the north and east by the WNF (Figure 3-1). The WNF encompasses over 4 million acres of forest land, spanning from the Pasayten Wilderness along the Canadian border to south of Mount Rainier. The WNF provides several recreational opportunities near the site, including hiking trails, camping, guided snowshoe tours, cross-country skiing, and sno-parks (Figure 3-19).

Hiking Trails: There are numerous hiking trails throughout the WNF. The portions of the WNF near the site include two formal trails that begin near the Silver Creek Dam. Both trails ascend the Easton Ridge and run either north or east. Informal trails on old logging roads connect to the site (WNF 2009a).

Campgrounds: The following campgrounds near the project site are owned and maintained by the National Forest Service:

East Kachess Group Site – located 5 miles down Forest Route #4818. It includes a sheltered dining area, garbage services, picnic tables, a stove, and vault toilets on site. The maximum capacity allowed on the site is 100 people and 25 cars. This facility is about 7 road-miles from the proposal site.

Kachess Campground – includes one primary boat launch and one unimproved boat launch, flush and vault toilets, piped water, stoves, tables, beach area, a self-guided interpretive trail, 120 camping sites, and 30 picnic sites. This facility is about 8 road miles from the proposal site.

Private Parks: These parks are provided in several subdivisions in the area including two sites totaling about 3 acres within the Sun Island subdivision south of I-90 Exit 71.

Private Forest Lands: The forest lands owned by Plum Creek Timber Company are available to the public on an "open lands" policy that allows public access for recreation and hunting subject to local closures to allow timber harvest, and subject to closure during times of high fire hazard (Plum Creek 2008). Much of the Plum Creek land in the area has been traded to the U.S. Forest Service (including the land immediately north of the site) or sold to other parties (including the development site).

2 What mandates or standards for parks and recreational services have been established?

The Kittitas County Comprehensive Plan Policy GPO 5.12 provides standards for LOS policies. The standards for parks and recreation are:

- Regional Parks – 3.96 acres per 1,000 population
- Trails – 0.44 mile per 1,000 population

The Comprehensive Plan contains the following general policies regarding recreational use:

GPO 8.54 Existing County-owned land should be the preferred location for any new recreation facilities.

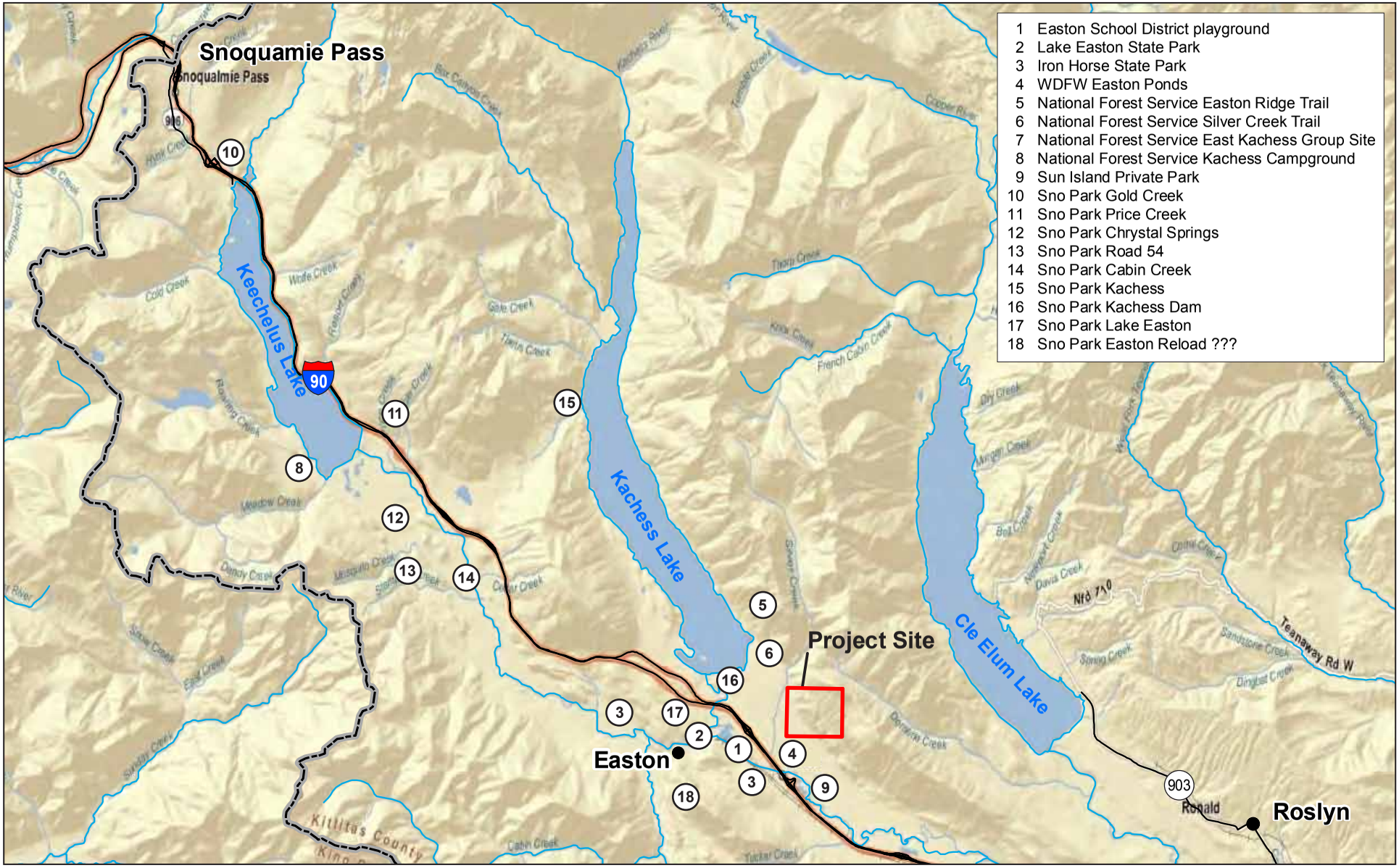
GPO 8.55 Kittitas County should direct the greater part of its recreation budget to maintaining access to exiting areas and continuing to emphasize public safety.

GPO 8.56 Private development of recreational opportunities should be encouraged through a predictable, uncomplicated permit process.

GPO 8.57 Open space is a benefit, which must be provided and financed by the public at large, not at the expense of individual landowners or property taxpayers.

GPO 8.58 Greater identification and education is needed for public recreational lands, particularly in regards to private property, access, parking and community notification.

GPO 8.59 The County should seek financial support from state and federal agencies to assist in providing for recreational area access and safety.



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Figure 3-19
Marian Meadows
Existing Park and Recreation Facilities

GPO 8.60 Rural home sites and private lands are not for public use and landowners' privacy and property must be respected.

GPO 8.61 All trespass laws should be strictly enforced.

In addition, the County adopted a Recreation Plan in 2004 that is adopted by reference into the Comprehensive Plan subject to the following limitations:

- The Recreation Plan is adopted as a reference document to be used by Kittitas County as an aid in land use discussions and by members of the public wishing to propose recreation projects, pursue grants for projects, or propose agreements with landholders.
- The Recreation Plan may be used as a reference in the development of potential subdivision or zoning codes amendments related to proposed use of density bonuses or mitigation of identified project impacts.
- The Recreation Plan may be used as a part of the Kittitas County Capital Facilities plan for purposes of utilizing REET proceeds for acquisition or expansion of recreational infrastructure.
- Non-compliance or inconsistency with the Recreation Plan shall not be considered non-compliance or an inconsistency with the Comprehensive Plan or the GMA; nor may any non-compliance or inconsistency with the Recreation Plan be a basis for appeal of any land use decision made by Kittitas County.
- The Recreation Plan shall not be used as evidence of use of property in an action for prescriptive easement or adverse possession.

3 How will the proposal and alternatives affect park and recreation facilities and services?

Using LOS policies established in Kittitas County Comprehensive Plan Policy GPO 5.15, and the range of population projections, the requirements for new parks and recreation facilities can be established as indicated in Table 3-17.

Kittitas County, like many rural counties, does not have park standards for the full range of park types typically found in towns and cities with a substantial population on small lots. The size of the Marian Meadows development is equivalent to the population of a small town, but it depends on the mix of workforce families, retired persons, and seasonal residents, Alternatives 1 and 2 are generally in the population range of Roslyn, Kittitas, or South Cle Elum. As a perspective on the typical park demands of such communities, the park guidelines of the NRPA are also included in Table 3-17 for mini parks, neighborhood parks, and community parks (NRPA 1996). The NRPA guidelines have a low and high range. The standards are included as a "benchmark" against which to measure possible impacts.

The types of park demands are likely to vary with the characteristics of the population.

Families with heads of households actively engaged in the workforce are likely to have children and are likely to meet their recreational demands both on their own property and in public facilities. Informal at-home activities vary with facilities available but typically include activities such as playing in the yard, shooting baskets in the driveway, gardening, and informal neighborhood gatherings. Mini parks are often used by families with younger children for a more varied play experience using more intricate play structures and also providing an opportunity for meeting and socializing with other children. Older children tend to be involved to varying degrees in sports and other activities, creating a demand for sports fields for baseball, softball, soccer, and a variety of other organized, semi-organized, and unorganized sports activities. Sports fields are typically elements of neighborhood and community parks in the NRPA guidelines. Active adults are often involved in a variety of activities including sports, which often include tournament play and more developed facilities with lighting and spectator facilities. Facilities such as golf courses are often private but are public facilities in some communities (Zabriski 2001). A 2002 survey of recent home buyers sponsored by the National Association of Home Builders and the National Association of Realtors identified parks and playgrounds as important to very important with 26 percent and 21 percent of respondents, respectively (NTTP 2002).

Trail facilities for a variety of activities are consistently among the most desired recreational facilities identified by surveys of residents in communities (Flink 2001). A 2002 survey of homebuyers identified trails as the second most important community amenity, second only to highway access and was identified by 36 percent of respondents (44 percent identified highways). Trails provide for a variety of activities including walking, jogging, or biking as well as winter activities such as skiing. Specialized trails provide opportunities for motorized sports including off-road vehicles and snowmobiling. It is likely that the full range of potential residents would use trails, with off-road trails likely to be important to seasonal residents as well as full-time residents.

The proposal includes no formal designation of trails to meet the county standards of between a third and a little more than half a mile of trails as indicated in Table 3-17. The proposal includes no formal connections to public land in the Easton State Airport or the National Forest to the northeast and north of the site. Informal use of the existing ORV and snowmobile trail along the BPA transmission line easement is likely to continue and would increase substantially from the additional residents of Marian Meadows property. Off-road vehicles and snowmobiles can use roadways; however, the use of unlicensed vehicles presents legal issues and presents the potential for conflict with motor vehicles at a substantial risk of life to off-road and snowmobile users.

Impacts on adjacent private land and National Forest Service lands to the north and south including the Roslyn watershed, depends upon whether provisions are made on-site and also depends on the extent to which provisions are made for ORV and snowmobile use in the Forest Service Motorized Travel Management program. If the BPA transmission line corridor or other facilities in the area were to be designated for ORV use, additional areas for this use would be available to residents of the development. If there are no additional trails designated in the area, it is likely that use would continue anyway. Such

uses may be subject to enforcement activities, but such enforcement is likely to be ineffective in controlling the demand for such use, absent adequate designated facilities in the area. The major effect of the project on adjacent public lands owned by the Forest Service and Washington DNR is likely to be continued long-term chronic enforcement problems. Because of the difficulty of enforcing restrictions on highly mobile uses such as ORV and snowmobiles, in the absence of a designated trail system continued use of informal trails would likely result in impacts of erosion and disturbance of wildlife.

Alternatives 1 and 2 recreation impacts would result from a community roughly equivalent to the size of the communities of Kittitas or Roslyn. Table 3-17 indicates the range of potential demand for a variety of types of park that may result from a community of that size. The proposed provision of 1.88 acres of park at three locations would not meet Kittitas County standards and would be much less than NRPA guidelines. Other potential areas for recreation are present on the site, including the BPA transmission line easement, which is currently used by off-road vehicles and snowmobiles. The proposal includes no formal designation of trails to meet the County standards of between a third and a little more than half a mile of trails. The proposal includes no formal connections to allow potential open space use of public land at the Easton State Airport or the National Forest to the northeast and north of the site. Informal access to that public land likely would continue along the BPA transmission line easement, although that easement passes through a private parcel. The current design makes inadequate provision for shared or public recreation facilities and makes no formal provision for informal off-road and snowmobile activities likely to be used by a substantial proportion of residents. Off-road vehicles and snowmobiles can use roadways; however, the use of unlicensed vehicles presents legal issues and the potential for conflict with motor vehicles at a substantial risk of life to off-road and snowmobile users.

Alternative 2 includes a considerable area of open space in debris flow hazard areas that have the potential to provide for informal and formal parks and recreation use, if developed for that purpose. This presumes that the risk to potential users would be acceptable.

For these alternatives, the lack of provision for recreation likely would result in either greater use of off-site facilities or a lack of opportunities for recreational activities to serve residents. The population likely served the least would be the demand for youth sports. Off-site facilities most affected would likely be State of Washington lands that provide a buffer area north of the Easton State Airport and U.S. Forest Service land to the north, as well as playfields at the Easton School.

Alternatives 3A, 3B, 3C, 3D, 4, and 5 would result with potential populations between 250 and 635, depending on the tenure scenario. There would be no formal provisions for park and recreation facilities because they are intended to be conceptual to illustrate development options. Alternatives 3A, 3B, 3C and 3D with larger lots may be considered to provide more opportunities for private recreation on the lots. All the alternatives with fewer residences would place less demand on off-site facilities.

Table 3-17 Park and Trail Demand per Standards and Guidelines

Alternative and Tenure Scenario	Population	Standards and Guidelines: Kittitas County: Regional: Trails (miles)	Kittitas County: Regional: Parks (acres)	NRPA Guidelines: Mini Park: Low	Mini Park: High	Neighboring Park: Low	Neighboring Park: High	Community Park: Low	Community Park: High	NPRA Total: Low	NPRA Total: High
Standard per 1,000 Population >		**0.44**	**3.6**	**0.25**	**0.5**	**1**	**2**	**5**	**8**	**9.9**	**14.1**
Alternatives 1 and 2 Applicant's PUDs 443 units **Tenure Scenario 1** 85% Family 15% Retired	1,363	0.6	4.9	0.3	0.7	1.4	2.7	6.8	10.9	**8.5**	**14.3**
Alternatives 1 and 2 Applicant's PUDs 443 units **Tenure Scenario 2** 60% Family 15% Retired 25% Seasonal	1,089	0.5	3.9	0.3	0.5	1.1	2.2	5.4	8.7	**6.8**	**11.4**
Alternatives 1 and 2 Applicant's PUDs 443 units **Tenure Scenario 3** 35% Family 30% Retired 35% Seasonal	903	0.4	3.3	0.2	0.5	0.9	1.8	4.5	7.2	**5.6**	**9.5**
Alternatives 1 and 2 Applicant's PUDs 443 units **Tenure Scenario 4** 25% Family 25% Retired 50% Seasonal	764	0.3	2.8	0.2	0.4	0.8	1.5	3.8	6.1	**4.8**	**8.0**
Alternatives 3A, 3B and 4 – 147 units **Tenure Scenario 1** 85% Family 15% Retired	391	0.2	1.4	0.1	0.2	0.4	0.8	2.0	3.1	**2.4**	**4.1**
Alternatives 3A, 3B and 4 – 147 units **Tenure Scenario 2** 60% Family 15% Retired 25% Seasonal	361	0.2	1.3	0.1	0.2	0.4	0.7	1.8	2.9	**2.3**	**3.8**
Alternatives 3A, 3B and 4 – 147 units **Tenure Scenario 3** 35% Family 30% Retired 35% Seasonal	300	0.1	1.1	0.1	0.2	0.3	0.6	1.5	2.4	**1.9**	**3.2**
Alternatives 3D and 5 – 113 units **Tenure Scenario 1**	301	0.1	1.1	0.1	0.2	0.3	0.6	1.5	2.4	**1.9**	**3.2**

Table 3-17 Park and Trail Demand per Standards and Guidelines (continued)

Alternative and Tenure Scenario	Population	Standards and Guidelines: Kittitas County Regional Trails (miles)	Kittitas County Regional Parks (acres)	NRPA Mini Park Low	NRPA Mini Park High	NRPA Neighboring Park Low	NRPA Neighboring Park High	NRPA Community Park Low	NRPA Community Park High	NRPA Total Low	NRPA Total High
85% Family 15% Retired											
Alternatives 3D and 5 – 113 units Tenure Scenario 2 60% Family 15% Retired 25% Seasonal	284	0.1	1.0	0.1	0.1	0.3	0.6	1.4	2.3	**1.8**	**3.0**
Alternatives 3A, 3B and 4 – 147 units Tenure Scenario 4 25% Family 25% Retired 50% Seasonal	254	0.1	0.9	0.1	0.1	0.3	0.5	1.3	2.0	**1.6**	**2.7**
Alternatives 3D and 5 – 113 units Tenure Scenario 3 35% Family 30% Retired 35% Seasonal	230	0.1	0.8	0.1	0.1	0.2	0.5	1.2	1.8	**1.4**	**2.4**
Alternatives 3D and 5 – 113 units Tenure Scenario 4 25% Family 25% Retired 50% Seasonal	195	0.1	0.7	0.0	0.1	0.2	0.4	1.0	1.6	**1.2**	**2.0**
Alternatives 3C – 33 units Tenure Scenario 1 85% Family 15% Retired	88	0.0	0.3	0.0	0.0	0.1	0.2	0.4	0.7	**0.6**	**0.9**
Alternatives 3C – 33 units Tenure Scenario 2 60% Family 15% Retired 25% Seasonal	81	0.0	0.3	0.0	0.0	0.1	0.2	0.4	0.6	**0.5**	**0.9**
Alternatives 3C – 33 units Tenure Scenario 3 35% Family 30% Retired 35% Seasonal	38	0.0	0.1	0.0	0.0	0.0	0.1	0.2	0.3	**0.2**	**0.4**
Alternatives 3C – 33 units Tenure Scenario 4 25% Family 25% Retired 50% Seasonal	27	0.0	0.1	0.0	0.0	0.0	0.1	0.1	0.2	**0.2**	**0.3**

Kittitas County standards are found in Comprehensive Plan Policy 5.15 http://www.co.kittitas.wa.us/cds/compplan/2009/2009%20Kittitas%20County%20Comprehensive%20Plan.pdf

NRPA Guidelines are found in Parks, Recreation and Open Space and Greenway Guidelines 1996

4 What are the likely cumulative impacts on park and recreational facilities with development of nearby land at existing zoning densities?

The cumulative demand for park and recreation facilities based on Kittitas County and NRPA guidelines provide a benchmark against which to measure possible impacts.

Alternatives 1 and 2 with 443 units and FTE cumulative population that would vary between 2,060 with all full-time residents and 1,300 with primarily seasonal residents. For comparative purposes, this would range from about 20 percent larger than the 2009 population of Cle Elum to about 70 percent of the size of Cle Elum, or alternatively slightly larger than either Kittitas or Roslyn. At the highest population projections, this would warrant between 13 and 21 acres of parks and between 8 and 14 acres at the lower FTE population as indicated in Table 3-17.

Under existing County LOS standards, it is unlikely that adequate provision for parks and recreational facilities would take place in conjunction with new development. The lack of provision for recreation likely would result in either greater use of off-site facilities, which are either not in existence or well below the capacity to serve such a population, or would result in a lack of opportunities for recreational activities to serve residents. The population likely served the least would be the demand for youth sports. Off-site facilities most affected would likely be informal use of State of Washington public land and U.S. Forest Service land to the northeast and north, which likely would result in a level of use far beyond that contemplated in forest management plans. Active recreation facilities affected would be existing playfields at the Easton School, which are not adequate to serve the potential demand for youth sports and would likely deteriorate as a result.

Under Alternatives 3A, 3B, and 4, with 147 units, the FTE cumulative population would vary between 1,400 with all full-time residents and 825 with primarily seasonal residents. For comparative purposes, this would range from about 75 percent of the size of Cle Elum (1,870) to about 45 percent of the size of Cle Elum. At the maximum population scenario between 9 and 15 acres of parks would be warranted. At the lowest end of the FTE population between 5 and 9 acres of parks would be warranted.

As with cumulative impacts of Alternatives 1 and 2, the lack of provision for recreation likely would result in greater use of off-site facilities at a slightly lower level. Such facilities are well below the capacity to serve such a population or would result in a lack of opportunities for recreational activities to serve residents. The population likely served the least would be the demand for youth sports. Off-site facilities most affected would likely be informal use of State of Washington public land and U.S. Forest Service land to the northeast and north, as well as existing playfields at the Easton School.

Under Alternatives 3A, 3B, and 4 with 113 units, the FTE cumulative population would vary between 1,180 with all full-time residents and 764 with primarily seasonal residents. As with cumulative impacts of other alternatives with a population increase of this magnitude, the lack of provision for recreation likely would result in greater use of off-site facilities at a slightly lower level. Such facilities are well below the capacity to serve such a population or would result in a lack of opportunities for recreational

activities to serve residents. The population likely served the least would be the demand for youth sports. Off-site facilities most affected would likely be informal use of State of Washington public land and U.S. Forest Service land to the northeast and north, as well as existing playfields at the Easton School.

Under Alternative 3D with 33 units, the FTE cumulative population would vary between 970 with all full-time residents and 625 with primarily seasonal residents, primarily from development of existing lots and subdivision outside of the proposal. As with cumulative impacts of other alternatives, the lack of provision for recreation likely would result in greater use of off-site facilities at a slightly lower level. Such facilities are well below the capacity to serve such a population or would result in a lack of opportunities for recreational activities to serve residents. The population likely served the least would be the demand for youth sports. Off-site facilities most affected would likely be informal use of State of Washington public land and U.S. Forest Service land to the northeast and north, as well as existing playfields at the Easton School.

5 What are the likely cumulative impacts on parks and recreational facilities with development of nearby land at densities similar to the proposal?

The cumulative demand for park and recreation facilities under both Kittitas County and NRPA guidelines are included in Table 3-17. The NRPA guidelines are included as a benchmark against which to measure possible impacts.

Alternatives 1 and 2 cumulative FTE populations would vary between about 2,635 with all full-time residents and 1,700 with primarily seasonal residents. For comparative purposes, this would represent a population half as large as the 2009 population of Cle Elum (1,870) to about 90 percent of the size of Cle Elum. At the highest population projections, this would warrant between 16 and 28 acres of parks and between 10 and 18 acres at the lower FTE population.

Under existing County LOS standards, it is unlikely that adequate provision for parks and recreational facilities would take place in conjunction with new development. The lack of provision for recreation likely would result in a lack of opportunities for recreational activities to serve residents because off-site facilities are either not in existence or well below the capacity to serve such a population. The population likely served the least would be the demand for youth sports if a substantial proportion of the population were to be families. Off-site facilities most affected would likely be informal use of State of Washington public land and U.S. Forest Service land to the northeast and north, which likely would result in a level of use far beyond that contemplated in management plans for those facilities. Active recreation facilities affected would be existing playfields at the Easton School, which are not adequate to serve the potential demand for youth sports and would likely deteriorate as a result or require a substantial investment to respond to the public need.

6 What measures would mitigate effects on park and recreational demand and facilities?

The most straightforward means of mitigating demand for park and recreation facilities is to provide such facilities on the site or provide a proportional contribution to the cost of such facilities. Table 3-17 indicates both the Kittitas County and NRPA Guidelines that may be used to determine appropriate facilities.

Provision of park and recreation facilities, including trails, would require not only provision of land but also development of facilities.

Providing facilities for ORV and snowmobile use would differ according to whether Forest Service and DNR plans provided for use of existing informal trails, such as along the BPA transmission line easement. If provisions for this corridor are not provided on Forest Service and other lands, an off-road system could be provided on-site. If such system utilized only the BPA corridor, about a third of a mile of trail would be provided. This could loop within the corridor. An alternative design would provide a loop through the lower portion of the site and could total up to about a mile of trail. In either case, users likely would not limit themselves to this corridor and would likely range widely to both the north and sough along the corridor. This wide ranging use would be especially prevalent for snowmobiles which would not be restricted by fencing or signage when snow is deep.

If provision is made in Forest Service plans for off-site use of the BPA transmission line, the likely use patterns would be similar to use of the existing informal trail, with the potential for more effective containment of impacts on trails and avoidance of some of the adverse impacts of uncontrolled use.

Maintenance of such facilities on the site could be provided by a homeowner association. Maintenance of off-site or regional facilities could be provided by the County or a locally established and funded parks district. Kittitas County Park and Recreation District No. 1, also known as the Upper County Park District, has expanded into the Easton area and could provide such service through voter-approved tax assessments.

3.4 PUBLIC SERVICES

3.4.1 Public Services - Schools

1 What school facilities and services are currently provided in the area?

The Easton School District boundaries are shown on Figure 3-20 and generally extend from south of Easton to Snoqualmie Pass.

The district provides kindergarten to 12th grade education from a central campus on Railroad Way in Easton. Enrollment has been stable for the past 5 years and has varied from 105 to 120 as indicated in Table 3-18.

Facilities include:

- Four elementary classrooms (Grades K-6);
- Five secondary classrooms (Grades 7-12); and
- Four specialized classrooms (science, art, technology, and special education/remediation).

Elementary classrooms are combined grades with one instructor teaching two groups at different grade levels.

The school has a small playground for elementary students within the main campus between Railroad Way and First Avenue. There is a larger playground between First Avenue and I-90. Because access to this playground requires crossing a public street, it is used by older students or by younger students when escorted across the street.

The school budget has ranged from $1.9 million to $2.4 million from 2000 to 2008 as indicated in Table 3-19. The state share of the budget has ranged from 59 percent to 65 percent with the local share from a local tax assessment ranging from 29 percent to 35 percent. Federal and other grants generally have provided between 5 percent and 10 percent of the budget.

The current facility was constructed in 2002 and financed by a 20 percent state share with 80 percent from a local bond issue.

Most students are transported to school by bus. The district runs two bus routes. A smaller bus serves Snoqualmie Pass and a larger bus serves the southern portion of the district near Easton. This bus serves students on both sides of I-90. A third bus serves as a backup and for special events and travel for sports teams (White 2008).

The number of students in the school has been fairly constant, varying from 102 to 123 between 2000 and 2008 as indicated in Table 3-18. An estimated 15 to 20 students within the district attend the Cle Elum or North Bend school district each year (White 2008). The number of certified staff (teachers) and other staff has also remained fairly constant over that period, ranging from 20 to 22

2 What mandates or standards for school service have been established?

The Washington State Constitution provides for free public education for all students in the state. This constitutional mandate is met through a number of agencies and policies:

- The State Legislature provides:
  - Laws governing schools and school districts; and
  - Budget for “basic instruction” for all public schools in the state.
- The Washington State Board of Education develops policies for state education laws created by the Legislature including:
  - Student learning goals;

Table 3-18 Easton School District Enrollment and Staffing

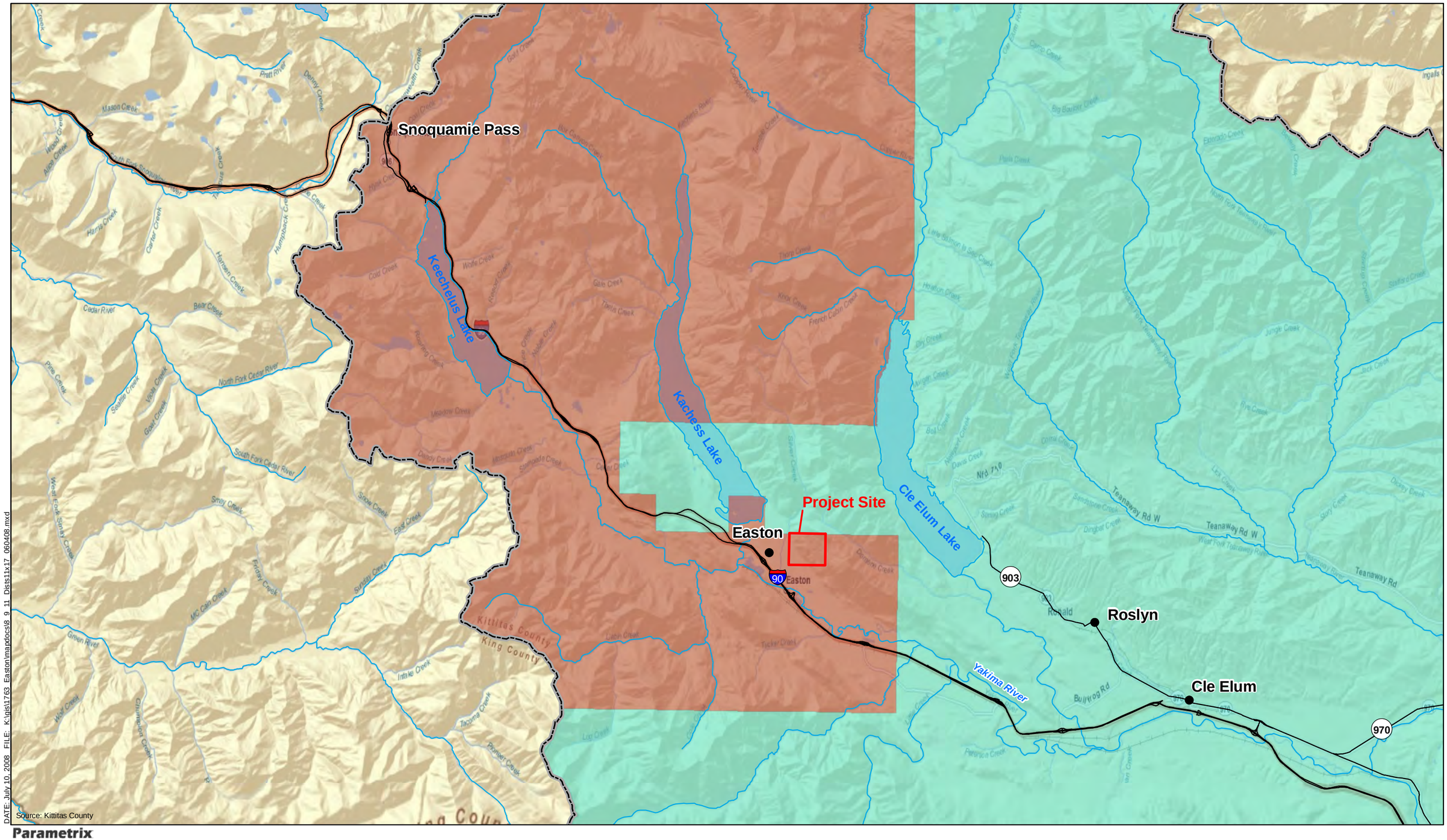
Average FTE Enrollment	Based on Report 1251								
	2008	**2007**	**2006**	**2005**	**2004**	**2003**	**2002**	**2001**	**2000**
Kindergarten	4.13	4.67	3.89	4.94	3.22	4.44	4.33	5.44	5.33
First	10.63	12.11	9.44	7.56	7.33	6.67	11.44	10.00	7.11
Second	13.63	5.56	6.11	9.22	6.78	12.33	8.00	9.22	9.56
Third	8.63	5.44	5.67	7.89	12.00	10.11	9.33	7.44	8.22
Fourth	3.75	6.56	8.11	10.11	10.33	8.44	6.89	8.44	5.11
Fifth	5.00	5.33	12.22	8.44	7.33	5.00	7.00	6.00	9.22
Sixth	8.13	11.22	10.11	7.33	6.56	8.22	9.89	11.56	7.00
Seventh	10.38	8.00	7.58	8.71	9.00	9.22	13.67	7.33	10.33
Eighth	8.00	8.80	8.00	8.67	12.11	13.00	8.67	11.00	9.00
Ninth	8.88	10.99	8.44	13.78	14.78	8.78	10.22	12.11	10.67
Tenth	9.63	6.22	10.33	12.56	10.44	10.00	12.44	10.33	13.89
Eleventh	5.00	8.67	9.44	10.11	10.11	13.56	8.78	12.33	12.56
Twelfth	8.77	8.00	10.44	8.76	12.80	11.44	9.56	8.67	7.56
Grand Total	**104.56**	**101.57**	**109.78**	**118.08**	**122.79**	**121.21**	**120.22**	**119.87**	**115.56**
	Based on Report 1801								
Staff FTE	**2008**	**2007**	**2006**	**2005**	**2004**	**2003**	**2002**	**2001**	**2000**
Classified	7.511	7.751	7.833	7.230	6.321	7.005	8.303	7.209	6.915
Certified	13.000	13.000	14.096	14.096	13.666	14.099	14.001	13.869	13.447

- Student and system accountability; and
- Basic education assistance.

- The State Office of the Superintendent of Public Instruction (OSPI) is an elected office responsible for all kindergarten through 12th grade education in the state. The OSPI provides:
  - Standards for programs in all public schools;
  - Certification of teachers; and
  - Resources for educational programs.
- Local school boards are established by the state and delegated responsibility for day-to-day
- operations in accordance with state laws and guidelines. School board members are elected locally. School boards are responsible for:
  - Adopting and administering the local budget.
  - Hiring and overseeing the administrator, and other aspects of operations.
  - Proposing local taxes for operation and capital facilities that are voted on by citizens.

Table 3-19 Easton School District Budget

	Year								
Revenue	**2008**	**2007**	**2006**	**2005**	**2004**	**2003**	**2002**	**2001**	**2000**
Local Tax	580,046	600,214	537,264	525,892	515,602	540,985	581,307	437,705	206,432
Local Nontax	95,200	92,759	74,185	228,882	51,986	72,753	61,515	259,524	109,598
State General	1,273,451	1,208,662	1,133,440	1,110,481	1,098,582	1,121,446	1,084,803	1,021,221	972,728
State Special	198,052	206,705	192,654	178,583	144,121	166,897	582,098	147,113	122,480
Federal General	9,500	9,210	10,276	11,168	10,977	11,087	10,834	8,143	7,775
Federal Special	80,823	45,390	92,669	61,900	73,318	74,421	79,077	93,098	108,429
Other	27,500	390	103,780	47,860	61,640	255,986	17,659	0	3,819,712
Total (Sum of Above)	**2,264,572**	**2,163,331**	**2,144,268**	**2,164,765**	**1,956,224**	**2,243,574**	**2,417,293**	**1,966,803**	**5,347,154**
Expenditures	**2008**	**2007**	**2006**	**2005**	**2004**	**2003**	**2002**	**2001**	**2000**
Instruction	1,061,663	953,767	972,686	910,286	903,864	887,297	893,154	846,207	809,043
Instruction Support	138,104	143,561	117,531	106,521	71,670	78,695	98,289	100,094	81,602
Building Administration	123,555	39,689	83,214	99,341	115,259	100,638	32,646	96,137	95,339
Central Administration	198,108	237,062	159,589	180,499	190,355	218,512	193,571	186,017	226,189
Other Support	372,909	337,833	331,057	313,582	316,296	304,033	295,213	208,563	205,405
Buildings	200,126	207,962	207,275	187,097	196,090	166,697	162,616	109,107	103,415
Building Bonds	324,274	323,521	421,289	353,385	372,515	314,527	218,875	209,114	15,506
Pupil Transport	82,045	60,754	49,072	59,858	52,683	71,196	73,558	45,993	44,368
Transport Vehicles	0	0	0	13,723	14,686	52,433	16,107	8,288	23,794
Other	90,738	69,117	74,710	66,628	67,523	66,140	59,040	53,464	57,622
Total (Only Includes Above)	**2,218,613**	**2,035,433**	**2,085,365**	**1,977,337**	**1,984,644**	**1,956,133**	**1,747,855**	**1,654,421**	**1,456,879**



Parametrix

N

0 2.5

Scale in Miles

School Districts

- Cle Elum-Roslyn School District
- Easton School District

Figure 3-20
Marian Meadows
School District Boundaries

- Citizens:
  - Elect legislators that provide laws and the state school budget.
  - Elect the SPI.
  - Elect local school board members.
  - Vote on local tax levies.

A number of standards adopted by the state affect local school operation:

- Schools must meet common learning standards for grades kindergarten to 10 measured by the Washington Measurements of Student Progress (MSP) and the High School Proficiency Exam (HSPE)) (RCW 28A.655).
- The class size goal is 18 students for grades kindergarten to 4 and is to be reduced as feasible for other grades given budget constraints (RCW 28A.505, Initiative 728).
- Transportation must be provided for students living more than 2 miles from schools, or who are separated from the school by unsafe roadways or other barriers, or who have special needs (RCW 28A.160).
- Local jurisdictions are required to provide safe public walkways for school children from residences to schools or to bus stops in new subdivisions (RCW 58.17.110).
- School districts may request the local jurisdiction to adopt school impact fees to pay up to 50 percent of school facility costs due to growth (RCW 82.02.050).
- Local jurisdictions are required to identify lands useful for public purposes, including schools (RCW 36.70A.150), and provide an inventory of facilities, forecast future needs, and provide for a 6-year plan that will finance such facilities (RCW 36.70A.070(3).

Kittitas County has not developed LOS standards for public schools in policy GPO 5.12, which adopts standards for LOS for public facilities.

3 How will the proposal and alternatives affect school facilities and services?

Impacts on schools are related to the number of students, which are determined by the number of units and the family structure of the households occupying the units. The analysis of impacts addresses the three basic parameters of delivery of school service:

- Instruction,
- Facilities, and
- Transportation.

The number of students generated by new dwellings depends primarily on the demographic characteristics of the future residents. Young families typically generate the highest rate or new students. Retirees typically generate the smallest number of students. Existing dwellings generate students over the

life-cycle of operation. Typically, a residence occupied by a family composed of younger parents would provide students that start school in kindergarten then move through the 13 grades in the system. If a family stays in a dwelling after children grow beyond school age they do not generate additional students. Most homes are cycled through resale and may again generate students that pass through the school grades.

The OSPI utilizes a method for projecting school enrollment known as the K Linear Cohort Survival method. The cohort survival or progression method starts with current enrollments, by grade, and then advances students one grade for each year of the forecast. If a district expects substantial housing development, and has not recently seen any development, enrollments will be underestimated by the cohort survival methodology (OSPI 2008c).

For districts experiencing substantial growth, student generation rates are derived from census information or generated by surveys. In addition to the children immediately generated when a new home is built, demand is generated for capacity at higher grades as a student moves through the grades. Enrollment from new development typically peaks 5 to 10 years after occupancy (Burk 2008). For this analysis, student generation rates were developed based on census information and surveys of other school districts in Washington State. Because new housing typically attracts younger families with younger children, the student generation rates are higher for elementary than secondary grades. The generation rates used are designed to match the 2000 census information of 0.71 children per household for the Easton area and are 0.35 for elementary (grades kindergarten through 5), 0.18 for middle school (grades 6 through 8), and 0.18 for high school (grades 9 through 12).

Projected student population is provided in Table 3-20 and range from about 260 with Alternative 1 with all full-time residents to about 30 with Alternative 3 and 50 percent seasonal residents.

Impacts on Instruction

State basic education financing of schools is established by the state legislature through annual appropriation and includes funding for what the state defines as "basic education."

The key to state funding, however, is an apportionment system that is based on a formula for costs that may not actually pay the true cost to the district. In effect, the amount of money allocated by the Legislature is divided up between school districts. They either have to adjust their program to match available state funding, or find additional funding.

Items that have been identified as chronic problems in the formula include:

- The formula does not typically fund the entire cost of instruction. On average, the state now provides about 70 to 80 percent of needed funds because of the number of items excluded that are seen as necessary by local communities, including the cost of updating instructional supplies, school

books, computer supplies, or power. In Easton, local tax assessments account for about 28 percent of the school budget.

- The full cost of facilities, including utilities (heating fuel, electricity, water) and facility maintenance are not fully funded.
- Transportation costs are generally funded at about 70 percent of cost (although the 2009 Legislature changed the formula, which would increase the state share somewhat).

Easton School currently is eligible for a larger allocation of funding from the state as compared to the standard per student allocation because it is classified as a "small school."

If additional enrollment increases beyond the threshold under which the Easton School District is currently classified for "small school funding," the contribution from the state becomes substantially lower on a per-pupil bases. The loss from the additional funding from the "small school" category would be greater than the additional incremental increase in revenues from the state based on the increase in student population.

In the future, if current funding formulas continue, the local community would need to provide between 20 and 30 percent of the cost of instruction and transportation. The actual cost to homeowners on an assessment per $1,000 value of property is affected by the overall value of improvements in the district as compared to the number of students. A large percentage of seasonal residents who do not send children to local schools increase the tax base with the value of their homes without increasing school costs; therefore, they lower the average amount paid in local tax levies for schools.

An important consideration in rapidly developing communities is the willingness of existing residents to pass operating levies (and construction bond levies) to support additional growth. If local citizens are not willing to pass such levies, the quality of school service would decline from the current level to the level that would be supported by state funding alone.

Impacts on Facilities

The projected student population in Table 3-20 range from about 260 with Alternative 1 with 443 units with all full-time residents to about 90 with Alternative 3A, 3B and 4 with 147 units with the same tenure scenario with up to 50 percent seasonal residents. This population would result in a need to increase the size of facilities by a factor of up to two and a half of the existing school.

At the lower end of the tenure range with up to 50 percent of residents seasonal, Alternative 1 would add an additional 80 students and Alternative 3A, 3B and 4 would add about 30. This student population likely could be accommodated for the first few years by capacity in existing classrooms. After a period of several years, at least two and possibly three new classrooms would need to be added to the existing school for Alternative 1, depending on the grade breakdown of new students. If new students are primarily in elementary grades, as expected, a larger number of classrooms would be needed. Expansion of the existing school would necessitate acquisition of adjacent parcels. For the 30 new students from Alternatives 3A, 3B, and 4 under this scenario, at least one new classroom would be needed.

To accommodate additional students under the scenarios with a substantial full-time family population, either a substantial expansion of the existing school would be needed, including acquisition of a substantial amount of land, or one or more new school sites and new school buildings would be required. To serve the projected maximum demand of 260 students, from 8 to 12 new classrooms would be needed, as well as specialty classrooms and support facilities including assembly, gymnasia, and food service. This would be equivalent to doubling the size of the existing school. The local school district has considerable discretion in deciding the size and location of new schools. The site of a new school or expanded school that meets state guidelines would vary according to the grades served and the size of the student population. To serve elementary school students, a site of 5 to 15 acres would be recommended with 10 to 25 acres for a middle school and 20 to 40 acres for a high school. The proposed development alone would not justify a new middle or high school by the student populations it would produce.

The advantages of a single large school to serve the area include having flexibility in filling classrooms as the student population for given grades fluctuates, and benefiting from decreased administrative and operating costs. A single school also contributes to community identity. Development of an additional school to serve the demands of this development (as well as cumulative development) would have some advantages in possibly reducing transportation costs. Such a strategy would decrease flexibility somewhat and increase administrative and operating costs. Depending on how students were assigned, it also could contribute to perception of a different community identity for different areas of the district.

State financing of new schools can range from nothing to a maximum of about 70 percent. The existing school in Easton was expanded with no contribution from state funds because it did not meet the state-established need criteria based on the assessed value of the district (White 2008).

State match funds in Washington come from the Common School Construction Fund. Bonds are sold on behalf of the fund then retired from revenues accruing predominantly from the sale of renewable resources from state school trust lands set aside by the Enabling Act of 1889 (primarily timber sales but also other leasing income from farmland or sources as wind and solar energy developed on trust lands). If these sources are insufficient to meet needs, the Legislature can appropriate funds or the State Board of Education can establish a moratorium on certain projects.

School districts may qualify for state match funds for specific capital projects. To qualify, a project must first meet a state-established criteria of need. This is determined by a formula that specifies the amount of square footage the state will help finance to provide permanent structures for the unhoused enrollment projected for the district. If a project qualifies, it can become part of a state prioritization system. This system prioritizes allocation of available funding resources to school districts statewide based on seven prioritization categories. Funds are then disbursed to the districts based on a formula that calculates district-assessed valuation per pupil relative to the whole state-assessed valuation per pupil to establish the percent of the total project cost to be paid by the state. The state contribution can range from nothing to about 70 percent of the project's cost (OSPI 2008b).

Table 3-20. Easton School District Student Population by Alternative and Tenure

Alternative and Tenure Scenario	Units	Annual Student Generation (each year over 10-year buildout)			Maximum Student Generation			
		Elem.	Middle	High	Elem.	Middle	High	Total
Alternatives 1 and 2 Applicant's PUDs 443 units Tenure Scenario 1 85% Family 15% Retired	443	12	6	6	121	61	81	263
Alternatives 1 and 2 Applicant's PUDs 443 units Tenure Scenario 2 60% Family 15% Retired 25% Seasonal	443	9	4	4	86	43	57	186
Alternatives 1 and 2 Applicant's PUDs 443 units Tenure Scenario 3 35% Family 30% Retired 35% Seasonal	443	5	2	3	52	26	34	112
Alternatives 3 A and 3B– 3-Acre Lots Alternative 4 Mitigated entire site 147 units Tenure Scenario 1 85% Family 15% Retired	147	4	2	2	40	20	27	87
Alternatives 1 and 2 Developers PUDs 443 units Tenure Scenario 4 25% Family 25% Retired 50% Seasonal	443	4	2	2	37	19	25	81
Alternatives 3A and 3B – 3-Acre Lots Alternative 4 Mitigated entire site 147 units Tenure Scenario 2 60% Family 15% Retired 25% Seasonal	147	3	1	1	29	14	19	62
Alternatives 3A and 3B – 3-Acre Lots Alternative 4 Mitigated entire site 147 units Tenure Scenario 3 35% Family 30% Retired 35% Seasonal	147	2	1	1	17	9	11	37
Alternative 3 – 3-Acre Lots Alternative 4 Mitigated entire site Tenure Scenario 4 25% Family 25% Retired 50% Seasonal	147	1	1	1	12	6	8	27
Alternatives 3D and 5 – 113 units Tenure Scenario 1 85% Family 15% Retired	113	3	1	2	31	15	19	67
Alternatives 3D and 5 – 113 units Tenure Scenario 2 60% Family 15% Retired 25% Seasonal	113	2	1	1	22	11	15	48
Alternatives 3D and 5 – 113 units Tenure Scenario 3 35% Family 30% Retired 35% Seasonal	113	1	1	1	13	7	9	29
Alternatives 3D and 5 – 113 units Tenure Scenario 4 25% Family 25% Retired 50% Seasonal	113	1	1	1	9	5	6	21
Alternatives 3C – 33 units Tenure Scenario 1 85% Family 15% Retired	33	>1	>1	>1	9	5	6	20
Alternatives 3C – 33 units Tenure Scenario 2 60% Family 15% Retired 25% Seasonal	33	>1	>1	>1	6	3	4	14
Alternatives 3C – 33 units Tenure Scenario 3 35% Family 30% Retired 35% Seasonal	33	>1	>1	>1	4	2	3	8
Alternatives 3C – 33 units Tenure Scenario 4 25% Family 25% Retired 50% Seasonal	33	>1	>1	>1	3	1	2	6

Elem. = Elementary

In general, in order to qualify for state funding a district must have an existing deficiency. In rapidly growing communities, it generally means that schools must be overcrowded and be using portable classrooms for a substantial number of students before the state will provide funding.

Because availability of state match funds has not kept pace with the rapid enrollment growth occurring in many of Washington's school districts, matching funds from the state may not be received by a school district until after a school has been constructed. In such cases, the district must "front fund" a project. That is, the district must finance the complete project with local funds (the future state's share coming from funds allocated to future district projects). When the state share is finally disbursed (without accounting for escalation), the future district project is partially reimbursed (OSPI 2008b).

School districts can collect two types of local property tax levies for capital facilities:

- Capital Project – These levies must be used for school facilities and other capital purposes. Levies can be for 1 to 6 years.
- Debt Service (also called "bond levies") – Voter approval of the levy allows a district to issue bonds (borrow money) and collect property taxes to repay principal and interest over the life of the bond (typically 20 to 30 years). Levies must be used to purchase land and build or renovate school buildings.

Local funds must be used for the entire cost of the following items because they are not eligible for the state match (OSPI 2008a):

- Acquisition cost of the site.
- Area in excess of the space allocations provided in WAC 392-343-035.
- All costs associated with the purchase, installation, or relocation of portable classrooms.
- Alterations, repair, or demolitions (except alterations necessary to connect new construction to an existing building).
- Costs incidental to advertising for bids, site surveys, soil testing for site purchase, or costs other than those connected directly with construction of facilities.
- Bus garages, except interdistrict cooperatives.
- Central administration buildings.
- Stadia/grandstands.

Impacts on Transportation

Transportation costs are also related to facility decisions. Development of a single school campus for the district would require all students from the site to be bused. Development of schools closer to the site might allow some students to walk. For Alternative 1, the student population could vary from about 260 students with all full-time residents to about 80 students with half the units occupied by seasonal

recreational residents. The number of school buses required to transport that many students would range from about six to two.

Student transportation is funded jointly by the state and local districts. The current transportation funding system was developed and incorporated in RCW 28A.160.150 through 28A.160.180. The statute defines specific transportation funding eligibility criteria for students, and prescribes a methodology based on the direct radius mile ("crow's flight") distance of each student's assigned bus stop location to their destination school, the number of students transported, minimum load factors, and weighted distance factors. The allocation amount is ultimately based upon a per-student allocation rate, which is adjusted each year by the Legislature.

The school district budgets about $50,000 for transportation of which the state pays about 70 percent. The district's share of the transportation budget funded from the local operations levy is about 30 percent, although the local share also includes transportation for activities for student trips and athletic trips not funded by the state.

School districts can collect local property tax levies for purchase of school buses. Such levies require a 60 percent approval rate.

4 What are the likely cumulative impacts on school facilities and services with development of nearby land at existing zoning or PUD densities?

The potential cumulative impacts of development of nearby land in the vicinity were evaluated for the area north of I-90 served by Sparks Road. The state-owned land surrounding the Easton State Airport was excluded from redevelopment scenarios. The area covered totals about 1.5 square miles (excluding the airport).

Cumulative projections include both development of land at existing rural zoning densities and at densities allowed by PUD approval. The methodology for calculating future cumulative development is discussed in Section 3.1, Land Use. The methodology for school student population is discussed above.

Potential student populations are indicated in Table 3-21. If development reflecting PUD density were applied to the area as a whole, additional student enrollment would vary from around 850 at the high end to around 153 at the low end. At the upper end of the range, this would be equivalent to current student enrollment in the Cle Elum School District. With buildout of the project vicinity at rural density with 3-acre lots, the district would have about three-quarters the number of students as the Cle Elum School District.

In general, the impacts on instruction, facilities, and transportation discussed above for the project would occur at a magnitude three times greater. The same need for local school levies to support instruction, facilities, and transportation would be required but at a greater level.

3-21 Easton School District Cumulative Student Population by Alternative and Tenure

Alternative And Tenure Scenario Rural Units 330, PUD Density Units 546	Cumulative Rural Maximum Student Generation				Cumulative PUD Density Maximum Student Generation			
	Elem.	Middle	High	Total	Elem.	Middle	High	Total
Alternatives 1 and 2 Applicant's PUDs Tenure Scenario 1 85% Family 15% Retired	334	167	222	723	393	196	262	850
Alternatives 1 and 2 Applicant's PUDs Tenure Scenario 2 60% Family 15% Retired 25% Seasonal	236	118	158	512	278	139	185	603
Alternatives 3A, 3B, and 4 – 147 units Tenure Scenario 1 85% Family 15% Retired	171	86	114	371	230	115	153	499
Alternatives 1 and 2 Applicant's PUDs Tenure Scenario 3 35% Family 30% Retired 35% Seasonal	142	71	95	308	167	84	111	362
Alternatives 3 A, 3B, and 4 – 147 lots Tenure Scenario 2 60% Family 15% Retired 25% Seasonal	121	61	81	263	163	82	90	353
Alternatives 1 and 2 Applicant's PUDs 443 units Tenure Scenario 4 25% Family 25% Retired 50% Seasonal	102	51	68	221	120	60	80	260
Alternatives 3 A, 3B, and 4 Tenure Scenario 3 35% Family 30% Retired 35% Seasonal	73	36	49	158	98	49	65	212
Alternatives 3A, 3B, and 4 – 147 lots Tenure Scenario 4 25% Family 25% Retired 50% Seasonal	52	26	35	114	70	35	47	153
Alternatives 3D and 5 – 113 units Tenure Scenario 1 85% Family 15% Retired	122	61	81	331	212	106	141	458
Alternatives 3D and 5 – 113 units Tenure Scenario 2 60% Family 15% Retired 25% Seasonal	108	54	72	234	150	75	100	325
Alternatives 3D and 5 – 113 units Tenure Scenario 3 35% Family 30% Retired 35% Seasonal	65	32	29	141	90	45	60	29
Alternatives 3D and 5 – 113 units Tenure Scenario 4 25% Family 25% Retired 50% Seasonal	47	23	31	101	65	32	43	140
Alternatives 3C – 33 units Tenure Scenario 1 85% Family 15% Retired	109	54	73	236	168	84	112	363
Alternatives 3C – 33 units Tenure Scenario 2 60% Family 15% Retired 25% Seasonal	77	39	51	167	119	59	79	257
Alternative 3C – 33 units Tenure Scenario 3 35% Family 30% Retired 35% Seasonal	42	23	31	100	71	36	48	155
Alternative 3C – 33 units Tenure Scenario 4 25% Family 25% Retired 50% Seasonal	33	17	22	72	51	26	34	111

Elem. = Elementary

5 What measures could reduce or mitigate impacts of the proposal on school facilities and services?

Instruction

Impacts on instruction resulting from increases in student population involve providing more resources for teachers and materials. Both the state and local component of revenue is largely outside of the control of the county or local jurisdictions. The exception is the ability of local cities and counties to use their taxing and bonding authority to provide funding for specific programs rather than the local levy provisions for school districts. This is advantageous only because counties and cities have more flexible means of bonding than special purpose districts.

No measures have been identified in which the proposal could reduce this impact.

Facilities

Counties have the means to mitigate facilities impacts on public facilities, including schools, through a fee system. Such fees are generally collected at the subdivision or building permit stage. The district would need to develop a capital facility plan establishing school facility needs and cost and the county would need to adopt a fee ordinance. One of the challenges with applying such a system in this case is identifying a means to address an estimated component of recreational residents who would not contribute students to the local school system. The proportion of units used seasonally cannot reliably be predicted in advance and may change as property is sold in the future.

Measures that the proposal could contribute include dedication of sites for schools or provision of funds for site acquisition and building construction.

An additional measure the county could impose would be project phasing coupled with a specific monitoring program for both student generation and provision of facilities by the local school district, including passage of local levies. This would give the county a means to match creation of additional lots to the provision of school facilities. Such a measure would prevent creation of additional lots and additional demand if funding is not obtained from the state or local levies to provide needed facilities.

Transportation

Transportation impacts relate both to facilities and operation. If school buses are considered capital facilities, local jurisdictions have the means to mitigate impacts through a fee system.

The proposal could contribute to transportation facilities by acquiring buses and expanding facilities to store and maintain them.

3.4.2 Public Services - Fire Protection

1 What fire protection facilities and services are currently provided in the area?

Kittitas Fire District No. 3 serves the proposal area, which is part of a 12-square-mile service area shown on the map in Figure 3-21. It has mutual response agreements with nearby fire districts. The district is entirely manned by volunteers and has a part-time chief. The district has 14 active volunteers at present, four of which live and work near the community. The total fire district budget is $89,500 of which about 37 percent is an assessment to repay bonds for purchase of equipment.

The district has a single fire station west of the BNSF Railroad near I-90, Exit 71. The station was constructed in 1992. Equipment includes a 2004 pumper with a pumping capacity of 3,200 gallons per minute (gpm), a 1994 2,650-gallon pumper with a 750-gpm pump, a 1990 4,000-gallon tender with a 750-gpm pump, and a 1991 one-ton brush truck. The district also has a 2000 aid car used for emergency medical response.

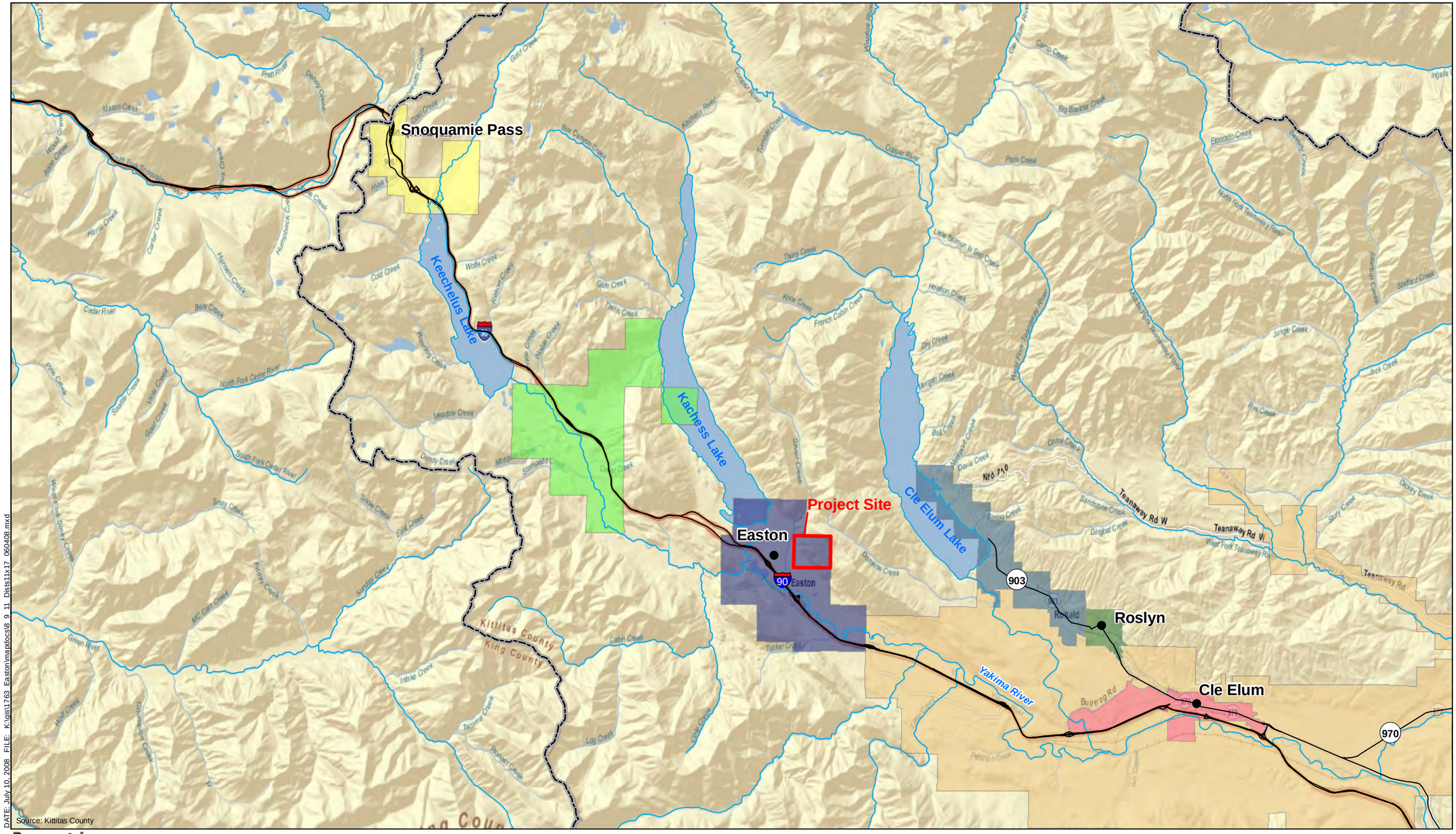
Annual fire responses between 2004 and 2007 ranged between 10 and 29 with property loss between $34,000 and $500,000 (State Fire Marshall 2008).

Training and experience of the volunteers varies greatly. Two of the volunteers are certified Emergency Medical Technicians (EMTs).

Wildland fire protection and suppression on all state-owned and private forest and range lands in unincorporated Kittitas County is the responsibility of the DNR. These responsibilities include:

- Suppressing wildfires;
- Regulating outdoor burning and industrial operations on forest lands; and
- Providing landowner assistance by inspecting and offering advice on fire-prone rural property.

DNR cooperates with other agencies in mutual aid, prevention, and education. However, county rural fire districts' obligations are limited to protecting improved property and structures, whereas federal agencies' responsibilities are limited to federally managed land under their jurisdiction.



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Parametrix

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Scale in Miles

Fire Districts

- CITY OF CLE ELUM 51-1
- CITY OF ROSLYN 57-1
- Fire District 3 (Easton)
- Fire District 51 (Snoqualmie Pass)
- Fire District 6 (Roslyn)
- Fire District 7 (Cle Elum)
- Fire District 8 (Kachess)
- NA

Figure 3-21
Marian Meadows
Fire District Boundaries

Within Kittitas County, the Okanogan/Wenatchee Ranger District is responsible for fire protection of National Forest lands. Through cooperative agreements with agencies, such as DNR, service districts assist other agencies and jurisdictions with wildland fire protection and suppression. Fire protection assistance to county rural fire protection districts is requested from the U.S. Forest Service through DNR.

2 What mandates or standards for fire protection service have been established?

Kittitas County has adopted the following polices:

GPO 2.109G Kittitas County will consider creating a wildfire protection policy tied to land use zoning that will protect both the private landowner and public lands from wildfire. When the use of forested lands is changed, the party doing the changing is responsible for providing a fire-resistant buffer around the property.

GPO 2.139 Kittitas County will encourage rural developments in the Wildland Urban Interface (WUI) and the owners of adjacent commercial forest lands to develop Community Wildfire Protection Plans (CWPPs).

The emergency medical response standard adopted in the Kittitas County Emergency Medical Services Standards for Fire District No. 3 is 20 minutes within a 5-mile radius of its station.

The standard for Hospital District No. 2 to respond to the Easton area, which is about 17 miles from its station, is 45 minutes or less (KCEMS 2006). According to the local fire chief, actual response times to the area north of I-90 are in the 8- to 12-minute range (McCaw 2008).

There are a variety of **measures of fire protection effectiveness** in a community. The factors discussed below are based on a model developed by the Center for Public Safety Excellence, Inc. (CPSE 2006) and includes the following:

Fire Risk

The characteristics of an individual community will affect the level of fire risk to protect against. For example, older buildings pose a different set of problems than new buildings built to modern construction codes. Commercial and industrial occupancies pose additional factors to be considered. Construction, occupancy type, water supply, exposure between buildings, modern furniture and furnishings, and the risks which the combination of these factors pose to the occupants constitute the fire risk component.

An additional critical factor in determining the level of fire risk to protect against is the assessment of consequences. Fires result in deaths, personal injuries, and property loss, including damage to the environment. Additional factors, such as the historical value of certain properties and the tax assessment value of property in the community, are also considered. In many cases, the loss of a particular occupancy in a community, such as a major employer or a public facility such as a school, has an adverse impact on the local economy or community values.

Fire Prevention Program Effectiveness

Regulations (codes) and practices pertaining to fire safety focus primarily on fire prevention. Enforcement of these codes is one of the most effective ways of reducing the loss of life and property due to fire. As such, the development, administration, and enforcement of fire prevention measures is an important component of fire protection. Public fire safety education has the potential to substantially reduce the loss of life and property due to fire. Although it is difficult to quantify the results of fire prevention - one cannot count the number of fires that did not occur - effective prevention and public fire safety education are likely to have a direct and substantial impact on reducing the demand on emergency response services.

Detection Capabilities

Fire detection notifies occupants and allows them sufficient time to escape. It may also allow for earlier notification of the fire department. Widespread use of early warning detection systems has the potential to significantly reduce notification time. The Center for Public Safety Excellence, Inc. (CPSE), Standards of Response Coverage, which, when coupled with effective fire department suppression, produces a corresponding reduction of loss of life, injuries, and damage to property from fire. Communities with a large number of seasonally occupied buildings pose an additional challenge for detection.

Built-in Suppression Capabilities

Built-in suppression refers to the fixed fire protection systems in large buildings normally associated with assembly (e.g., theatres); commercial, industrial, and manufacturing complexes; and to a lesser extent residential occupancies. These systems, such as automatic sprinkler protection, play an important role in minimizing the effects of fire by controlling the spread and growth of the fire, thereby enabling the fire department to extinguish the fire more quickly and easily. The extent to which built-in suppression systems are in use, the effectiveness and reliability of these systems, and the age of the buildings in the community will have an impact on the demand for fire fighting services. While built-in suppression systems may decrease the demand placed on fire department suppression services, they may increase the demand placed on in-service fire prevention inspections and associated activities.

Intervention Time

Intervention time, for the purposes of the Comprehensive Model, is defined as the time from ignition until effective fire fighting teams can be directed at the fire. Factors that affect intervention time include, but are not limited to:

- The time required to detect the fire;
- Notification time from the public;
- Notification time to the fire fighters;
- Preparation time for the fire fighters to leave the station;
- The distance between the fire station and the response location;

- The layout of the community;
- Impediments such as weather, construction, traffic jams, and the lack of roads;
- Set-up time; and
- Type and size of the building involved.

Fire department intervention time is crucial in determining the consequences of a fire in terms of deaths, injuries, and loss of property and damage to the environment. Effective fire prevention and public education programs can reduce intervention time. In turn, reducing intervention time can significantly increase fire department effectiveness.

Fire Suppression Ground Effectiveness

A fire department's fire ground effectiveness affects the degree of damage to the environment, property loss, personal injury, and death from fire. Factors that affect a fire department's fire ground effectiveness include:

- Fire ground staffing, the number and assembly of fire fighters at the scene of an emergency, which comprises:
  - The initial fire attack team arriving at the scene and initiating fire ground operations;
  - Additional staff arriving at the scene after the initial fire attack team;
  - The timing and sequencing of arrival of each group of fire fighters; and
  - The relief of fire fighters at prolonged emergencies.
- Fire fighter efficiency is the proficiency in which individuals and teams utilize tools and practices effectively to suppress the fire. Factors that affect efficiency include:
  - Physical capability,
  - Training,
  - Tools/gear used, and
  - Operational guidelines.
- Fire ground command control the ability to communicate information. Direct fire ground command operations are crucial to the successful outcome of a fire ground operation.
- Apparatus and equipment have varying capabilities and must correspond to the demands of the Fire Ground Sub-Model. Innovations in equipment and technology can have an impact on staffing requirements and overall fire department effectiveness.
- Water supply availability including:
  - Amount, duration, and
  - The ease with which the supply can be secured.

This typology is also reflected in the Insurance Service Organization (ISO) Public Protection Classification (PPC) of fire protection in communities, which is based on the ISO's Fire Suppression Rating Schedule (FSRS), which includes the following criteria:

Receiving and handling of fire alarms

- Receipt,
- Operators, and
- Alarm dispatch circuits.

Fire department

- Equipment,
- Distribution of companies within specified response distances,
- Company personnel available for first alarms, and
- Training.

Water supply

- Adequacy of water supply in terms of:
  - Hydrant's size, type, and installation; and
  - Hydrant's inspection and condition.

3 What risks are posed by wildfire in the area and to the proposal and alternatives?

Wildland fires are fires caused by nature or humans that result in the uncontrolled spread of destruction of forests, brush, field crops, grasslands, and real and personal property.

The wildland fire season in Eastern Washington usually begins in late May or early June and typically culminates in late September with a precipitation event; however, wildland fires have occurred in every month of the year. Drought, snow pack, and local weather conditions can expand the length of the fire season. The early and late shoulders of the fire season usually are associated with human-caused fires. Lightning generally is the cause of most fires in July, August, and early September.

People start most wildland fires on state land and private lands in Washington State. Major causes include arson, recreational fires that get out of control, smokers' carelessness, debris burning, fireworks, and children playing with fire. The major cause of fires on federally protected lands is lightning (DNR 2009).

Factors that Influence Wildland Fire

A fire needs three elements in the right combination to start and grow – a heat source, fuel, and oxygen. How a fire behaves primarily depends on the characteristics of available fuel, weather conditions, and terrain.

Fuel

- Lighter fuels such as grasses, leaves, and needles quickly expel moisture and burn rapidly, while heavier fuels such as tree branches, logs, and trunks take longer to warm and ignite.
- Snags and hazard trees, those that are diseased, dying, or dead, are larger west of the Cascades, but more prolific east of the Cascades. In 2005, about 2.5 million acres of the state's 21 million acres of forest land contained trees killed or defoliated by forest insects and diseases.

Weather

- East of the Cascades, summer drying typically starts in mid-June and runs through early September, with drought conditions extending this season.
- Passage of a dry, cold front through this region can result in sudden increase in wind speeds and a change in wind direction affecting fire spread.
- Thunderstorm activity, which typically begins in June with wet storms, turns dry with little or no precipitation reaching the ground as the season progresses into July and August. Thunderstorms with dry lightning are more prevalent in Eastern Washington.

Terrain

- Topography of a region or a local area influences the amount and moisture of fuel.
- Elevation and slope of landforms affect the spread and intensity of fire, which spreads more easily as it moves uphill than downhill and dries and heats fuels in its path, making it easier to ignite and burn. The fire can create its own winds through convection that further intensifies the fire and increase spread.
- Barriers such as highways and lakes can affect the spread of fire depending on their width and location. In an intense fire, wind tends to carry burning debris considerable distance and can jump such fire barriers.

All of the factors for creating extreme hazard conditions are present in the Easton area, especially on the slopes surrounding the valley. Adding to the risk is the near constant wind from the west that quickly dries forests after snowmelt (Munroe 2010).

4 How will the proposal and alternatives affect fire protection facilities and services?

The addition of residences generally adds to the incidence of fire as well as the demands placed on the fire district to control these fires. If all factors were equal, the risk and need for additional fire protection services would be proportional to the increase. This is not the case, however, because the factors affecting risk differ by location and character of development.

In the case of the proposed Marian Meadows development, the addition of 443 residents adds about 30 percent to the number of potential sources of residential fires. The provision of water supply and fire

hydrants with adequate fire flow will increase the potential for effective response to fire incidents, depending on the availability of adequate fire flow and the placement of hydrants. Additional water storage is essential for adequate fire flow north of I-90. Addition of adequate fire storage, if included as part of this development, would increase the effectiveness of fire control for all properties north of I-90 served by the Easton Water District's hydrants.

The modern construction codes the new buildings will comply with would result in a slightly lower fire risk than older buildings within the district. The proposed lot size and separation between buildings will add to the risk of fire spreading to adjacent buildings as compared to rural large lot development, but will be about the same or less than existing small lot development in the fire district, such as the Easton Village Subdivision southwest of the site.

The major factor in fire risk to property and persons within the proposed development is the ability of the fire district to respond to fires and suppress them.

The provision for fire detection in the proposal would be largely by residents or neighbors. Tenure options with larger components of seasonal residents may increase detection times depending on proximity of occupied homes as well as whether residents are home full time.

Dispatch by Kittcom, the county-wide 911 system, is comparable to most dispatch services.

The status of the Easton Fire District as an all-volunteer force has the potential to increase deployment of fire fighters to a scene. Such deployment depends on the presence of volunteers in proximity, the time required for them to get a call, time that may be required to safely cease the activities they are engaged in, report to the station, prepare equipment, leave the station and travel to the site. The response time also can be adversely affected by weather, including snow on the ground, impedance from traffic, and possible blockage from accidents on roads or the lack of access over essential facilities such as bridges.

The Marian Meadows site layout is provided with two public roadway accesses, but depends on Sparks Road as its only source of public road access to I-90 and the Easton townsite. If the access along Sparks Road is blocked, there is no access to the site. The most significant potential barrier is the bridge over Silver Creek. If that bridge is blocked, alternative access is available during summer through the Easton State Airport to Silver Creek Road, which has an additional bridge over Silver Creek. Access involving fording Silver Creek may be available in low flow periods by driving north on the Kachess Dam Road and down informal roads on the BPA transmission line easement. These routes would add considerable time and would be impassable over a substantial part of the year when snow would make them impassable. Additional access from Sparks Road farther to the east may be provided over a private parcel; however, this access provides no potential for alternative routes over Silver Creek as does the access from Country Road. On the site, the upper eastern portion of the site could be rendered impassable by snowstorms that could take several days for the roads to be cleared.

Fire response to the steep eastern portion of the site would be slower because of additional distance as well as the steep grade. Access also could be impeded by conflict with residents fleeing from the area. Intense fires could make the single access road unusable due to the proximity of heat and flames.

The distance of the single Easton Fire Station from the site is a potential factor in increasing response time when access is impeded by adverse conditions.

The ability of the volunteer fire fighters to respond in a timely and effective manner depends on the availability and training of personnel. The presence of additional residential units theoretically increases the potential pool of volunteers. Tenure scenarios with larger components of seasonal residents reduce the potential pool of volunteer fire fighters. Full-time residents who commute to work at a distance from the community also reduce the availability of personnel during work hours. Retired residents may be available and willing to participate in the volunteer force, but may have physical and endurance limitations on their effectiveness, depending on age. In addition, the increase in population and number of responses in the community may increase the number of responses to an extent that the existing force experiences burnout, or simple unwillingness to commit the time needed. All these factors make it difficult to predict the availability of an effective force of volunteer fires fighters to respond to the increased exposure of the development. It is a safe assumption, based on the large number of fire departments manned by volunteer fire fighters operating in the state and nationwide, that adequate volunteers would be recruited and maintained to provide some level of response. The probability of effective response is higher in evening hours when more residents are likely to be home.

Limits in the effectiveness of the volunteer fire force to respond will most likely be reflected in the manning levels of the initial and secondary response to incidents. It is likely that minimally manned equipment would be able to respond. If the number of persons responding is limited, the ability to effectively initiate and maintain operations may be limited. If inadequate personnel is available, suppression effectiveness is limited, the risk of fires spreading is increased, and the risk to fire-fighting personnel is increased. If personnel and equipment is limited, response can be requested from other fire forces in the vicinity. That response, however, would take additional time for deployment and travel.

The ability of the Easton Fire District to effectively respond is also currently limited by having only one modern fully equipped fire truck. The second truck, which is 15 years old, can be considered at risk of failure to provide adequate service, if adequate personnel are available to operate it.

Alternatives 1 and 2 provide the greatest potential exposure of fire risk and potential impacts requiring additional volunteer personnel, higher levels of training, and additional equipment. The steep eastern portion of the site provides an area of extreme wildfire hazard due to the location on a slope and the potential for wildfires to move more quickly uphill, heating fuels as it moves uphill and reinforcing the speed and heat as it moves. The potential for more than 200 units on this portion of the site places a large number of residents at risk. The site is at risk from wildfire initiated from human sources on the site (as are half of wildfires) and is also at risk from wildfires spreading from forest lands on the north, east, and south sides of the site. The single access provided to the steep eastern portion of the site also limits the

ability to escape a fire without interfering with fire response vehicles and equipment trying to move up the same roadway to respond. A fire that started on the flat portion of the site and moved uphill could block or seriously impede escape or access on the road.

Alternative 2 would reduce the risk to persons and property from wildfire substantially by locating all development on the flat western portion of the site. The development of approximately 200 multi-family units on the site would substantially increase fire exposure due to the type of units and the lack of separation between units. Fire suppression in multi-family structures would require additional personnel, additional equipment, and additional training for the volunteer fire force. The site is at risk from wildfire initiated from human sources on the site, and is also at risk from wildfires spreading from forest lands adjacent to the site.

Alternatives 3A, 3B, and 3D would reduce the total exposure to fire risk and resources required of the fire district, compared to Alternative 1, by reducing the number of units and increasing separation between units. Residences on the steep eastern portion of the site would have similar extreme exposure to risk from wildfire and limits to access; however, the overall risk exposure would be less because of fewer lots, as well as larger lots with greater separation between buildings. The site is at risk from wildfire initiated from human sources on the site, and is also at risk from wildfires spreading from forest lands adjacent to the site.

Alternative 3C would have the lowest overall fire risk of any of the alternatives due to larger lot sizes and lack of development on the eastern slope. Risks of wildfire initiation from human sources on site and risk of wildfires spreading from adjacent forest lands would still be present.

Alternative 4 would reduce the total exposure to fire risk and impacts to the fire district, compared to Alternative 1, by reducing the number of units. Residences on the steep eastern portion of the site would have similar extreme exposure to risk from wildfire; however, the overall risk exposure would be less because of fewer lots and the lack of lots on the higher slopes where escape and access would be most difficult. Risks of wildfire initiation from human sources on site and risk of wildfires spreading from adjacent forest lands would still be present.

Alternative 5 would reduce the total exposure to fire risk and impacts to fire protection resources, compared to Alternative 1, by reducing the number of units and eliminating residents from the extreme exposure to risk on the steep eastern portion of the site. Risks of wildfire initiation from human sources on site and risk of wildfires spreading from adjacent forest lands would still be present.

5 What are the likely cumulative impacts with development of nearby land at existing zoning densities and PUD densities?

Cumulative impacts of the project in the immediate vicinity (north of I-90 and served by Sparks Road) would result largely from the number of additional residents, lot sizes, type of development, and location.

At the current time about two-thirds of the lot sizes in the area are larger than 3 acres. Under the 3-acre minimum lot size, only lots greater than 6 acres were considered subdividable. This would result in about 320 lots in the area, in addition to the Marian Meadows proposal.

Alternatives 1 and 2, with 443 units with additional development at rural densities, would result in up to 773 cumulative lots or units in the project vicinity with development of existing lots and undeveloped parcels. Alternatives 3A, 3B and 4 with 147 units would result in 477 cumulative4 lots. Alternatives 3D and 5 with 113 lots would result in 443cumulative lots in the project vicinity. Alternative 3C with 33 lots would result in 363 cumulative lots. In general, risk and resources needed for fire suppression for alternatives with fewer lots and larger lot sizes would be less than the proposed PUD because larger lot size provides greater separation between structures. In addition, Alternatives 3C and 5 would result in less fire risk and less exposure to loss of property and life due to avoidance of development on the steep eastern portion of the site.

Most of the lots outside Marian Meadows would be on the flat valley floor and on 3-acre lots where separation between structures would be greater and help to reduce the risk and spread of fire. Wildfire hazard on the flat valley floor would be lower due to the absence of terrain features increasing wildfire spread and intensity, as well as easier access for fire suppression.

If the Alternatives 1 or 2 PUD approval were received and provided the precedent for similar development of other properties in the vicinity, subdivision of properties 2 acres or larger could lead to development of up to 546 lots (including 80 existing vacant lots).

Alternatives 1 and 2 with 443 units would result in 990 cumulative lots under PUD density,

Most of the lots outside Marian Meadows developed at PUD densities would be on the flat valley floor and at an average of 1 acre would be smaller than the majority of lots in the Marian Meadows PUD alternatives. Distance between structures would be greater and reduce the risk and spread of fire. Wildfire hazard on the flat valley floor would be lower due to the absence of terrain features affecting wildfire spread and intensity, as well as easier access for fire suppression.

6 What measures could reduce or mitigate fire risks to persons and property and the impacts on fire protection facilities and services?

There are several areas in which fire risk and the impacts on fire protection facilities and services can be reduced as described below.

Avoidance of High Risk Areas

Avoidance of the high risk areas including the steep eastern portion of the site would reduce risk of both structural fires and wildfire. If development were avoided in this area, potential wildfires would affect only forest resource lands and not persons and property. Wildfire also would potentially affect the City of Roslyn Watershed which is located to the east of the crest of Easton Ridge. Wildfire that originated on the site could spread to the northeast with prevailing winds. The topography and limits to access would

make control of a fire in the watershed difficult. Removal of vegetation cover due to a wildfire in the watershed could lead to erosion that might degrade the quality of water from the watershed until vegetation regenerated.

Provision of Access

Provision of more than one access road to the western portion of the site in the event that Sparks Road was blocked or impeded would greatly increase the reliability of fire response. Two potential access options are available. One would be access from the south from I-90, Exit 71. This would involve a bridge over the Yakima River and connection to Hawthorn Lane, which is not currently maintained by the county. The second would be access from the north across either the public land at the Easton State Airport or the National Forest and connecting to Silver Creek Road which bridges Silver Creek. This access could be initiated at either Silver Ridge Ranch Road or from Kachess Dam Road. To be effective in the winter, snow would have to be cleared from these routes. Extenstive coordination with the public agency controlling both of these routes would be required to accomplish this access, which may or may not be consistent with agency land management policies. Because the highest risk of structural fires spreading and the risk of wildfires are greatest in the summer, securing these routes for summer access would be beneficial. Provision of an additional access to the steep eastern portion of the site would substantially decrease the risk of residents being trapped in the area by a fire moving rapidly uphill. There is, however, little potential for access to the north from National Forest land or from the south from even more steeply sloping private land.

Provision of more than one access road to the steep eastern portion of the site would greatly increase the reliability of fire response and reduce the potential for loss of life and property if the single access were blocked during a fire blocking both escape for persons in the eastern area and access from the west for personnel and equipment. There is not, however, a practical alternative access on the site given topography, the length of the site, and road grades. In the absence of a second access road, the risk of closure of the access during an emergency would be reduced by providing a wider roadway resulting in less potential for blockage. A similar strategy has been employed for bridges providing the single access to islands. For example, the Camano Island Bridge on SR 532 was designed to a 56-foot width with 14-foot shoulders rather than the standard 36- to 44-foot width for a two-lane roadway to increase the probability that at least one lane would remain open in case of an accident.

Access to the eastern portion of the site would also be substantially improved by a lower roadway grade. A lower grade decreases response time, especially during times when there is snow on the road. A roadway grade greater than 10 percent is generally considered to substantially reduce response time for heavy trucks, particularly a long continuous grade such as would be present in this case (FireWise 2009).

Provision of Facilities

In addition to volunteer personnel and training, fire fighting requires equipment and buildings to house that equipment. The addition of up to 443 additional residential units in the district would increase the

total residential structures about 30 percent and justify providing a second modern fire apparatus. It may be advantageous to the district also to establish a second station on the north side of I-90. This is a decision that would have to be made by the district board. Advantages of an additional station may include proximity to the population served and may increase the recruitment of local volunteers. Response time from residents to a closer station also may be reduced. On the other hand, a single centrally located station provides the greatest potential for manning apparatus during times when the pool of available personnel is limited. A single station also provides the potential for locating all equipment in a single place and ensures flexibility in choice of appropriate equipment for a given response. A single station also reduces facility maintenance and utility costs. Co-location of equipment also may facilitate maintenance of equipment because all needed tools can be located at one place. If volunteer personnel are scattered or respond at different times, having shared personal equipment on trucks rather than in the station may decrease response time, although individually assigned properly fitted equipment is considered important for safe and effective fire fighting.

The project proponent could contribute to this impact by providing a site for a new building, if desired by the fire district, and contribute a proportional share of the cost of a new truck that would vary by alternative. The advantages of developer contributions over voter-approved levies for equipment is the uncertainty involved in residents passing the levies, as well as a perceived fairness that new development should provide for the costs they impose on the community. On the other hand, additional equipment benefits the entire service area.

Built-in Suppression Capabilities

Built-in suppression through automatic sprinkler systems provides a substantial decrease in risk for structural fires and reduces greatly the risk of fire spread. It is an especially useful strategy in areas served by volunteer fire departments where the response time and number of personnel available may be highly variable. To be effective, fire sprinklers must be appropriately designed, installed, and inspected. Fire sprinklers are a substantial additional cost for single-family homes and require considerably larger water pipelines and meters. In the cold climate that the project residents would experience, sprinklers would be either dry systems, which are much more expensive to install or operate, or buildings with wet systems that must be constantly heated in cold weather, or systems that must be drained and mothballed. Such systems are most effective in reducing risk in the summer months. Mothballing in the winter season would reduce effectiveness in avoiding structural fires but would not substantially increase risk because the hazard from fires spreading in cold wet months is lower. Built-in fire suppression systems are of limited effectiveness in reducing risk from wildfire.

Wildland Fire Defensible Space

A variety of programs have been developed to reduce the risk of wildfire igniting homes. These generally include providing effective access and an area around homes where fuel loads are reduced. This strategy often involves two areas. One is an area close to the home that has a “non-combustible area” of 3 to 10 feet wide around the base of the home with very low potential for ignition from flying embers such as

lawn, ground cover, flowers, rock mulches, or hard surfaces. Another is an area of 30 to 50 feet with a small amount of flammable vegetation, including lawn or ornamental plants that are routinely irrigated to reduce ignition temperature. The outer zone generally includes an area where fuel loads are reduced through removal of dead vegetation, thinning of underbrush, and removal of "ladder fuels" by removing low tree branches and removing or pruning the shrubs under the tree. These measures are of variable effectiveness depending on the intensity of the fire. They can be very effective against a slow-moving surface fire. They are of variable effectiveness against a very hot rapidly moving fire in the crowns of trees, although in such cases, crown fires may quickly burn past residences with such measures (FireWise 2009).

Fire Prevention Programs

Public fire safety education has the potential to substantially reduce the loss of life and property due to fire. Although it is difficult to quantify the results of fire prevention because one cannot count the number of fires that did not occur, the fire protection industry believes that effective prevention and public fire safety education are likely to have a direct and substantial impact on reducing the demand on emergency response services.

3.4.3 Public Services - Police and Public Safety

1 What police facilities and services are currently provided in the area?

The Kittitas County sheriff's department provides primary law enforcement services to unincorporated areas of Kittitas County, an area of 2,400 square miles with a population of 16,510 (total county population is 38,300), including the project area. The cities of Cle Elum, Roslyn, Kittitas, and Ellensburg provide their own police service. The Kittitas County sheriff's department is headquartered in Ellensburg, and is organized into patrol services, major crimes, civil warrant, special operations, traffic enforcement, U.S. Forest Service patrol, corrections services, narcotics abatement, administration, and records. Services within these divisions include traffic control, drug enforcement, search and rescue, domestic calls, K-9 unit, SWAT team, marine patrol, evacuation, and emergency disaster management. The sheriff's department serves as first responder to emergencies and crime throughout the unincorporated county. The department currently employs 24 commissioned officers, 18 reserve officers, 19 corrections officers, and 60 to 100 volunteers for search and rescue operations. The recent voter-passed sales tax increase to support enhanced criminal justice is expected to enable the sheriff's department to add five new deputies and one civil deputy (Dana 2008).

The sheriff's department currently deploys deputies in two daily shifts in two patrol districts in the eastern and western county. The normal daily deployment is one officer per district on overlapping shifts plus one or more additional deputies on specific assignments or for backup. This deployment is enhanced on Fridays and weekends to cover greater weekend demand from recreational activities that draws seasonal residents and visitors. Reserve officers also enhance deployment levels. The sheriff's department has

maintained an office at the Easton School in the past. That office has recently been relocated to Bullfrog Road near the Suncadia Resort (Dana 2008).

Response time to calls currently average about 28 minutes. The sheriff's goal is to improve to a 20-minute response time with the addition of personnel. Backup to responses to violent crime in the Easton area is provided by the Washington State Patrol or officers from Cle Elum, as well as other sheriff's deputies, depending on availability when a call is received (Dana 2008).

The breakdown in the type of calls for police service in the area is provided in Table 3-22.

Table 3-22. Police Incident Reports, Easton, January 2006 to June 2008

Incident Type	Number	Percent
Burglary	45	33
Theft	35	26
Motor Vehicle (excluding I-90)	25	19
Assault	18	13
Trespass	9	7
Sex Offence	3	2
Total	**135**	**100**

Review of individual reports indicates that most incidents are at residences or businesses. Relatively few are from Lake Easton State Park or campgrounds, indicating that full-time and seasonal residents rather than recreational visitors account for most of the incidents.

The Washington State Patrol (WSP) also serves the area by providing traffic law enforcement, collision investigation, and motorist assistance along the state and interstate highways. In the general vicinity of the project area, these highways include I-90. The WSP detachment office is located in Ellensburg. The District 6 headquarters office is located in Wenatchee, and provides service to a five-county area (referred to as District 6). In addition to highway patrol, the WSP provides drug enforcement, hazardous materials oversight, incident response, truck inspections, and aviation patrol (WSP 2008).

2 What mandates or standards for police service have been established?

The sheriff's office does not have a specific standard for deployment or response time. The sheriff would like to improve the current average response time of 28 minutes to 20 minutes (Dana 2008).

3 What risks are posed by the current level of police service to persons within the area?

Current staffing levels generally provide one sheriff's deputy in the western part of the county as a base level with additional staffing on weekends and holidays. Backup to responses to violent crime is provided by the WSP or officers from Cle Elum, which contributes to the average response time to calls. The

current average, about 28 minutes, reflects the fact that the deputy covers a large area and may be at some distance from the site of a call.

This level of service is generally not a problem for crimes against property. These crimes are generally discovered by residents after the occurrence. The function of the deputy on-call is to investigate and report. Any follow-up occurs later.

For violent crimes in progress, response time is critical. The dispatch of the closest available police personnel may result in response from a sheriff's deputy or state patrol, depending on which is closer, or in some cases initial response may be by officers from Cle Elum. The goal is to improve to a 20-minute response time with the addition of personnel.

4 How will the proposal and alternatives affect police facilities and services?

The potential impacts of the proposal and alternatives must be assessed in relation to the total service area and population served by the Kittitas County sheriff's department, particularly service in the eastern part of the county. The addition of up to 1,200 residents with Alterative 1 and Tenure Scenario 1 with all full-time residents would be an increase in populations served by the sheriff of about 8 percent. The proportion would be less with other tenure scenarios. This is also the peak population that could be expected on the site during a peak holiday period when the largest number of seasonal residents would be expected to be present. An increase of 8 percent in population could be presumed to increase demand by the same amount and justify an additional 1.7 commissioned officers. In terms of peak population of western Kittitas County during the peak recreational season, the presence of persons at Lake Easton State Park and at many recreational activities elsewhere in the area would make the increase in service population from the proposal and alternatives a relatively smaller increase.

A second characteristic of the local service area for public safety is the presence of I-90, which brings a large number of automobile and truck trips through the area. Although relatively few persons traveling on this highway stop in the community, this service population demands a substantial police response to accidents and other incidents on the roadway that increases demands on both the sheriff's department and the state patrol.

In terms of the deployment of sheriff's deputies in two daily shifts in two patrol districts in the eastern and western county, the increase in population and demand would be greater. In tenure scenarios with a large component of seasonal residents, the current practice of enhancing deployment on Fridays and weekends to cover greater weekend demand would respond to this pattern of increased weekend population from recreational activities.

Availability of personnel on a population basis is only one measure of demand for public safety service. The second is the demand for responses. It is probable that property crimes such as burglary and theft have some relationship to the number of housing units and population in the area, although the relationship has not been shown to directly correlate with population and likely reflects other social

characteristics of the population. It is also probable that some components of property crimes in the area are from transient perpetrators that find opportunities in the area.

The ability of public safety personnel to respond to a larger population and additional demand depends on the availability of personnel and equipment. Public safety is funded from the county general fund and competes for funding with a variety of other programs. The resources available to the sheriff are a function not only of the tax resources available but also of budget priorities. To a certain extent, the additional tax revenues can be considered to be provided by additional residential development. It is unclear, however, that those resources are adequate to meet the demand for a variety of public services. It is also not predictable how a particular county will allocate those resources in a particular budget cycle.

In general, the additional population in the area would lead to additional demand for police response. That response would demand service from the available police officers from the sheriff's department and other agencies such as the state patrol. A higher level of response would be reflected in more responses per shift, but may not affect the ability of the personnel to respond, unless a number of incidents overlap, or incidents involving a threat to persons requires a backup response, which would likely involve response from multiple agencies. The likely effect noticed by local residents would be less frequent presence of officers patrolling the area, or longer response time to calls. The likely effect on personnel would be busier shifts and a perception of greater risk to them from multiple calls.

5 What are the likely cumulative impacts on the level of police service with additional development?

For public safety, the area of potential cumulative impact includes the entire western Kittitas County patrol area. In addition to the potential for 300 to 500 additional residents in the immediate vicinity, the additional housing and recreational development in the area from multiple sources must be considered. Substantial development in the Cle Elum/Roslyn area includes the Suncadia Resort of about 4,000 units and multiple additional developments.

The additional units included in the Marian Meadows proposal would contribute to cumulative demands for public safety service and would contribute several percent to the total cumulative demand in the future.

The cumulative additional population in the area would lead to a much greater additional demand for police response. That cumulative demand would require additional personnel and equipment. The fiscal implications would be a budgetary challenge for the county. If provision of personnel to respond does not keep pace with the demand, local residents would notice a less frequent presence of officers patrolling the area, and longer response time to calls. The likely effect on personnel would be busier shifts, a perception of greater risk to them from multiple calls, and possible job-related burnout.

6 What measures could reduce or mitigate impacts of the proposal on police facilities and services and risks to persons and property within the area and the proposal?

There are limited measures that could be implemented by the project to address the project's contribution to cumulative demands on public safety services for personnel and equipment from cumulative growth in western Kittitas County. The response to additional population and demand includes provision of resources for additional personnel as well as related equipment or facilities to accommodate police response. Such equipment or facilities, however, would also serve existing population and other components of cumulative growth; therefore, a fair share contribution from the project would be required. The project's share of the increased demand would be close to 8 percent for the Alternative 1, Tenure 1 Scenario based on the existing population served, and would be less with other alternatives and tenure scenarios, as well as further reduced if cumulative growth were considered.

3.4.4 Public Services – Medical Response

1 What medical response facilities and services are currently provided in the area?

Medical response to the area is provided on a two-tier basis. The initial response by EMTs is from the fire district. The second tier of response, if needed, is from Kittitas County Hospital District (Figure 3-22) from a station in Cle Elum. The district operates three ambulances with paramedics that offer advanced life support. Annual medical responses ranged between 81 and 88 from 2003 to 2007 (KITTCOM 2008). In addition to calls from the local community, accidents on I-90 unrelated to the existing population is a substantial portion of the calls for medical service.

The Kittitas Valley Community Hospital in Ellensburg is the area's trauma center. The hospital is equipped to serve up to level four trauma patients. Patients with severe injuries, such as head injuries, advanced burns, and trauma greater than level four are generally transported to the Harborview Medical Center in Seattle.

Fire District 3, the hospital district, and other public safety providers are served by a single county-wide 911 call center that processed approximately 31,000 dispatches in 2007 (KITTCOM 2008). Hospital District No. 2 dispatched assistance about 90 times to the Easton area in 2008 with about 40 of the dispatches related to I-90.

2 What mandates or standards for medical response service have been established?

The emergency medical response standard adopted in the Kittitas County Emergency Medical Services Standards for Fire District No. 3 is 20 minutes within a 5-mile radius of its station.

The standard for Hospital District No. 2 to respond to the Easton area, which is about 17 miles from the station, is 45 minutes or less (KCEMS 2006). According to the local Fire Chief, actual response times to the area north of I-90 are in the 8- to 12-minute range (McCaw 2008).

3 How will the proposal and alternatives affect medical response facilities and services?

All alternatives would create additional demand for emergency medical response based on the increase in population and the extent of special needs populations. The retired component of the population consisting of a larger proportion of persons over 65 are statistically more likely to suffer heart attacks, strokes, and other emergencies. The ability of the local fire district and Hospital District No. 2 to respond depends on resources available. The hospital district has a single response unit, which would require response from other resources such as local fire districts if equipment is utilized. The volunteer fire department is less assured of the ability to add personnel because it relies on volunteers. The challenge of getting enough volunteers would be increased with a greater proportion of residents commuting outside the area or being seasonal residents.

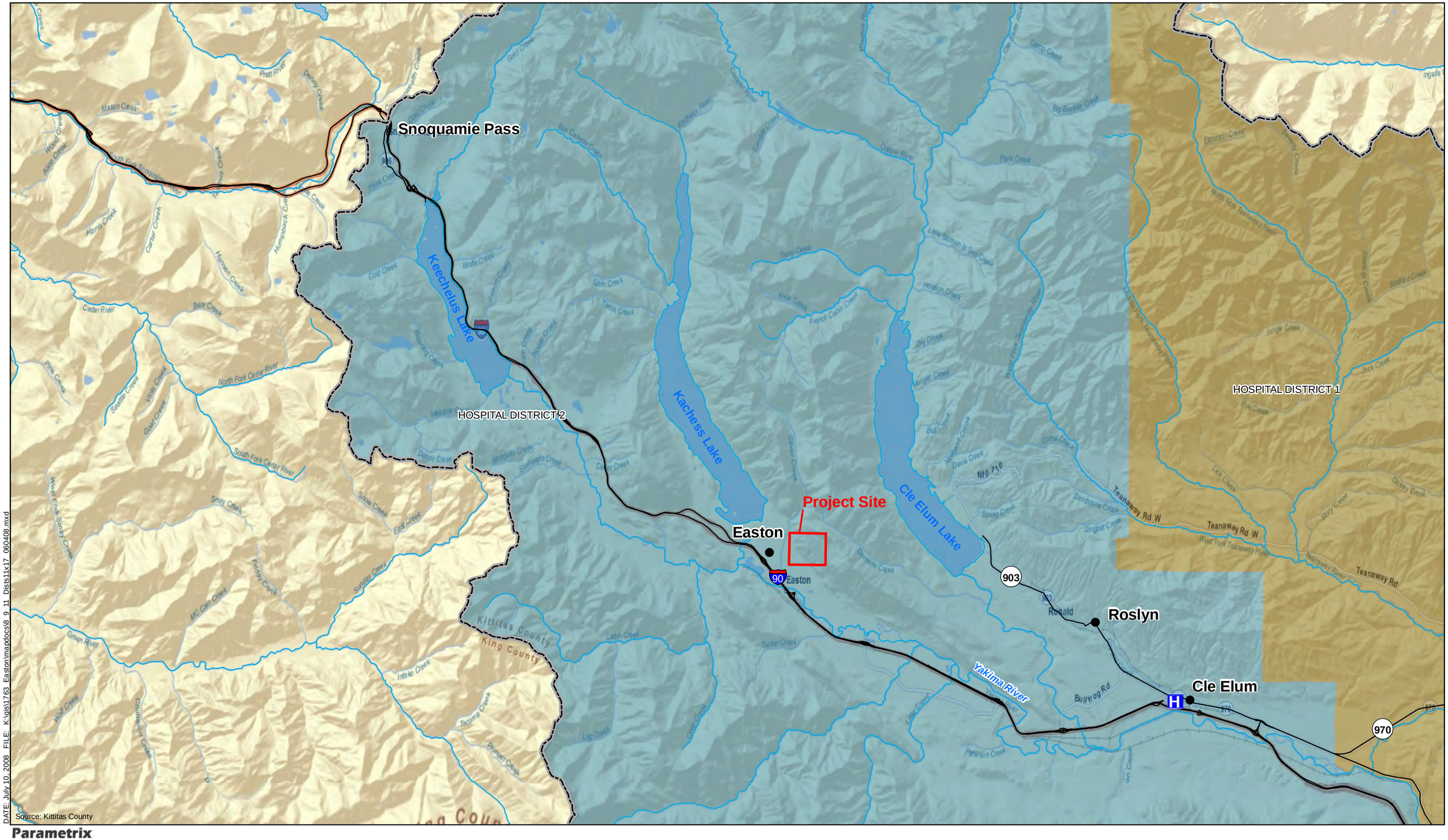
Hospital District No. 2 is likely to be able to respond by adding more equipment and personnel because it relies on paid staff. Additional development in the area is likely to add tax revenue that theoretically can offset additional costs. Hospital district assessments, however, must be established through voter approval (RCW 84.52.069) and assessments adequate to respond to demand are not assured.

4 What are the likely cumulative impacts on medical response facilities and services with development of nearby land at existing zoning densities or at densities similar to the proposal?

The additional development in the area could result in demands equivalent to an additional small town with additional needs for response also based on population characteristics.

The volunteer fire department's ability to respond to cumulative demand is largely dependent on the volunteer pool, which generally is increased by more population but may be reduced by a greater proportion of residents commuting outside the area or being seasonal residents. The long-term impacts on the fire district of fire and emergency medical response may be to encourage a transition to a core paid staff that can respond during working hours when volunteers are less likely to be available.

Hospital District No. 2 is likely to be able to respond to cumulative demand by adding more equipment and personnel because it relies on paid staff, provided that local assessments provide adequate resources, or voters approve additional assessments. Additional development in the area is likely to add enough tax revenue to offset additional costs. In addition, cumulative development in the Easton area is likely to be a relatively smaller component of the hospital district's demand compared to growth in the Cle Elum/Roslyn/Suncadia area.



Parametrix

N

0 2.5

Scale in Miles

Hospital District

- 2
- 3
- Hospital

Figure 3-22
Marian Meadows
Hospital Districts

5 What measures could reduce or mitigate impacts of the proposal on medical response facilities and services and risks to persons and property within the area and the proposal?

Addition of personnel and equipment is the appropriate mitigation for additional demand for service. For the local fire district, additional equipment likely would require voter-approved levies. For the hospital district, a combination of regular levies and capital facility levies would likely be required to meet long-term demands. Project contribution to a share of equipment costs could be required. The total increase in population within the hospital district, assuming peak summer occupancy of seasonal units, would be about 18 percent of the estimated existing peak population of about 10,000. The percent of future population would be less with the projected population of Suncadia and other development. The relative demand on medical facilities, however, would be greater with tenure scenarios with a larger proportion of persons over 65 who are likely to require a higher proportion of emergency response.

3.4.5 Public Services - Mail Service

1 What mail facilities and services are currently provided in the area?

Mail service is provided to the area by the U.S. Postal Service (USPS) through the Easton Post Office. All residents in the area must pick up their mail at the post office. There is no rural delivery in the area of the project north of I-90. Rural delivery service is currently provided in areas farther south, generally those areas served by Exits 74, 78, Nelson Siding Road, and other roads served from those exits.

2 What mandates or standards for mail service have been established?

The USPS has a mandate from the U.S. Congress to provide mail service throughout the United States.

The character and LOS provided are dictated by standards adopted by the USPS, which generally are based on population density and other characteristics of the community. Four general levels of postal service are provided (USPS 2008):

- Local post office service such as provided in Easton, where residents pick up mail at the post office. The main criterion for such service is a small rural population in which the majority of residents are within reasonable distance of the post office.
- Rural delivery at roadside mailboxes, which is performed by contractors to the USPS. Mail is delivered to mailboxes at the edge of the roadway directly accessible to the vehicle without the operator leaving the vehicle. The criterion for this service is a rural population that is not within reasonable distance to pick up mail at the post office.
- Delivery to mail kiosks. This is the dominant method of mail delivery to new development within the United States and consists of designation of single mail delivery points at the street curb that

serves an area of about a standard residential block. These points are generally designated by the USPS at the time of development approval.

- Door-to-door mail delivery to individual building-mounted mailboxes is generally limited to cities and towns that had such service prior to 1980.

Changed conditions, such as a greater demand for mail service than can be provided by the local post office, can lead to a choice by the post office to expand the post office to provide more facilities for pickup, or provide rural delivery to areas previously not served (USPS 2008).

3 How will the proposal and alternatives affect mail facilities and services?

The existing post office in Easton has no capacity to add additional customer mailboxes. All residents of the new development would be required to receive their mail "general delivery," which means it would be sorted at the post office and handed over the counter to customers when they called for the mail. This likely would require additional manpower at the post office and likely would result in customer dissatisfaction due to waiting times at peak pickup times.

The likely impact of any of the alternatives would either be acquisition of a new post office with greatly expanded individual mailboxes, or rural delivery, or both.

4 What are the likely cumulative impacts on mail service with development of nearby land at existing zoning densities or at densities similar to the proposal?

The likely impact of any of the cumulative impact scenarios under any alternatives that would result in mail demand similar to a small town would either be acquisition of a new post office with greatly expanded individual mailboxes, or rural delivery, or both.

5 What measures could reduce or mitigate impacts of the proposal on mail facilities and services?

Acquisition of a new post office with greatly expanded individual mailboxes, or rural delivery, or both are the likely mitigating measures for increased demand for service.

3.5 UTILITIES

1 What utility services are addressed in this analysis?

This analysis addresses utility services commonly associated with residential use, or specifically proposed as part of the development including water, sewage disposal, stormwater, solid waste, electricity, communications, and cable television.

2 What policies and standards govern utility services?

Utilities are governed by a variety of governmental agencies at the federal, state, and local level as well as by the public and private utility providers.

In general, federal agencies regulate interstate utilities, which include:

- The interstate provision of communication services, which is regulated by the Federal Communications Commission (FCC).
- The interstate provision of electrical service, which is regulated by the Federal Energy Regulatory Commission (FERC).

At the state level, there are both regulations of private utilities and regulations of specific facilities:

- The Washington Transportation and Utilities Commission (WUTC) regulates all public utilities not provided by government bodies, including those that provide water service as well as electrical, telecommunications, and solid waste services.
- The Washington State Department of Health (DOH) regulates water systems through approval of facilities to meet health standards, and also shares regulatory responsibility with Washington State Department of Ecology (Ecology) for certain sewer systems and disposal of effluent.
- Ecology regulates water rights, which affects water utilities, and also regulates sewer system design and disposal of effluent.

Kittitas County has a Comprehensive Plan, in which various goals, policies, and objectives are outlined. It also regulates utilities through granting franchises for operations in specific portions of the county, and for placement of facilities within county rights-of-way.

The county has over 36 goals, policies, and objectives that relate to utilities. Those most relevant to this proposal are outlined below:

GPO 6.1 The County should promote the joint use of transportation rights-of-way and other utility corridors consistent with the underlying private property rights and easement limitations.

GPO 6.6 Expansion and improvement of utility systems should be recognized primarily as the responsibility of the utility providing the corresponding service.

GPO 6.13 The County should coordinate with utility providers.

GPO 6.18 Decisions made regarding utility facilities should be consistent with and complementary to regional demand, resources, and should reinforce an interconnected regional distribution network.

GPO 6.22 Kittitas County reserves the right to review the placement and appropriateness of utilities.

GPO 6.23 Kittitas County reserves the right to review all applications for utilities placed within or through the County for consistency with local policies, laws, custom, and culture.

GPO 6.28 It is the position of Kittitas County that it is inappropriate for utilities to over or under build other utilities. A specific example of such requirements may be found in RCW 35A.14.900 and other state law.

3.5.1 Utilities - Water

1 What water supply facilities and services are currently provided in the area?

All existing residences and businesses in the Easton area obtain domestic water supplies from wells. The predominant water service options available are:

- Public water systems provided by governmental entities. There is one entity in the area, Easton Water District No 3.
- Public water systems provided by private companies or associations. There are several systems in the area, such as the Sun Island water system that serves a subdivision north of I-90 and east of Exit 71.
- Private wells.

The Easton Water District No. 3 was formed in 1967 when local residents formed a special district to purchase the assets of the private company providing service to the area. In 1971, the district purchased the assets of a private company, Easton Silver Springs Inc., including the existing wells, a water withdrawal from Silver Creek, and the distribution system, which has been abandoned. This purchase included the water system and water rights that served Northern Pacific Railroad facilities in Easton.

The Easton Water District No. 3 boundary is shown in Figure 3-23. The system currently serves 188 customers in the original town of Easton and an area on the south side of I-90 extending along Railroad Avenue to the east and Cabin Creek Road to the west. Service on the north side of I-90 includes portions of Hawthorn Lane, Sparks Road north to the commercial area, Silver Springs RV Park and east on Sparks Road, as well as the subdivisions of Easton Village and Silver Creek (Easton 2004; DOH 2008). The water district annexed the Marian Meadows site in 2009.

The system's water source is three wells, one on the south side of I-90 and two on the north side. The system has a single 100,000-gallon storage tank on the south side of I-90. The system has fire hydrants throughout and delivers 1,000 gpm of fire flow (Easton 2004). The system was completely rebuilt in the 1990s with financing from a Federal Farm Administration loan and grants. The recently instituted rates are based on metered water quantity use (Hill 2008). Withdrawals from the three Easton Water District No. 3 wells are authorized by groundwater rights allowing a total withdrawal of 145 gpm and 137.2 ac-ft per year. These are classified as municipal water rights and were recently evaluated and verified by Ecology's Central Regional Office, in conjunction with a decision by the Kittitas County Water

Conservancy Board (Ecology 2003). The system has an application for additional water rights of 112 ac-ft that has been pending since 1990. The system water use in 2008 was about 71 ac-ft.

According to the District's Small Water System Plan (EWD 2004), which was approved by the DOH in 2005, storage is the principal factor that limits the existing system capacity to 542 connections. The water system plan addresses 188 connections. Average reported residential water usage was 168 gallons per day (gpd) per equivalent residential units (ERUs) (or 0.19 ac-ft per year per ERU), and average non-residential usage was 430 gpd per ERU in 2001. The system plan does not, however, explicitly address the differing water demands for full-time and seasonal residents.

Water meters were recently installed in the system and several years of data are currently available. Use was analyzed by amount used by service and by seasonal patterns. This analysis indicates that:

- The average daily consumption per hookup is 419 gpd. Peak season (summer) average use for all hookups is 644 gpd and low use season (winter) average use is 278 gpd.
- A few large users including the school and commercial uses account for about 49 percent of the annual use. Average daily use by these large users is 5,922gpd. Peak season (summer) use is 8,222 gpd and low use season (winter) use is 4,983 gpd.
- Occupied residential users (excluding the 10 largest users and vacant units) result in an average 247 gpd daily consumption (this excludes users that average less than 10 gpd).
- Median level users consuming above the average daily consumption are about 40 percent of the active residential users and account for 39 percent of the total water consumption and 76 percent of the residential water consumption. These are interpreted to be primarily full-time residents. Average daily use for the entire year is 474 gpd. Peak summer use is 790 gpd and low use season (winter) use is 306 gpd. Substantially higher summer use indicates that a substantial component of summer water use is for irrigation.
- Low users are about 40 percent of the residential users and account for about 12 percent of the total annual use and 24 percent of the residential water consumption. These are interpreted to be primarily part-time seasonal residents. In deriving average daily use, the users that had only a few readings per year were excluded, which resulted in an average daily use of 97 gpd. Peak season (summer) use for this group is 112 gpd and low use season (winter) use is 64 gpd. This value is consistent with other analysis methodologies used in this study that presume seasonal residences occupancy is equivalent to about a quarter of a full-time household.
- The average annual water consumption by the district based on metered uses is about 92.5 ac-ft per year.

Based on the 350-gpd standards provided in the DOH Water System Design Manual (DOH 2001), the capacity of the Easton Water District would be 355 residential connections. Subtracting the existing large users, and using the same average use, the capacity would be Based on the system current average use of 572 gpd, the capacity of the system would be about 217 hookups. Based on the average seasonal

residential use of 135 gpd, if all new users were seasonal, the capacity of the system would be about 632 hookups. This variability highlights the importance of the proportion of full-time and seasonal residential usage as well as commercial uses as a critical factor in determining future system capacity.

There are numerous water systems operated by homeowner associations that serve subdivisions in the area. These range from the Sun Island subdivision (115 connections), six separate water systems serving the Lake Easton Estates subdivision at the far north end of Sparks Road (35 total connections), the Shoop Short Plat water system near the east end of Sparks Road (7 connections), to very small systems such as the McKenna water system serving two lots on Kachess Lake Road. These systems do not provide fire hydrants and fire flow.

Systems serving individual businesses include the Turtle Town RV Park.

Private wells serve a variety of larger lots in the area including the homes in the southern portion of Hawthorn Lane south of the project site. The Silver Trail Acres subdivision on the north side of I-90 is largely served by private wells as are the Easton small ranches on the south side of I-90.

2 What mandates or standards for water supply service have been established?

The United States Environmental Protection Agency (EPA) provides standards for drinking water quality that apply to public water systems through the National Drinking Water Regulations, which are administered in Washington State by DOH.

Water systems are primarily regulated by DOH through planning and engineering standards. In general, water systems are required to:

- Provide water that meets health standards;
- Provide water within their identified service area; and
- Meet standards for system capacity and reliability, including facilities as well as operational, technical, managerial, and financial capability.

Regulation of water systems with up to nine connections and some commercial systems are reviewed and approved by the local health department.

Kittitas County Comprehensive Plan policies specific to water systems include:

GPO 5.110 Public facilities outside of urban growth areas or urban growth nodes. New municipal urban public facilities (central sewage collection and treatment, public water systems, urban street infrastructure, and stormwater collection facilities) will not be extended beyond urban growth area and urban growth node boundaries for residential development. Water service, public or private, may be provided beyond urban growth area or urban growth node boundaries. This policy does not apply to stormwater drainage.

Kittitas County has adopted a level of service standard for Water District No. 3 of 320 gallons per capita per day in accordance with GPO 5.12 Standards for Levels of Service.

3 What is the demand for water from existing vacant lots in the LAMIRD and how does that affect water available to the alternatives for project development.

Kittitas County has designated two LAMIRD.. This includes designation of the area around the Easton Townsite as a Rural Activity Center and designation of an area on the west side of I-90 accessed by Exit 70 and Sparks Road as a Rural Employment Center. One of the findings in the County's designation of these areas is that sufficient water is available from the Easton Water District to serve these areas. Some commenters on the DEIS suggest that water should be reserved to allow development with the LAMIRDs prior to release of water to serve additional development outside the LAMIRDs. Table 3-23 indicates the vacant residential and commercial parcels with the LAMIRDs and existing subdivided lots for which the water district has commitments to service. The table includes common multipliers for water demand for residential and commercial uses resulting in projected consumption on a daily and annual acre feet basis. The Rural Employment Center includes only undeveloped lots, not developed parcels that may be subject to redevelopment in the future. The Rural Employment Center also includes a parcel of DNR Trust Lands that are currently part of the Easton State Airport Site. Development potential of this site is listed separately because it is uncertain whether it would be made available for development and projections include only about half the area of the site, presuming that the area near the airport would continue to be devoted to airport use.

The resulting water demand for these parcels would range between almost 55 and 90 ac-ft of water consumption per year and would consume 80 percent to over 100 percent of the remainder of the district's 137.2 ac-ft per year of water rights not consumed by existing hookups.

4 What is the demand for water under the different alternatives?

Alternatives 1 and 2 water demand is indicated under multiple tenure scenarios in Table 3-24. The tenure alternatives with a higher proportion of full-time residences (workforce and retired) have substantially higher water demand. All the tenure options exceed the current Easton Water District water rights of 137.2 ac-ft per year with existing use of 71 ac-ft, resulting in up to 61 additional ac-ft per year for new hookups. If the pending water rights application for an additional 112 ac-ft per year were approved, the resulting rights of 252 ac-ft per year would result in 178 ac-ft available for new hookups. This capacity would not be adequate for any options except Tenure Scenario 4 with 50 percent seasonal residents. Table 3-22 does not make provision for lower water demand that can be expected for multi-family use included in Alternative 2. If multi-family units demand were half that of full-time single-family residences, the resulting demand would be 204 ac-ft per year.

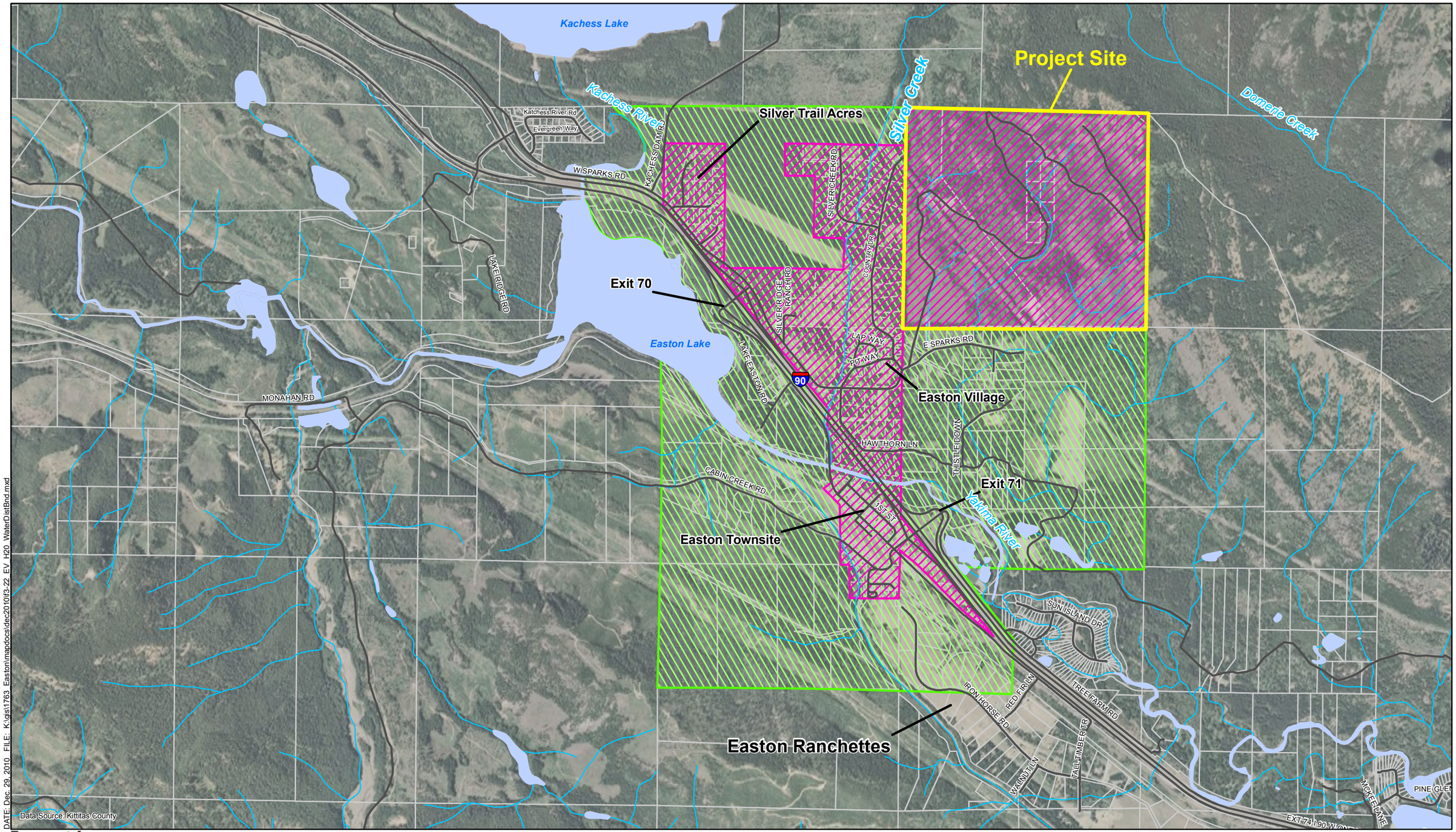
Alternatives 3A, 3B, and 4 water demand for 147 units is indicated under multiple tenure scenarios in Table 3-25. The demands are proportionally lower than Alternatives 1 and 2. Tenure Scenarios 3 and 4 with seasonal residents totaling 35 percent and 50 percent, respectively, are within the 61 additional ac-ft per year available for new hookups under the existing district water rights including only existing use. If provision is made for reserving water supply for existing platted lots and the land within the LAMIRDs, the district is not likely to have sufficient water rights. If the pending water rights application for an additional 112 ac-ft per year were approved, all tenure scenarios would be adequately served by the 178 ac-ft available for new hookups.

Table 3-23. Projected Water Use Easton LAMIRDs and Water District

LAMIRD	Number of Vacant Residential Units	Vacant Commercial Acres	Daily Demand per Residential Service (gpd)	Daily Demand per Commercial Acre12 (gpd)	Average Daily Demand (gpd)	Total Annual (ac-ft)
LAMIRD Rural Activity Center						
	41		350		14,350	**16.07**
	41		419		17,198	**19.26**
	41		474		19,464	**21.80**
LAMIRD Rural Employment Center						
Excluding DNR Trust Land		16		1,200	19,200	**21.50**
Including DNR Trust Land		32		1,200	39,012	**43.70**
Water district vacant lots outside LAMIRD						
	46		350		16,100	**18.03**
	46		419		19,295	**21.61**
	46		474		21,838	**24.46**

Table 3-24 Projected Water Use, Alternatives 1 and 2 – 443 Units

Use Category	Number of Units	Average Daily Demand per Service (gpd)	Total Annual (ac-ft)
Average Daily Method Statewide per user demand	**443**	**350**	
Tenure Scenario 1: All Full-Time Residential			
Median use service Workforce 85%; Retired 15%	443	419.46	**208.1**
Tenure Scenario 2: Primarily Workforce			
Median Use Service Workforce 60%; Retired 15%	75%	332	474.73
Low Use Service Seasonal residential 25%	25%	111	97.16
TOTAL Scenario 2			***189***
Tenure Scenario 3:			
Near Balanced Full-time 35%; Retired 30%	288	474.73	153.1
Low-Use Service Seasonal residential 35%	155	97.16	16.9
TOTAL Scenario 3			***170***
Tenure Scenario 4:			
Median Use Service Full-time 25%; Retired 25%	222	474.73	*117*
Low Use Service Seasonal residential 50%	222	97.16	24.1
TOTAL Scenario 4			**142**



Parametrix

0 N 2,000
Scale in Feet

Legend

- Project Site
- Road
- Lake
- Intermittent Stream
- Perennial Stream
- Water District Boundary
- Future Service Area
- Parcel Lines

Figure 3-23
Marian Meadows
Water District Boundary

Alternatives 3D and 5 water demand for 113 units is indicated under multiple tenure scenarios in Table 3-26. All of the tenure scenario demands are within the 61 additional ac-ft per year available for new hookups according to the existing Easton Water District water rights including only existing use. If provision is made for reserving water supply for existing platted lots and the land within the LAMIRDs, the district is not likely to have sufficient water rights. If the pending water rights application for an additional 112 ac-ft per year were approved, all tenure options would be adequately served by the 178 ac-ft available for new hookups

Alternative 3C water demand for 33 units is indicated under multiple tenure scenarios in Table 3-27. All of the tenure scenario demands are within the 61 additional ac-ft per year available for new hookups including only existing use. If provision is made for reserving water supply for existing platted lots and the land within the LAMIRDs, the district is still likely to have sufficient water rights.

Table 3-25. Projected Water Use, Alternatives 3A, 3B, and 4 – 147 Units

Use Category	Number of Units	Average Daily Demand per Service (gpd)	Total Annual (ac-ft)
Average Daily Method (includes all users)	147	350.00	**57.6**
Tenure Scenario 1: All Full-Time Residential			
Median Use Service	147	474.73	78.2
Workforce 85%; Retired 15%			
Tenure Scenario 2: Primarily Workforce			
Median Use Service	110	474.73	58.6
Workforce 60%; Retired 15%			
Low Use Service	25%	37	97.16
Seasonal residential 25%			
TOTAL Scenario 2			**62.6**
Tenure Scenario 3: Near Balanced			
Median Use Service	96	474.73	50.8
Full-time 35%; Retired 30%			
Low Use Service	51	97.16	5.6
Seasonal residential 35%			
TOTAL Scenario 3			**56.4**
Tenure Scenario 4:			
Median Use Service	74	474.73	39.1
Full time 25%; Retired 25%			
Low Use Service	74	97.16	8.0
Seasonal residential 50 %			
TOTAL Scenario 4			**47.1**

Table 3-26 Projected Water Use, Alternatives 3D and 5 – 113 Units

Use Category	Number of Units	Average Daily Demand per Service (gpd)	Total Annual (ac-ft)
Average Daily Method (includes all users)	**113**	**350**	**44.3**
Tenure Scenario 1: All Full-Time Residential			
Median Use Service Workforce 85% Retired 15%	113	475	**60.1**
Tenure Scenario 2: Primarily Workforce			
Median Use Service	85	475	45.1
Workforce 60% Retired 15%			
Low Use Service	28	97	3.1
Seasonal residential 25 %			
TOTAL Scenario 2			**48.2**
Tenure Scenario 3:			
Near Balanced	73	475	39.1
Full time 35% Retired 30%			
Low Use Service	40	97	4.3
Seasonal residential 35%			
TOTAL Scenario 3			**43.4**
Tenure Scenario 4:			
Median Use Service	57	475	30.0
Full time 25% Retired 25%			
Low Use Service	57	97	6.1
Seasonal residential 50%			
TOTAL Scenario 4			**36.1**

Table 3-27. Projected Water Use, Alternative 3C – 33 Units

Use Category	Number of Units	Average Daily Demand per Service (gpd)	Total Annual (ac-ft)
Average Daily Method (includes all users)	**33**	**350**	**12.94**
Tenure Scenario 1: All Full-Time Residential			
Median Use Service Workforce 85% Retired 15%	33	475	**17.55**
Tenure Scenario 2: Primarily Workforce			
Median Use Service	25	475	13.16
Workforce 60% Retired 15%			
Low Use Service	8	97	.90.
Seasonal residential 25%			
TOTAL Scenario 2			**14.06**
Tenure Scenario 3: Near Balanced			
Median Use Service	21	475	11.41
Full time 35% Retired 30%			
Low Use Service	12	97	1.26
Seasonal residential 35%			
TOTAL Scenario 3			**12.66**
Tenure Scenario 4:			
Median Use Service	17	475	**8.77**
Full time 25% Retired 25%			
Low Use Service	16	97	**1.80**
Seasonal residential 50%			
TOTAL Scenario 4			**10.57**

One consequence of the alternatives is the use of much of the existing capacity of the water system. If more water is used by the Marian Meadows development, less is available for other users. If water is reserved for exiting platted lots and for the two LAMIRDs in the area, there is little or any water available to serve the Marian Meadows proposal.

One of the potential effects of use of the water district capacity is the use of individual wells by future development. Any lot over 1 acre in size with on-site sewage disposal can use an individual well for water supply. A water rights certificate from Ecology is not required to be obtained prior to drilling a well. These individual wells are theoretically subject to state water rights laws and theoretically could be required to reduce or cease their use of water if senior water rights were adversely affected.

Enforcement of the precedence of senior water rights against a large number of individual domestic wells is extremely problematic and has not been done to date in Washington State. One of the disadvantages of individual well water supplies is that water supply for hydrants and fire flow is not provided. In addition, the systems are not monitored for water quality and reliability of service. In this case, an adverse unintended consequence of state water rights, as applied to the Easton Water District, with the demands of the Marian Meadows development may be the development of water supplies for new development in the area that serves the public less effectively than the expansion of the water district system.

5 What are the likely cumulative impacts on water supply facilities and services with development of nearby land at existing zoning densities?

Cumulative impacts of the project in the immediate vicinity (north of I-90 and served by Sparks Road) under the existing 3-acre minimum lot size were analyzed based on the potential increase in development based on lot sizes according to Kittitas County Assessor's records.

At the current time, about two-thirds of the lots in the area are larger than 3 acres. Under the 3-acre minimum lot size, only lots greater than 6 acres were considered subdividable. The Easton State Airport was excluded. Division of those lots would result in creation of an additional 130 lots. In addition, there are about 80 existing vacant parcels in the area that could be developed with single-family residences with submittal of building and septic tank applications. There are about 120 existing residences. The total would result in up to 330 lots outside the Marian Meadows development.

Alternatives 1 and 2 with 443 units would result in 773 cumulative lots or units in the project vicinity.

Alternatives 3A, 3B, and 4 with about 147 lots would result in about 477 lots in the project vicinity.

Alternatives 3D and 5 with about 113 lots would result in about 443 lots in the project vicinity.

Alternative 3C with about 33 lots would result in about 363 lots in the project vicinity.

Table 3-28 indicates the average daily demand on an annual basis of these alternatives, based on tenure scenarios.

All cumulative scenarios are in excess of the water district's existing water rights and additional applications pending. This would substantially increase the likelihood of use of water sources other than the water district such as individual wells. This would impose difficulties in managing surface and water rights to recognize senior rights and provide in-stream flows. If service is provided by individual wells, fire flow would not be required.

5 What are the likely cumulative impacts on water supply facilities and services with development of nearby land at densities similar to the proposal?

If the Alternative 1 or 2 PUD approval were received for this property, it could provide the precedent for similar development of other properties in the vicinity. This would allow subdivision of properties 2 acres

or larger. If properties not currently subdivided were developed at the same intensity as the proposal, an additional 546 lots could be developed (this includes 80 existing vacant lots).

Alternatives 1 and 2 with 443 units would result in about 990 cumulative lots or units in the project vicinity.

Table 3-28. Cumulative Water Use, Rural Development, in Project Vicinity

	Annual Water Use in Acre Feet				
Use Category	**Average Daily Demand per Service (gpd)**	**Alternatives 1 and 2 443 units**	**Alternatives 3A, 3B, and 4 147 units**	**Alternative 3D and 5 113 units**	**Alternative3C 33 units**
Number of Cumulative Units		773	477	443	363
Tenure Scenario 1: All Full-Time Residential					
Median Use Service Workforce 85%; Retired 15%	475	411.1	**253.7**	**235.6**	**193**
Tenure Scenario 2: Primarily Workforce					
Median Use Service Workforce 60%; Retired 15%	475	308.3	190.2	176.7	57.8
Low Use Service Seasonal residential 25%	97	21.0	13.0	12.1	3.9
TOTAL Scenario 2		**329.3**	**203.2**	**188.7**	**61.7**
Tenure Scenario 3:					
Near Balanced Full-time 35%; Retired 30%	475	267.2	164.9	153.1	50.1
Low Use Service Seasonal residential 35%	97	29.4	1.2	16.9	5.5
TOTAL Scenario 3		**296.6**	**183.0**	**170.0**	**55.6**
Tenure Scenario 4:					
Median Use Service Full-time 25%; Retired 25%	475	205.5	126.8	117.8	38.5
Low Use Service Seasonal residential 50%	97	42.1	26.0	24.1	7.9
TOTAL Scenario 4		**247.6**	**1532.8**	**141.9**	**46.4**

Alternatives 3A, 3B, and 4 with 147 units would result in a cumulative total of about 690 lots with PUD density.

Alternatives 3D and 5 with about 113 lots would result in about 443 lots in the project vicinity under existing zoning and about 656 lots with PUD density.

Alternative 3C with about 33 lots would result in about 363 lots in the project vicinity under existing zoning and about 579 lots with PUD density.

Table 3-29 indicates the cumulative water use for PUD development in the project vicinity based on the tenure scenarios.

All scenarios result in water demand in excess of the water district's existing water rights and additional applications pending. This would substantially increase the likelihood of use of water sources other than the water district such as individual wells. This would impose difficulties in managing surface and water rights to recognize senior rights and provide in-stream flows. If service is provided by individual wells, fire flow would not be required.

Table 3-29. Cumulative Water Use, PUD Density Development in Project Vicinity

Use Category	Average Daily Demand per Service (gpd)	Alternatives 1 and 2 443 units	Alternatives 3A, 3B, and 4 147 units
Number of Units		989	693
Tenure Scenario 1: All Full-Time Residential			
Median Use Service Workforce 85% Retired 15%	475	**525.9**	**268.5**
Tenure Scenario 2: Primarily Workforce			
Median Use Service Workforce 60% Retired 15%	475	394.4	276.4
Low Use Service Seasonal residential 25%	97	26.9	18.9
TOTAL Scenario 2		**421.3**	**295.2**
Tenure Scenario 3:			
Near Balanced Full-time 35% Retired 30%	475	341.8	239.5
Low Use Service Seasonal residential 35%	97	37.7	26.4
TOTAL Scenario 3		**379.5**	**265.9**
Tenure Scenario 4:			
Median Use Service Full-time 25% Retired 25%	475	263.0	184.3
Low Use Service Seasonal residential 50%	97	53.8	37.7
TOTAL Scenario 4		**316.8**	**222.0**

6 What measures could reduce or mitigate impacts of the proposal on water supply facilities and services?

The alternatives with fewer units reduce demand on water supply.

A number of programs would tend to reduce water demand:

- The installation of water meters and a rate system based on consumption is the most effective means to reduce water use through greater charges for larger consumption. A system that charges a lower rate for an initial allowance and a higher rate for additional use provides additional incentive to conserve for large water users. The Easton Water District has charged rates based on metered use for a relatively short period. Additional experience of the relationship between use and cost may provide incentive in the future for users to conserve water. Higher charges also would tend to reduce use.
- Education programs in conjunction with metered water use provide customers with tools to reduce water use in conjunction with the incentive provided by rates.
- Metered use and regular monitoring of the system aids in detecting leaks, which aids in water conservation.
- Reduction in summer peak use can be encouraged by plantings of drought-tolerant landscaping, which also can be encouraged by the rate structure.
- Irrigation with non-potable water such as recycled water from a wastewater treatment facility meeting appropriate standards can reduce the use of domestic water for that purpose. Use of greywater from a separated system also is a potential source for subsurface irrigation. Under Washington State DOH standards, greywater may be used for subsurface irrigation of trees, shrubs, flowers, lawns, and other ground covers, but may not be used for watering of food crops, vegetable gardens, or any type of surface or spray irrigation.
- Fixtures that reduce water consumption can be required on new construction and encouraged on existing structures.

The extent of reduction that can be achieved through water conservation programs varies considerably among communities. Generally, there is a strong correlation between utility provisions of resources, including education and incentives, and the effectiveness of a program (AWE 2009).

How do microorganisms help provide sewage treatment?

Microorganisms are bacteria in the soil that helps treat sewage by "digesting" and breaking down the organic components.

3.5.2 Utilities - Sewage Disposal

1 What sewage disposal facilities and services are currently provided or planned in the area?

The project vicinity is currently served by on-site sewage disposal systems. These are systems that convey, store, treat, or dispose of sewage on the property where it originates or on adjacent or nearby property. The systems typically consist of:

- A septic tank, which receives the sewage and provides separation of settleable and floating solids from the liquid for some biological digestion of organic matter, prior to discharge of the liquid portion into a drainfield.
- A drainfield that is designed so that effluent is absorbed into the surrounding soil where additional treatment is provided through microorganisms in the soil.

What makes a soil permeable?

The ability for water and air to move through the natural spaces or pores within soil determines if the soil is permeable. If water can flow through the soil quite easily, the soil is highly permeable. Coarse soils typically have large connected pore spaces and high permeability. Fine soils, such as clay, typically have less space within the soil.

On-site sewage disposal is practical only when:

- There is a satisfactory location for a primary and reserve sewage system on the site at an appropriate slope and with clearance from structures, watercourses, wells, and other restrictions, such as adjoining property.
- There is sufficient undisturbed native soil of suitable texture, structure, permeability, and depth to provide satisfactory treatment and disposal.
- There is adequate separation from the bottom of a drainfield trench to the seasonal high groundwater table to provide sufficient treatment in the soil before the effluent reaches groundwater.

The major limitation for suitability of an on-site system is the character of the soil. Many soils in mountainous areas are not deep enough, are not permeable enough, or are too permeable, or have restrictive layers, or have high groundwater tables. The soils deposited in the flat valley bottom in the Easton area are generally too permeable to permit standard drainfield systems. Most systems in the area use "sand-lined trenches" to provide a layer of soil that provides for adequate retention time for treatment (Gilbert 2008). A sand-lined trench is a combined treatment component and soil dispersal component. Proper function requires that influent to the sand filter be distributed over the media in controlled, uniform doses. In order to achieve accurate dosing, these systems require timed dosing with associated pump systems. The effluent is absorbed into the native soil at the bottom of the sand-lined trenches, which accomplishes dispersal into the subsoil environment and further treatment (DOH 2007).

Soils on sloping hillsides are often too shallow to provide adequate biological treatment, or have restrictive layers that prevent water from moving through them or cause effluent to surface downhill from the system. In these cases, large generators of effluent, such as the Easton School or commercial uses, typically utilize larger on-site systems with large multi-compartment septic tanks and drainfield systems

that more evenly distribute effluent to the soils. In some cases, they are required to use more advanced systems such as sand filters.

2 What mandates or standards for sewage disposal service have been established?

The GMA contains several specific mandates for sewage disposal, including the following:

RCW 36.70A.030(16). "Rural governmental services" or "rural services" include those public services and public facilities historically and typically delivered at an intensity usually found in rural areas, and may include domestic water systems, fire and police protection services, transportation and public transit services, and other public utilities associated with rural development and normally not associated with urban areas. Rural services do not include storm or **sanitary sewers**, except as otherwise authorized by RCW 36.70A.030(19) "Urban governmental services" or "urban services" include those public services and public facilities at an intensity historically and typically provided in cities, specifically including storm and **sanitary sewer systems**, domestic water systems, street cleaning services, fire and police protection services, public transit services, and other public utilities associated with urban areas and normally not associated with rural areas.

RCW 36.70A.110(4). In general, cities are the units of local government most appropriate to provide urban governmental services. In general, it is not appropriate that urban governmental services be extended to or expanded in rural areas except in those limited circumstances shown to be necessary to protect basic public health and safety and the environment, and when such services are financially supportable at rural densities and do not permit urban development.

Kittitas County Comprehensive Plan policies specific to sewer systems include:

GPO 5.110 Public facilities outside of urban growth areas or urban growth nodes. New municipal urban public facilities (central sewage collection and treatment, public water systems, urban street infrastructure, and stormwater collection facilities) will not be extended beyond urban growth area and urban growth node boundaries for residential development. Water service, public or private, may be provided beyond urban growth area or urban growth node boundaries. This policy does not apply to stormwater drainage.

Standards for on-site sewage disposal have been developed by the DOH and are contained in WAC 246-272A.

The local health officer has authority and approval over:

(a) Systems with design flows through any common point up to 3,500 gpd.

(b) Any large on-site sewage system for which jurisdiction has been transferred by the department to a local health jurisdiction by contract. Counties with such agreements currently include Clallam, King, Kitsap, Thurston, and San Juan.

DOH (Large On-Site Program per Chapter 246-272B WAC) has authority and approval over:

(a) Sewage systems with design flows through any common point between 3,500 to 14,500 gpd.

(b) Any large on-site sewage system for which jurisdiction has been transferred to the DOH under conditions of memorandum of agreement with Ecology.

Ecology has authority and approval over:

(a) Domestic or industrial wastewater under Chapter 173-240 WAC.

(b) Sewage systems using mechanical treatment, or lagoons, with ultimate design flows above 3,500 gpd.

(c) Sewage systems with subsurface disposal with ultimate design flows above 14,500 gpd.

(d) Any system utilizing subsurface disposal which has received a federal or state construction grant administered by Ecology.

Regardless of what agency reviews and approves sewage disposal systems, regulations provide for:

- Protection of public health from disease that may be contracted in waste products, including protection of water supplies.
- Protection of surface and groundwater to prevent pollution.
- Assurance that the system is adequately designed and installed to function properly.

The major regulations that govern sewage disposal include:

WAC 173-240. Submission of plans and reports for construction of wastewater facilities outlines the requirements for the submittal of planning, design, and construction documents for both domestic and industrial wastewater collection and treatment systems. Prior to the construction or modification of wastewater facilities, an engineering report and plans and specifications for the project must be prepared under the supervision of a professional engineer and approved by Ecology. It also includes requirements for the general sewer plan, construction quality assurance plan, and operation and maintenance manual, as well as for a certified operator and public ownership of the facilities.

WAC 246-272A. On-site sewage disposal regulations are designed to protect the public health by minimizing the potential for public exposure to sewage from on-site sewage systems and by minimizing adverse effects to public health that discharges from on-site sewage systems may have on ground and surface water. The state guidance accomplishes this through regulating the location, design, installation, operation, maintenance, and monitoring of on-site sewage systems to achieve effective long-term sewage treatment and effluent dispersal, including limiting the discharge of contaminants to waters of the state.

WAC 246-272B-00101. Address large on-site sewage systems, provide similar regulations for large systems, and recognize the special design and engineering needs of those systems and the higher level of operation, maintenance, and monitoring required.

WAC 246-272B. Regulations about on-site sewage system additives. This guidance establishes the review, criteria, and decision-making procedures for evaluating on-site sewage disposal system additives to determine whether individual additives have an adverse effect on public health or water quality.

WAC 173-221. Discharge standards and effluent limitations for domestic wastewater facilities establish surface water discharge standards which represent "all known, available, and reasonable methods of prevention, control, and treatment" (AKART) for domestic wastewater treatment facilities, as required by Chapter 90.48 RCW. These are often referred to as technology-based standards. The chapter also provides for alternative discharge standards in some situations where specific criteria have been met.

WAC 173-220 WAC. National Pollutant Discharge Elimination System Permit Program establishes the state permit program for implementation of the NPDES Permit Program created by the federal Clean Water Act. The program requires a discharge permit for any point source discharge of pollutants to surface waters of the state. Permits are issued on a 5-year cycle and address discharge limits, monitoring schedule, and general and special conditions. This chapter also includes the requirements for permit applications and renewal and for public notice.

WAC 173-216 WAC. State Waste Discharge Permit Program establishes the state permit program for the discharge of pollutants to groundwaters of the state and to municipal sewerage systems. The use of reclaimed water is also permitted under the State Waste Discharge Permit Program. The program excludes domestic wastewater discharges from septic tank/drainfield systems with a design capacity not exceeding 14,500 gpd, as well as mechanical treatment and lagoon systems with a design capacity not exceeding 3,500 gpd. DOH regulates these systems under Chapter 248-96 WAC.

3 What sewage disposal facilities are included in the proposal and alternatives and what operational risks do they pose?

Alternative 1, the Applicant's PUD Proposal with up to 443 units is proposed to be served by a tertiary treatment plant designed to produce Class A, reclaimed water.

Impacts related to the proposal include:

- Cost and feasibility of routine operation;
- Cost and feasibility of long-term maintenance and reconstruction and replacement; and
- Reliability and the risk of failure, which relates to the operational issues.

In order to understand potential impacts, it is useful to understand the basic proposed treatment technology. The proposed wastewater treatment facility consists of an SBR "package plant" with additional elements to meet the proposed effluent standard of

What is Aerobic Treatment?

In all aerobic biological wastewater treatment systems, the basic principle is that treatment occurs by growing a culture of bacteria and other microorganisms that utilize BOD and TSS as a food source. Oxygen is required and is provided by mechanical systems using blowers and diffusers. This part of the process, called aeration, also serves to mix the contents of the tank to make sure contaminants in the wastewater come in contact with the biomass. The majority of the food is converted to carbon dioxide and water to produce energy for the microorganisms. The rest of the food is converted to new biomass.

Class A, reclaimed water. This type of wastewater treatment process involves an equalization/chlorine contact tank and a tertiary filtration system.

Sequencing Batch Reactor Package Plant

An SBR is a common type of extended aeration biological treatment process that removes organic matter and suspended solids from the wastewater. An SBR performs the major functions of a biological system in a timed sequence using one tank. These major functions are aeration/mixing, clarification/settling, and decanting of clarified effluent. The objective of the biological treatment system is to reduce the biological oxygen demand (BOD) and total suspended solids (TSS) to low levels to protect the oxygen resources of the receiving water.

How the Treatment Plant Functions:

Headworks

The proposed headworks for this project consist of a grinder and a flume for measuring the system flow rate. This system will be located below grade in a vault. This process of in-line grinder is sometimes referred to as a macerator or comminutor that reduces the upfront capital costs.

Risks of Failure:

- Grinders are high-wear items and need frequent inspection and adjustment. They can also be subject to plugging.
- If the grinder is out of service, the plant will be shutdown unless bypass or provisions for storage of wastewater are provided. Bypassing will subject downstream processes to larger solids and risk of failure of downstream processes.
- Increased risk of downstream problems may occur including clogging, equipment wear, and scum formation.
- Ground-up plastics and other debris may adversely affect the quality of biosolids, thereby complicating disposal of these solids.
- Equipment in underground vaults may be less likely to be properly maintained.

The incorporation of a grinder increases the need for regular oversight and maintenance and for having operational staff on-call in case this critical element of the process experiences a breakdown.

Options to Reduce Risk

- Include an influent pump station so the headworks can be above grade to facilitate maintenance.
- Provide two grinder facilities to be operated alternatively to provide greater reliability in case of failure.
- Provide a vortex grit removal system rather than the proposed system of letting grit settle with the biosolids in the SBR.

- Utilize alternative technology consisting of screening and grit removal to continuously remove, wash, and dewater the collected debris. Effective screening also reduces the formation of scum, which greatly reduces the risks of downstream operation problems and increases the life of equipment.

Risks of Failure

- The SBR is a proven technology that with proper design, sizing, and operation should produce a high quality secondary effluent. However, this process relies on solids settleability. Settleability depends on many variables and must be monitored closely. Process upsets resulting in poor settleability will affect the effluent quality.
- Influent variability may affect the ability of the biological processes to function. During off-peak times, or during initial startup, there may not be sufficient loading to maintain the biological system. If a sudden increase occurs in influent load due to an increase in seasonal or weekend occupants, the system may not have sufficient biological activity to effectively process the sewage.

Options to Reduce Risk

- Close operator attention and monitoring may be critical so that adjustments can be made in response to variable conditions to ensure adequate system performance in an application with a high proportion of vacation homes.
- Systems that receive highly variable loads can be fed supplemental food sources (dog food) during low loading periods to maintain biomass in the system. If there are periods of no loads, the system can be shut down and reseeded. This approach would require that the loading pattern be predictable.
- Alternative treatment systems are available that are less susceptible to risk of failure. Membrane bioreactors (MBR) have gained popularity for these types of applications because they are generally considered to be the less susceptible to upsets because the system does not rely on solids settleability.

What does chlorination do?

Chlorine is a powerful oxidant used to kill disease causing microorganisms that can be present in effluents from wastewater treatment systems. There are several forms of chlorine that can be used. No matter what form chlorine is delivered in, the objective is to provide a sufficient concentration of chlorine after mixing with the final effluent and allow sufficient contact time to allow chlorine to react with and kill microorganisms.

Chlorination System

Chlorine is used in this phase of treatment to kill disease-causing microorganisms. Chlorine is added to SBR effluent in an effluent equalization tank to provide adequate contact time.

Risks of Failure

- Chlorine demand is significantly higher on unfiltered effluent than filtered effluent. If chlorine demand is underestimated, proper disinfection may not be provided.

Options to Reduce Risk

- Chlorination after filtration will reduce chlorine demand. In general, disinfection systems are much more effective after filtration when residual solids have been removed.
- If chlorine residual is not required in the reclaimed water system, ultraviolet (UV) disinfection should be considered. This will eliminate safety concerns with chlorine and also eliminate the need to de-chlorinate when discharging to surface waters.

Tertiary Filtration

Tertiary filters remove particles from secondary effluent by physical straining of the filter media and some interactions with the filter media. Coagulation and flocculation are used to aggregate smaller particles into bigger particles and make them easier to remove by filtration. There are a wide variety of filter technologies that are currently on the market.

Risks of Failure

- Plugging or blinding of the filter.
- Use of the filter feed pumps is risky for providing reclaimed water system pressure.

Options to Reduce Risk

- A conservative design with respect to filter influent TSS concentration should be used to ensure that filters can handle SBR effluent TSS variations and reasonable upset conditions.
- Other filter technologies should be evaluated such as continuous backwash filters and disk type filters.
- A separate storage tank and pumps for the reclaimed water system should be employed to decouple filtration from the reclaimed water system and allow more flexibility in system operation.

Overall impacts

Wastewater treatment facilities employing a combination of mechanical and biological processes have been successfully used to serve large concentrations of population for many years. In this application, with a relatively small population, there are a number of factors that may lead to choices other than the SBR system proposed. These include:

- High cost of implementation. The initial capital cost of a wastewater treatment facility is very high. For a service area of 443 units the cost per unit is several magnitudes larger than on-site disposal.

The SBR system proposed, however, is one of the lowest cost alternatives available if such a system is needed or desirable.

- High cost of operation and maintenance. Any sewage treatment facility requires a relatively high level of oversight of operation and maintenance of key facilities. In this case, with the potential for variable populations due to vacation homes, a very high level of oversight may be required during seasonal startups and weekends. This may involve checking the operation on a regular basis several times a day. It is also critical that personnel be on-call if critical parts of the system are not operating properly. The SBR system proposed needs relatively high levels of oversight and maintenance. For a service area of 443 units the cost per unit is likely to be many times higher than typical charges for municipal sewage treatment due to economies of scale.
- High cost of replacement. The proposal to use steel tanks in the SBR system reduces initial capital cost, but ensures that major portions of the system will require replacement in 15 to 25 years. This high cost will necessitate rates that build a reserve of funds for replacement that will be half to three-quarters of the cost of the initial system. In addition, key mechanical components such as the influent grinder will require relatively frequent replacement of key components.
- Risk of upset and failure to meet effluent standards as outlined above. There are a number of steps in the treatment process where mechanical failure or the failure to operate the system properly may result in not meeting effluent standards. This would subject the public to potential risks from coming into contact with effluent that does not meet proposed standards:
  - In a system proposing to use reclaimed water on residential landscaping or other surface application, homeowners could be exposed to effluent that may lead to risk of disease.
  - If effluent were discharged to groundwater, there is a risk of contamination of groundwater and downgradient wells that are providing the water supply. This is discussed in more detail in Section 3.13, Groundwater Resources.

4 What risks may be associated with the proposed and alternative means of sewage disposal?

Proposed Sewage Treatment System

The major risk associated with the proposed sewage treatment facility is potential for failure to meet discharge standards, as discussed above, based on multiple potential contributing causes. This could affect the groundwater aquifer used for public water supply, as discussed in Section 3.13. In the worst case, discharge of untreated wastewater would cause the average nitrate concentration in groundwater to increase to approximately 15 mg-N/L within a plume that would migrate downgradient from the infiltration pond. For full buildout of Marian Meadows, with 443 ERUs, the nitrate concentration would increase to approximately 19 mg-N/L. These values would be far above the current background concentration in the aquifer of 0.22 mg-N/L and would exceed the drinking water standard of 10 mg-N/L.

(The concentrations of other dissolved compounds in the untreated wastewater plume might also exceed the drinking water standards.)

The exact direction of the plume migration cannot be predicted with available information but would be generally to the south or southeast. The exact locations of neighboring domestic wells are not known, but they potentially could be affected for a period by the plume. The water district well just north of Sparks Road and east of Silver Creek is not downgradient from the direction of groundwater flow from the site and would not likely be affected. Several domestic wells are located along the southern edge of the Marian Meadows property, adjacent to the proposed infiltration pond.

The somewhat rectangular plume would migrate at a rate of approximately 1 foot per day. Thus, a single well that pumped the average concentration in the plume would experience concentrations that rise to near the maximum concentrations reported above, then decrease to values unaffected by the upset condition, over the course of several months to a year. In all, the plume would persist for many years in the aquifer before reaching the river.

On-site Sewage Systems

On-site sewage systems (OSS) are commonly used to treat and dispose of sanitary waste in lower density developments. Common failures of OSSs in the past have included unpumped and sludge-filled tanks, which result in a clogged adsorption field, and hydraulic overloading caused by increased occupancy and greater water use following installation of new water lines to replace wells and cisterns (EPA 2002). A number of household chemicals have also been found to interfere with the proper operation of the septic system, which allows them to pass through into the aquifer untreated (EPA 2002).

Bacterial and viral pathogen contamination from OSSs can be prevented through proper siting, maintenance, and use. The DOH currently develops and implements standards for the performance, application, design, operation, and maintenance of on-site sewage treatment and disposal systems to prevent bacterial and viral pathogen contamination to groundwater.

Remaining contaminants such as nitrates, chlorides, and any organic solvents placed in the system usually depend on dilution to protect groundwater. The main outstanding issue associated with the design of OSSs is the nitrogen removal capacity. Upon release from the septic tank, most of the nitrogen is in the form of ammonia. This ammonia gets converted by aerobic bacteria in the biomat and upper vadose zone to nitrite and then nitrate, which is a major groundwater pollutant (EPA 2002). Nitrate concentrations can be reduced by dilution or denitrification. Denitrification requires both anaerobic conditions and an available electron donor, like carbon or sulfur. Without this process, the reduction of nitrate concentrations relies entirely on dilution through dispersion or recharge of groundwater supplies by precipitation (EPA 2002).

A high density of septic systems would reduce the ability to dilute the nitrate levels sufficiently. A DOH (2002) technical report suggests it could be necessary to either increase the minimum lot size from 0.5 acre to 1 acre or add additional treatment for nitrogen at high-risk sites within Washington to prevent

nitrate contamination to groundwater. All alternatives, except the multi-family component of Alternative 2, have the potential to be adequately served by on-site sewage disposal with lower density options, thereby posing less risk.

5 What are the likely cumulative impacts associated with sewage disposal facilities and services with development of nearby land?

Cumulative impacts of the project in the immediate vicinity (north of I-90 and served by Sparks Road) were analyzed under the existing zoning with a 3-acre minimum lot size, as well as under densities allowed by PUD approval at an overall density of about 1 acre per unit.

Alternatives 1 and 2 with 443 units would result in a cumulative total of about 770 lots or units in the vicinity at existing zoning densities and about 990 cumulative lots or units with PUD densities.

Alternatives 3A, 3B, and 4 with 147 units would result in a cumulative total of 477 lots in the project vicinity at existing zoning and about 690 lots with PUD density.

Alternatives 3D and 5 with about 113 lots would result in about 443 lots in the project vicinity under existing zoning and about 656 lots with PUD density.

Alternative 3C with about 33 lots would result in about 363 lots in the project vicinity under existing zoning and about 579 lots with PUD density.

All lots outside the development site could be served by on-site sewage disposal systems at either 3-acre or 1-acre lot sizes.

6 What measures could reduce or mitigate impacts of the proposal on sewage disposal, including risks?

The risks associated with the proposed SBR "package plant" could be addressed with the following strategies:

- Utilization of on-site sewage disposal for alternatives that would allow that option. This strategy would avoid the high cost of implementation, the high operation and maintenance cost, and the high cost of replacement. On-site systems also would avoid the risk of failure due to upset of the system.
- Alternative sewage disposal systems with less risk of upset could be utilized such as MBR, which are generally considered to be the less susceptible to upsets because the system does not rely on solids settleability.
- The proposed SBR "package plant" could be engineered to reduce the likelihood of upset, including more durable materials such as concrete rather than steel, and larger capacity of system components designed to address variation in flows from seasonal residents. This would add substantially to the cost.

- Risk of failure could be addressed by providing greater oversight of operation. This could range from full-time operators on site to a complex monitoring system with remote response from on-call personnel. This would substantially increase operating costs.
- The high cost of replacement could be addressed by providing rates that would fully finance replacement facilities. This method differs from usual public financing, which would be done in the future by new bonds. This action would substantially reduce risks to a public entity that might guarantee the operation of a private facility, but would substantially increase monthly rates to users.
- The risks to potential users of reclaimed water if an upset in operation causes standards to not be met could be addressed by including a full capacity groundwater disposal system. Routing to the reclaimed water system would only occur if on-line testing confirmed that standards were met. This action would add to operating expenses. The option of not using reclaimed water would reduce the risk of exposure and reduce costs, although possibly increasing domestic water demand for summer irrigation.

3.5.3 Utilities - Stormwater

1 What stormwater facilities and services are currently provided or planned in the area?

The existing roads in the area generally handle runoff through surface ditches. Those ditches provide a means of collecting water as it runs off the impermeable portion of the road surface after which it either percolates into the soil or is carried to streams.

Most existing homes and businesses in the relatively flat areas along the Yakima River rely on infiltration of rainwater or snowmelt beyond ditches or swales to convey water away from structures or driveways. The permeable soils in the area generally absorb most of the water because the amount of impermeable road, driveway, and roof area is relatively small in relation to the area available for water to infiltrate.

In cases where the ground is frozen, runoff may not be able to absorb into the soil and may pond or flow to streams and rivers. In the more steep-sloping mountainous areas, the runoff from snow or rain often moves too quickly to be absorbed, or soil depth is too shallow to absorb all of the runoff.

For particularly intense storm events, or rain-on-snow events, runoff from steep sloping areas can be very large and can lead to catastrophic “flash floods” and debris flows. Such debris flows have occurred on the property in the past as shown by the alluvial fan where the main drainage discharges from the upper portion of the site.

2 What mandates or standards for stormwater management have been established?

Kittitas County has adopted the Ecology Stormwater Manual for Eastern Washington with local regulations as provided in Kittitas County Code 12.70. The manual provides a methodology for calculating runoff depending upon the severity of design storms based on a variety of factors with data

derived primarily from past weather reports. The manual also includes a methodology for assessing rain-on-snow events. The manual, however, does not assess the potential for hazards such as debris flows. In addition, various methods for managing stormwater are provided including discharge to surface water or infiltration.

The practice in Kittitas County typically has been to prepare detailed stormwater management plans for subdivisions after preliminary plat approval at the time of the design of roads and other facilities. For this site, at least some reliance on infiltration is likely, given both soil conditions. Stormwater runoff may be accommodated by standard roadside ditches, depending on the results of detailed analysis, or may include a combination of infiltration and overland conveyance through ditches that eventually would discharge to either Silver Creek or the Yakima River.

3 What stormwater facilities are included in the proposal and alternatives?

No specific designs for stormwater facilities are included at the preliminary plat stage. Such detailed designs are generally developed after preliminary approval and are reviewed and approved for compliance with engineering standards and installed prior to final plat approval.

4 What impacts to surface water, flooding, or other resources may be associated with the proposed and alternative means of stormwater management?

All alternatives are likely to handle normal stormwater up to typical 2- and 10-year storms through standard facilities. It is likely that infiltration would be utilized as well as conveyance in roadside ditches. Larger surface flows are likely for rain-on-snow events with frozen ground and will need to be addressed.

The most significant hazard not addressed in standard engineering design is from isolated events leading to unpredictable volumes of water collecting in narrow canyons. This event has happened periodically on the site as is evidenced by alluvial fans that have formed at the base of several drainages.

At these locations during higher flows, large amounts of sediment are transported down the steep channels. When the flood water and sediment hit the lower gradient and unconfined valley bottom, the coarse sediment drops out allowing the upper fan to build. The gravel, sand, and finer sediment are transported farther down the fan. Deposition of this flood sediment often shifts the channel to another portion of the fan endangering any improvements constructed on the fan.

In addition, there is evidence of several channels across the flat portion of the site generally trending from the northeast to the southwest. These channels are 15 to 25 feet wide with a depth between 5 and 10 feet. The size of the channels is indicative of the volumes of water that periodically discharge from the steep upper portion of the site. The channels generally become indistinct near the southern boundary of the site indicating either infiltration of water or human actions that have obliterated the channels.

5 What are the likely cumulative impacts to stormwater facilities and services with development of nearby land at existing zoning densities or at densities similar to the proposal?

Cumulative impacts of stormwater conveyance generally would be experienced at downgradient locations. There are no clear indications of channels from the site leading off the site, although substantial regrading of some existing parcels may have obliterated dry watercourses. The construction of Sparks Road and its ditch conveyance system also has diverted any existing drainage and conveyed it to the west to Silver Creek. It is possible that during severe storm events in the area, especially rain-on-snow events with frozen ground, the Sparks Road conveyance capacity could be exceeded and surface water would flow generally to the southwest across the gently sloping topography and carve new channels in the path of least resistance. This occurrence may affect existing roads, homes, and other improvements in the area.

6 What measures could reduce or mitigate impacts of the proposal on stormwater management facilities and services and risks within the area and the proposal?

Implementation of normal stormwater management practices specified in the Ecology Stormwater Manual for Eastern Washington is likely to adequately manage runoff from typical 2- and 10-year storms through standard facilities reviewed and implemented in the subdivision approval process.. It is likely that infiltration would be utilized as well as surface conveyance. Larger surface flows are likely for rain-on-snow events with frozen ground and would need to be addressed. In addition, the adequacy of downstream conveyance, including county road ditches and natural drainage conveyance across private property would need to be addressed. Conveyance capacity would need to be increased, as well as provisions implemented to prevent erosion of natural channels from increased peak flows and duration of flows.

The most significant hazard not addressed in standard engineering design is from isolated events leading to very large volumes of water collecting in narrow canyons that are discharged as debris flow across alluvial fans and then across the site. The most effective mitigation for such water and debris fans is to avoid any human occupancy or improvements on the alluvial fan and its likely expansion area. This avoidance is illustrated in Alternatives 2, 4, and 5. In addition, a conveyance system is needed for peak events discharging across the site incorporating ditches and possibly berms to protect adjacent development. In addition, downstream conveyance, including county road ditches and natural drainage conveyance across private property would need to be sized for such peak events. The size of existing conveyance channels across the site provides an indication of the volumes needed to be conveyed in such events.

3.5.4 Utilities - Solid Waste

1 What solid waste facilities and services are currently provided or planned in the area?

Kittitas County contracts with Waste Management Inc. of Ellensburg to operate the two County transfer stations, one in Ellensburg and one in Cle Elum. The County's contract with Waste Management extends to 2010. County Solid Waste Department employees run the scale houses and collect fees. Waste Management hauls the refuse from the transfer stations to the East Wenatchee Regional Landfill, which is owned by the company. The trip to the landfill is about 75 miles one way from Cle Elum.

The Kittitas County Solid Waste Department manages the Rye Grass construction and demolition debris landfill, which accepts inert materials including asphalt, construction debris, fencing, roofing material, concrete, brick, etc.

The current tipping fee at transfer stations is $75.26 per ton. Of that amount:

$44.07 per ton goes to Waste Management, Inc.;

$28.79 per ton pays for the County Solid Waste Department operations;

$1.55 per ton pays closure costs of the previous landfill; and

$0.85 is a fee to Douglas County for the current landfill.

Recyclable items are accepted at the transfer stations. In addition, a variety of private recycling services accept materials such as appliances. Yard waste also is accepted at transfer stations at a reduced fee if separated from garbage. This material is chipped and offered to the public at no charge.

Household hazardous wastes are accepted at the Moderate Risk Waste Facility in Ellensburg, by appointment.

2 What mandates or standards for solid waste management have been established?

Washington State mandates that each county in the state prepare a Comprehensive Solid Waste Management Plan (SWMP) under RCW 70.95 that establishes the following priorities:

1. Waste reduction (which includes reuse);

2. Recycling, with source separation of recyclable materials preferred;

3. Energy recovery, incineration, or landfill of separated waste; and

4. Energy recovery, incineration, or landfilling of mixed wastes.

Specific standards for plans were adopted by Ecology in WAC 173-350-010. This chapter is adopted under the authority of RCW 70.95, which requires:

(1) Setting minimum functional performance standards for the proper handling and disposal of solid waste originating from residences, commercial, agricultural, and industrial operations, and other sources.

(2) Identifying those functions necessary to assure effective solid waste handling programs at both the state and local level.

(3) Following the priorities for the management of solid waste as set by the legislature in RCW 70.95, Solid Waste Management – Reduction and Recycling.

(4) Describing the responsibility of persons, municipalities, regional agencies, state, and local government related to solid waste.

(5) Requiring use of the best available technology for siting, and all known available and reasonable methods for designing, constructing, operating, and closing solid waste handling facilities.

(6) Promoting regulatory consistency by establishing statewide minimum standards for solid waste handling.

(7) Encouraging the development and operation of waste recycling facilities and activities needed to accomplish the management priority of waste recycling.

Kittitas County adopted its SWMP in 1998 and operates the county solid waste department in accordance with the plan, including the transfer stations and disposal in the landfill in Douglas County.

In addition, the Kittitas County Board of Health has adopted regulations (KCHD 1998) that:

- Prohibit disposal of debris or waste except in designated facilities (KCC 8.20.010).
- Provide for owner responsibilities for collecting and disposing of solid waste (Solid Waste Regulations [SWR] IV.A).
- Provide specific regulations for moderate risk waste, biomedical waste, animal waste, and other elements of the waste stream (SWR IV.B).
- Provide solid waste collection service standards (SWR V).
- Provide standards for handling facilities (SWR VI).
- Provide for enforcement (SWR VII).

3 What solid waste facilities or services are included in the proposal and alternatives?

No particular provisions for solid waste facilities or service are included or required. Residents can haul their garbage to the transfer station or contract with a refuse hauler.

4 How will the proposal and alternatives affect solid waste facilities and services?

The alternative and potential cumulative development in the area either at existing rural densities or at the density of the PUD likely would not affect the capacity of existing solid waste facilities but may require more frequent hauling of solid waste to the ultimate disposal site.

3.5.5 Utilities - Electrical

1 What electrical facilities and services are currently provided or planned in the area?

Electrical service in the area is provided by Puget Sound Energy (PSE). The electricity used in the area is largely generated by dams on the Columbia River and distributed to the area by transmission lines. The transmission line that serves the Easton area is located along the Iron Horse Trail because it was originally developed by the railroad and subsequently purchased by PSE.

What is a volt and kilovolt?

Electricity is measured in standardized unit called volts. A kilovolt is one thousand volts and measures electrical potential.

At the Easton substation just west of the BNSF rail line in the town of Easton, the electricity from the transmission line is "stepped down" to the lower voltage of 29 kV used for distribution to users. The Easton substation does not include circuit breakers at the transmission line junction. This means that if there is an interruption in the transmission line at any point between Cle Elum and Snoqualmie Pass, service is interrupted. Manual switches can be used to isolate a downed section of transmission line and allow service from the other direction. This, however, requires that the break in the system is located, which can take hours, or sometimes days in the case of a major regional outage.

Distribution lines carry electricity from the substation to users in the area. The distribution lines serving users on Sparks Road on the north side of I-90 is a radial system, which means a single line carries the power. If there is an interruption anywhere in the line, circuit breakers at the substation interrupt power to the entire line until the break is located and fixed.

The radial transmission system design is subject to outages on a more frequent basis than systems with looped or redundant features. Such redundant systems, however, are more expensive and are generally not justified by the number of services and revenue produced in a rural area. Outages in the Easton area, as reported by PSE, include four momentary substation outages (less than 1 minute) and eight sustained outages. Six of the sustained outages were 30 minutes or less, and two were 10 to 11 hours. The two long outages were due to major windstorms. Winter conditions can extend outages due to heavy snow impeding the accessibility of line crews; however, automatic switching can reduce most outages to under 30 minutes. In the event of a transformer failure, a mobile substation would need to be delivered from the west side over the pass to be installed at Easton. Such a condition may result in outage durations of up to 24 hours.

The distribution system on Sparks Road has experienced two circuit outages (3 hours and 15 hours) due to weather in the past year. The more local overhead and underground distribution in the vicinity of Sparks Road experienced four outages ranging from 1.5 to 5.5 hours due to animals. Country Drive Road

experienced four outages ranging from 2 to 15 hours. The 15-hour outage was due to a cable failure (DiRay 2008).

In addition to the electrical systems that serve the users in the area, a number of regional transmission lines pass through the area that carry electricity from the hydropower dams on the Columbia River and other rivers in the eastern part of the state to consumers in urban areas to the west. The BPA Rocky Reach to Maple Valley 345-kV transmission line runs diagonally through the site at approximately the boundary between the flat western and steep sloping eastern portions of the site. The transmission line supports are 150 feet high and 1,200 feet apart. The towers were designed to support two circuits of three wires on each side. Only one circuit has been built and consists of three wires, one above the other, on the west side of the towers.

BPA has an easement through the site that allows the agency to maintain a road along the easement. The easement can be fenced as long as gates are provided to allow access to BPA crews (BPA 2008).

2 What mandates or standards for electrical facilities and services have been established?

The WUTC regulates utility service within the state. PSE is a regulated utility and is subject to standards in WAC 480-100 that address a variety of service standards, including the service that must be provided, reliability, responsiveness to service charges, and service outages.

The service to the Easton area generally meets standards for service to rural areas, with specific provisions for upgrading service over time to provide newer technology. Service to rural areas is generally slower to upgrade because the lower number of subscribers does not produce enough income to the company to justify short-term improvements to the technology used.

N minus 1 Criteria

A generally accepted utility industry standard related to reliability is commonly referred to as "N minus 1" (N-1). This means that if the total system of a number of facilities is referred to as "N," the system would still be able to serve all the customers even with the loss of one of those facilities. PSE utilizes the N-l criteria as a guideline for design of its system in most cases. There are portions of the system which do not meet the N-l criteria due to cost. This is primarily the case in rural areas. In addition, PSE does not attempt to meet the N-l criteria in peak demand periods. PSE uses the N-l criteria for operation of the system between 23 and 86 degrees Fahrenheit (°F). This excludes the peak demand periods for electrical heating in the winter and air conditioning in the summer. For example, if a given power line contained five distribution substations and connected to two transmission substations (one at each end), no single break in that line should cause customers served by that line to lose power.

One of the policy questions that decision makers could consider is whether this degree of reliability justifies the economic or environmental costs associated with building systems to meet these standards, or whether putting up with less reliability is a reasonable price to pay for fewer electrical facilities. This

would be similar to the decision by PSE not to apply the N-l criteria to peak demand periods but would extend it to potential failures in links of the distribution system.

3 What risks may be associated with existing and planned electrical facilities and services in the area, including risks to future residents of the proposal?

In the United States, scientific and public interest in possible human health effects from exposure to electric and magnetic fields has resulted in a large number of studies addressing EMF. Today, the EMF health effects research is focused on either magnetic fields alone or on both magnetic and electric fields. A large number of epidemiology studies are currently underway both in the United States and in foreign countries, as well as laboratory studies of cells, whole animals, and humans. There also have been studies seeking to assess exposure to EMF in residences and occupational settings.

Electrical distribution facilities in the area consist of the overhead power lines that transmit electrical service to residences. Electrical transmission lines in the area consist of the BPA 415-kV line that passes diagonally through the property at the approximate eastern margin of the flat portion of the site.

Results from studies still leave the role of EMF in the development of leukemia unclear. In general, studies have indicated:

1) There is evidence of a relationship between the configuration of distribution facilities (often referred to as wiring code) and leukemia. Although the potential exists, the correlation is with as yet unidentified "intervening factors."
2) Little support has been established for a relationship between measured magnetic field exposure and leukemia risk.
3) There is some support for a relationship between children's use of some electrical appliances and leukemia.

Epidemiologic studies linking EMF and human cancers have prompted researchers to seek out and to specify cell-level changes caused by EMF exposure. Studies have shown that EMF does affect some aspects of these cellular processes to varying degrees; however, the significance of these cell functions and the degree to which they may contribute to health effects are not currently known.

What are Electro Magnetic Fields?

Electric fields are created by the forces of attraction and repulsion of positive and negative charges. Electric fields occur whenever power lines are energized or whenever the electric cord to an appliance is plugged in. The strength of the electric field depends on the voltage of the object creating it.

Magnetic fields are created by the movement of electric charges. For example, when a current flows through a conductor (such as an appliance cord or power line), a magnetic field is created. Appliances that are plugged in but are not turned on do not produce magnetic fields. As the current flow in a conductor increases, the strength of the magnetic field increases.

Although there are electric and magnetic fields that are caused by natural phenomena, including electric fields by the sun and magnetic fields by the earth's molten interior, the electric and magnetic fields that are the focus of health effects studies are primarily those that occur when current is flowing through electric power transmission lines, distribution lines, substations, household wiring and electrical equipment, and appliances.

Reports of biological effects of EMF are disturbing to some observers, but it is important to remember that all these effects have not been found in any one animal or cell type, and that effects that occur in one animal or cell type may not occur in other animal or cell types. A conclusion that these biological effects indicate a health effect for one particular species (e.g., human beings) is therefore premature. In addition, the biophysical or biological mechanisms that would explain how EMF interacts with living systems to produce observed effects are still not understood. There is no definitive indication that EMF exposure does or does not cause adverse health effects.

The concept of risk means different things to the expert involved in risk assessment and management and to the public. An appreciation of the differences between the understanding of risk by experts of risk analyses and the public helps to explain why responses to risk vary, and why risk analysts and the public have such trouble reconciling their concepts of risk. Public perception of risk relating to EMF cannot be assumed to mirror that of risk analysts. In contrast to the technical understanding of risk, the public understanding of risk is based on the public's *perception* of risk, and on a determination of the *acceptability of the risk.* Research and experience has shown that public responses to risk are based on how the majority of individuals "feel" about the risks, rather than on some type of individual analytical process. For example, with the "dread effect" such as cancer, an analyst would consider the endpoint of death to be of prime concern. In contrast, the public is more concerned about how the process of death occurs.

For each risk factor, there is a range of acceptance. The *acceptability of risk* is a separate process from the perception or determination of the level of the risk. There are different factors that determine to what extent the public will accept the risk associated with a particular health issue. One of the most important factors of risk acceptance is an informal estimate of the perceived benefits versus costs associated with the issue. However, this factor can be complicated when the benefits of an issue are spread (geographically, for example), but the risks are concentrated.

4 What electrical facilities and services are included in the proposal and alternatives?

The proposal would be provided electrical service by PSE. New service lines would be installed by PSE as either overhead or underground service at PSE's expense, except that for underground service PSE requires the developer to provide trenches and backfill.

5 What impacts to electrical facilities and services may be associated with the proposal and alternatives?

Additional demand for new service in the area would require upgrade of several elements of the existing PSE electrical distribution system. The existing substation in Easton is near capacity and scheduled for replacement of the existing transformer. The new transformer would be needed prior to substantial growth in the area. At that time, additional substation upgrades are likely to be implemented, including a new substation feeder breaker and circuit. All such upgrades can be accommodated within the existing substation.

The local distribution near the proposed project is a one-phase operation. This would be adequate for limited new development, but would require construction of a new three-phase (overhead or underground) distribution system to provide additional capacity.

The addition of additional lines for a looped system rather than a radial system could be implemented to provide additional reliability and meet the N-1 standard of providing service with one element of the distribution system out of service. This may involve an additional crossing of I-90 and additional parallel distribution lines (Lenz 2008).

6 What are the likely cumulative impacts on electrical facilities and services with development of nearby land at existing zoning and PUD densities?

Cumulative impacts of the project in the immediate vicinity (north of I-90 and served by Sparks Road) were analyzed under the existing zoning with a 3-acre minimum lot size as well as under densities allowed by PUD approval at an overall density of about 1 acre per units. Impacts are likely to be proportional to the additional demand created by additional residences.

Alternatives 1 and 2 with 443 units would result in a cumulative total of about 770 lots or units in the vicinity at existing zoning densities and about 990 cumulative lots or units with PUD densities.

Alternatives 3A, 3B, and 4 with 147 units would result in a cumulative total of 477 lots in the project vicinity at existing zoning and about 690 lots with PUD density.

Alternatives 3D and 5 with about 113 lots would result in about 443 lots in the project vicinity under existing zoning and about 656 lots with PUD density.

Alternative 3C with about 33 lots would result in about 363 lots in the project vicinity under existing zoning and about 579 lots with PUD density.

Additional demand from services would require additional upgrades in the electrical distribution system, including transformer capacity, and may require installation of new distribution circuits from the third Easton substation to the service area (Lentz 2008).

7 What measures could reduce or mitigate impacts of the proposal on electrical facilities and services and risks?

The major potential mitigation for impacts on electrical services is for the utility to plan facility upgrades and implement improvements in conjunction with new development and the growth in demand.

EMF mitigation options are all governed by the laws of physics and these laws are rigid. Mitigation options are therefore generically quite limited. No matter what the source of the magnetic field is, reduction may only occur in the following ways:

- Increase the distance between the field source and the exposed subject, or
- Decrease the propagation of the magnetic field at or near its source.

The alternatives with deeper lots adjacent to the BPA transmission line generally would reduce EMF exposure.

3.5.6 Utilities - Communication

1 What communication facilities and services are currently provided or planned in the area?

The Easton area is provided telephone service from the Qwest system. The local telephone system consists of a standard electrically wired system. In this system, a pair of wires connects the subscriber to the system's central switch office. This is called a subscriber loop. For the Easton area, the central switching system is located in Cle Elum, about 15 miles to the east. The system connecting from Cle Elum to Easton is largely underground. The system in the Easton area is a combination of underground and aboveground circuits.

The standard wired system provides a low bandwidth connection to subscribers with very high reliability. The basic wire communications circuits provide a flexible platform for a variety of services, including digital communications provided by equipment at the switching center. The major limitation to the system is the limited bandwidth provided for modern computer applications.

Qwest currently does not provide digital subscriber line (DSL) service in the Easton area, but is under a compliance order from the WUTC to upgrade its system to provide service by 2010 (Qwest 2007).

Wireless telephone service is available to the Easton area from all major wireless providers because the I-90 corridor as the major east-west highway through the state is provided with "first order" service by all providers in the state. There is a wireless telephone antenna on the south facing slope of the site at about elevation 2,600.

2 What mandates or standards for communication facilities and services have been established?

The WUTC regulates utility service within the state. Qwest is a regulated utility and is subject to standards in WAC 480-120 that address a variety of service standards including the service that must be provided, reliability, responsiveness to service charges, and service outages.

The service to the Easton area generally meets standards for service to rural areas, with specific provisions for upgrading service over time to provide newer technology. Service to rural areas is generally slower to upgrade because the lower number of subscribers does not produce enough income to the company to justify short-term improvements to the technology used.

3 How will the proposal and alternatives affect communication facilities and services?

The site will be provided with telephone service in accordance with WUTC requirements. Provision of new land-line telephone service may depend on projected demand, which also is dependent on the use of cellular telephones. A large component of seasonal residents may reduce the demand for conventional telephone service in preference to cellular service.

Cumulative growth in the area would likely provide a larger market for service and may lead to the provision of a wider range or service, including high capacity internet service.

3.5.7 Utilities - Cable Television

1 What cable television facilities and services are currently provided or planned in the area?

Cable television service to the Easton area is provided by Broadstripe (formerly Millennium). It provides a separate coaxial cable-wired system that was installed in the 1980s and upgraded to include some fiber optic lines in the early 2000s. Broadband internet and telephone service is achieved over the coaxial cable by using cable modems to convert the network.

2 What mandates or standards for cable television facilities and services have been established?

Service areas for cable are established between service providers and local government, in this case Kittitas County.

3 How will the proposal and alternatives affect cable television facilities and services?

The site will be provided with cable service in accordance with requirements of the provided agreement with the county. Provision of service may depend on projected demand, which also is dependent on the projected use of internet service. A large component of seasonal residents may reduce the demand for internet service.

Cumulative growth in the area would likely provide a larger market for service and may lead to the provision of a wider range of service, including high capacity internet service.

3.6 VISUAL QUALITY, LIGHT, AND GLARE

1 How can the aesthetic experience be characterized?

Three critical parameters of the aesthetic experience are evaluated in this analysis:

- Visual Character,
- Visual Quality, and
- Viewer Response.

Visual Character refers to identifiable visual information. The first step in assessing visual impacts is to describe visual attributes and environmental features using objective descriptors. Four key features are used to identify relationships among elements of the visual environment: dominance, scale, diversity, and continuity.

Dominance refers to the position of an individual element, or its extent or contrast among all the other elements of a view.

Scale refers to apparent size relationships between an element and the other components of its surroundings.

Diversity is a function of the number, variety, and intermixing of elements in a view.

Continuity refers to how a given visual element of a scene fits into the visual context of a broader visual environment.

Visual Quality refers to assessing the value of the visual experience to the public. Studies of the American public and across cultures demonstrate strong agreement about preferred qualities of the visual experience (Jacques 1980; Kaplan 1985; Real 2000). This consensus is exhibited in officially designated landscapes generally agreed to have high value such as national parks, scenic rivers, scenic highway viewpoints, and significant natural and human-made features.

One measure of visual quality is the extent to which the view exhibits vividness, intactness, and unity. These characteristics are consistently prominent in landscapes perceived by the public as having high visual quality. This set of measures is similar to other systems that analyze human perceptions based on factors such as legibility—the features which contribute to the recognition of an environment; complexity—the variety or diversity in a scene as it relates to human interest; coherence—the extent to which the scene "hangs together" through repetition of elements which facilitates comprehension; and legibility—the features which contribute to the recognition of an environment (Kaplan 1982).

For this analysis, these three measures are evaluated as described below.

Vividness describes the way landscape components may combine in distinctive and memorable visual patterns. For different landscapes, various elements may contribute to vividness.

Intactness describes the integrity of natural and human-built visual patterns and the extent to which the landscape is free from encroaching elements. Encroaching elements may include a single “eyesore” or may include multiple elements.

Unity measures the visual coherence and compositional harmony of the landscape considered as a whole. It refers to the “fit” between elements of the landscape, but does not connote uniformity in design or character.

Viewer Response is analyzed in terms of viewer exposure and viewer sensitivity.

Viewer Exposure refers to the physical location of viewer groups, the number of people exposed to a view, and the duration of their view. This includes both persons passing through and persons in the surrounding area.

Viewer Sensitivity refers to factors that affect the degree to which a viewer perceives elements of the environment and the extent to which those elements are important to the viewer. Viewer sensitivity is affected by factors such as the activities a viewer is engaged in (which may affect the way in which a scene is perceived), the visual context, and the values.

2 What does the area look like now?

Views in the Easton area are dominated by mountains, trees, and water. The narrow valley was shaped by glaciers and later by deposits from the Yakima River. The major human features are I-90, the BNSF railway, dwellings, and a limited number of commercial buildings. The tree-covered ridges that frame the valley are the dominant visual elements in middle-range views, with distant peaks of the Stevens Range dominating skyline views to the north. These ridges and mountains are the most prominent element of the landscape.

What is a National Scenic Byway?

A National Scenic Byway **is a road recognized by the United States Department of Transportation for its archaeological, cultural, historic, natural, recreational, and/or scenic qualities. The program was established by Congress in 1991 to preserve and protect the nation's scenic but often less-traveled roads and promote tourism and economic development. The program is administered by the Federal Highway Administration.**

The contrast of the ridges and peaks provides a vivid focus. They are visually integrated by the common elements of tree cover and exposed bedrock. The unity of the landscape is interrupted to some extent by the clear-cut on the site of the proposal, largely because the straight line of the cut follows property lines and cuts diagonally across the upper portion of Easton Ridge without any relationship to the typical natural patterns of vegetation in the landscape.

Views of and from the valley floor are largely obscured by large trees. Natural features such as the Yakima River generally cannot be observed except when one is adjacent to the river, or if one crosses it on a road. Most of I-90 is similarly screened from view, although the background noise from traffic is a constant reminder of the presence of the freeway, except when new snowfall deadens tire noise and limits the volume of vehicular travel. The exception to this is the view of the highway from the frontage roads immediately south of Exit 70.

The largest single viewing population in the area is that formed by drivers and passengers on I-90. I-90 carries an average 21,000 vpd containing approximately 40,000 persons. I-90 in this area is a designated National Scenic Byway. In addition, a private non-profit organization, the Mountains to Sound Greenway Trust, supports trail development and scenic enhancement of the route. In conjunction with state and federal agencies, they have been able to plan and implement measures to acquire, protect, and develop lands along the corridor that provide recreational opportunities and protect natural and scenic resources.

Views of the Easton area from I-90 northbound generally are framed by large trees and provide little opportunity to see adjacent lands and features on the valley floor. Exceptions at areas largely cleared are views to the south and east of Easton immediately west of Exit 71, views of the frontage road on the south side immediately east of Exit 70, and views of commercial buildings (Turtle Town) on the north side immediately east of Exit 70. Views westbound down the alignment of I-90 are centered on Ambolis Mountain. Views eastbound are centered on the project site for a distance of approximately 1 mile between mile post 68.7 and 69.7 and as indicated in Figure 3-24. Views not centered on the site generally feature Easton Ridge farther to the south. Drivers and passengers on I-90 are likely to be quite sensitive to views. The activity of driving or riding in a vehicle on an interstate highway provides little opportunity for activities other than enjoying the scenery.

Lake Easton State Park, with 212,000 annual visitors, provides views from the Park primarily to the ridges to the northwest over Lake Easton, although all visitors leaving the Park have a direct view of the proposed site at the Park driveway as shown in Figure 3-25. The view from the Park driveway does include power lines running alongside I-90 in the foreground. Park visitors are likely to be very sensitive to the character of views because the purpose of their visit to the area is to enjoy the setting and recreational amenities.

The John Wayne Trail (Iron Horse State Park) is a state park created on the right-of-way of the former Milwaukee Road Railroad on the east side of I-90. It serves hikers, bikers, and equestrians passing through the area. The Washington State Parks and Recreation Commission estimates that the portion of the trail between North Bend and Thorp has approximately 164,000 annual visitors. Views of the site from the trail are prominent where it passes along the west shore of Lake Easton and also south of Easton, where there is little screening vegetation between the trail and I-90.

Views of the site are available to local residents largely from local streets oriented such that they are centered on the ridgeline portion of the site and from areas east of I-90 where vegetation is sparse enough to allow view corridors toward the ridge. Residents of Easton and the area immediately south generally have views of the ridge within the development from their homes or from routes they regularly travel. These views are not generally interrupted by built structures, utility lines, or associated appurtenances.

Overall, the visual quality of all views of the project site from I-90 and the Easton vicinity are very vivid. This is among the more prominent sections of Easton Ridge. The intactness of the scene is somewhat reduced by the clear cutting to facilitate the harvesting of forest resources on the site; this clear-cut occurred several years prior to this analysis. The contrast of the straight lines of the edge of the clear-cut, however, tend to distinguish the site from the more natural vegetation cover surrounding it and making a more distinct visual pattern that increases its vividness. The unity of the site, with the remainder of the wooded ridge, is somewhat reduced by the clear-cut, but the widespread occurrence of clear-cuts in the area is likely to lead to a perception that such elements are a normal and transitory element of the landscape.

Viewer response is likely to be high for several reasons; there are large numbers of persons exposed to the view, the view is prominent from both I-90 and the local community, and the views available are a valued component of the experience of persons making trips on I-90 and persons living in the area.

The major source of light and glare in the area is street lighting at the I-90 interchange ramps. Street lighting is generally not provided on surface streets in the area. Security lighting varies in businesses and public buildings in the area. Turtle Town, on the north side of I-90, has parking lot lighting adjacent to Sparks Road. The Easton School has a parking lot and building lighting at its perimeter. The fire station in Easton also has parking lot lighting. Some residences have exterior security lighting. The Easton State Airport has runway lighting; however, because of the trees surrounding the airport, runway lights are generally visible only from the air. There currently are no sources of light on the ridges surrounding the community of Easton.

3 What mandates or standards have been established for views and aesthetics?

The Kittitas County Comprehensive Plan recognizes scenic views and view corridors in the following policies:

IV.15 Goal: Identify the "viewshed", that is, scenic areas, which are visible from places of frequent human activity.

IV.16 Goal: Important scenic views and viewlines should be identified, preserved, and where appropriate, enhanced.

4 What will the area look like during construction?

During construction of infrastructure for future residents there will be a disarray of construction equipment, earth movement, and construction materials visible at the project site. Construction activities on the lower part of the site would be visible only from adjacent properties; however, the distance from existing residents and existing tree cover on most adjacent properties will restrict visibility. Construction on portions of the upper eastern portions of the site would be visible from I-90 and the surrounding community. The most visible aspects of construction will be extensive clearing and cut and fill slopes for roadways traversing steep slopes that will contrast in color from the tree cover of the remainder of the site. Construction will require temporary clearing for staging areas; however, if those areas are located away from the perimeter of the site they would not be visible to the surrounding community.

Alternative 1, the applicant's PUD proposal with 443 units on the entire site, would have the most substantial impacts to visual quality during the construction phase of the project as it includes readily visible road construction on steep cross slopes in the eastern portion of the site. Residential construction will also take place in areas visible from I-90 and much of the surrounding community.

Alternatives 2, 3C, and 5 would have much lower visual impacts during construction because there would be no construction on the eastern portion of the site, which is most visible from I-90 and other viewpoints to the south and west.

Alternative 3A, 3B, and 3D with 3-acre and 5-acre lots would have impacts similar to but somewhat lower than Alternative 1. The road system on the eastern portion of the site would involve a similar amount of site disturbance, but fewer lots would result in somewhat less clearing and less visibility of structures.

Alternative 4 with development on both the eastern and western portions of the site would have less visible impacts from road construction because the lower part of the main road up steep slopes would be screened from I-90 and other views to the south and west by existing trees. The upper part of the road would be highly visible. The most prominent portion of the roadway system on the uppermost portions of the site would not be subject to road construction and result in less visual impact.

5 What will the area look like after completion of the project?

Regardless of the selected alternative, development in the area will represent a significant change in the visual character of the Easton Range. The current visual continuity provided by somewhat undeveloped forest conditions (mitigated by the presence of clear-cut lines) will be altered in perpetuity by the presence of human development. Specific impacts, however, will vary based on the selected alternative.

Alternative 1, the applicant's PUD proposal with 443 units, would result in substantial change to the visual quality of the area due to the location of residences and infrastructure on the steep-sloping eastern portions of the site that are visible from I-90 and much of the community as indicated in Figures 3-26 and 3-27. These figures indicated building sites that are likely to be visible from the viewpoints discussed above considering topography and likely tree clearing. For a period of several decades while the clearing and cut-and-fill slopes for roads are revegetated, they would be an obvious contrast in color from the surrounding area and would cut diagonally across several portions of the site, in marked contrast to natural landforms. After revegetation, the line of the roadway is likely to be visible. Clearing of vegetation and construction of residences would contrast against the backdrop forest cover, which would vary somewhat with the amount of clearing and the color and amount of glass used in residences. The visual prominence of development of the area would be high, and even more pronounced at night when residence and security lights would be visible at great distances.

The intactness and unity of the existing forested ridge above the valley would be replaced by a visual scene without the integrating character of continuous forest cover. The development would stretch approximately halfway up the ridge, contrasting with the natural forested surroundings and introduce human elements in contrast to the existing natural scene. The vividness of the ridgeline would decrease somewhat by the visual clutter of roads and residences on the slope.

The change in visual character of the area would be most pronounced at night when lights in residences and especially outdoor security lights would be visually prominent on the currently unlighted ridge.

On the eastern portion of the site, cleared areas for roads and residences, including the built residences, would be visible from the major thoroughfares, especially I-90 (as indicated in Figure 3-26) giving the proposed site high viewer exposure. The I-90 corridor has been designated a National Scenic Byway in this area, indicating that viewers will be highly sensitive to the visual elements of their trip through the corridor. The development on the visible slopes would contribute to change in an important element of the rural environment—the dominance of natural features framing the valley.

The flat western portion of the site would not be visible from I-90 and other distant locations. This portion of the site would be viewed only from adjacent properties and roadways. In the future, persons driving through the site, including residents, would note the difference in character from large lot areas by the larger cleared areas and relatively close spacing of residences. The visual character would be similar to higher intensity development in the area such as the Easton Village Subdivision.

Alternatives 2, 3C, and 5, with no development on the sloping eastern portion of the site, would avoid features visible from I-90 and much of the community and would retain the forested ridgeline.

Alternative 2 development character on the flat western part of the site would contrast substantially from the existing character of the area in terms of amount of clearing, building form, and more extensive parking areas. The addition of multi-family development would represent a change in the visual quality of the vicinity and would contrast with the unity of the existing scene provided by the predominance of native trees and consistency of the single-family residences.

Single-family areas in Alternatives 2, 3C, and 5 on the western portion of the site would have a character similar to Alternative 1 except for, in alternatives 2 and 5, extensive areas of open space for the ASZs and debris flow areas, which would contribute to the forest cover characteristic of the rural area. **Alternatives 3A, 3B, and 3D,** with 3-acre and 5-acre lots on both the eastern and western portions of the site, would also result in substantial cleared areas for roads and residences, including the built residences, on the eastern portion of the site. This area would be visible from the major thoroughfares, including I-90, giving the proposed site high viewer exposure. The amount of clearing for residences would be less extensive, and the built residences would be fewer, resulting in less extensive change. As compared to Figure 3-27, the locations where building sites would be visible would be the same, but the number of units visible would decrease. That change, however, would contrast sharply with the existing unity of forest cover and would contribute to change from the dominance of natural features framing the valley to a substantial intrusion of human features in the view.

Development on the lower flat portion of the site would be large lots similar to existing large lots in the area with extensive retention of forest cover. The large lots, coupled with preservation of extensive areas

of open space for the ASZs and debris flow areas, would contribute to maintaining the rural character of the area.

Alternative 4, a PUD with reduced density on the entire site, would also result in substantial, identifiable impacts to the character of the eastern sloping areas. However, impacts would be less than those associated with Alternative 1 because development would be avoided on the most visible upper portions of the site. Avoidance of the most visible higher areas of the slope would result in less visual contrast with the existing unity of forest cover and would result in less obvious change from the dominance of natural features on the highest portion of the slopes framing the valley. Development on the lower slopes would be similar to Alternatives 2 and 4.

6 What are the likely cumulative impacts on visual quality in the area with development of nearby land at existing zoning or PUD densities?

The potential cumulative impacts of development of nearby land in the vicinity would result in little change in visual quality from I-90 and the area in general because these areas are not visible.

Three-acre development in the area would be generally consistent with existing rural large lot development.

Cumulative development was projected for the area north of I-90 served by Sparks Road under two scenarios:

- Development at existing rural densities at one unit per 3 to 5 acres, and
- Development at the intensity allowed under PUD regulations as proposed for the Marian Meadows site, resulting in about one unit per acre.

Development under existing zoning allowing one lot per 3 acres would allow a total of about 330 lots in the vicinity outside Marian Meadows, including existing development. The majority of these new lots would be located south of Sparks Road, where existing lots are larger. This area includes several parcels 10 acres and larger. Subdivision at the density reflected in the Marian Meadows PUD application would allow a density up to three times that of the current zoning density of one unit per 3 acres, or about one unit per acre. If development reflecting this density of development were applied to the area as a whole, most of the existing parcels larger than 2 acres could be subdivided. This would result in about 780 future dwellings in the vicinity outside of Marian Meadows. These lots would be spread throughout the area because many of the existing 3- to 5-acre lots could be further divided.

Development in these areas would be primarily on the flat valley bottom and would not result in development on the ridges that would be visible from I-90 or the area in general. The cumulative visual impacts would be mainly apparent on roads and in lot size. Under the PUD intensity, houses would be less dispersed and more concentrated on lots. Under rural intensity, houses would be more dispersed and more space would separate them on lots.

7 What measures can reduce the effects of the proposal on the appearance of the area?

Several measures can be taken to reduce visual impacts caused by development of the applicant's proposed PUD and the other alternatives. Unless otherwise noted, it can be assumed that the following measures will be used for the applicant's proposed PUD and the other alternatives.

- Revegetation of road cuts by immediately establishing ground cover and planting native coniferous trees would speed the re-establishment of vegetation, which would mask the change in color of exposed soils and bedrock. Areas with extensive bedrock would be screened only when plantings reached adequate height, which could be several decades.
- Proposed building materials and color could be selected to be as visually coherent as possible with landscape features in the vicinity.
- The applicant could prepare a lighting plan for the proposed development to incorporate some or all of the following standards:
    - Use of full-cutoff shielding on outdoor light fixtures.
    - Mounting of light fixture luminaries at a height designed to limit off-site impacts. This may vary depending on screening vegetation between 15 and 30 feet.
    - Establishment of roadway lighting standards based on needed light distribution and the luminance of roadway surfaces.

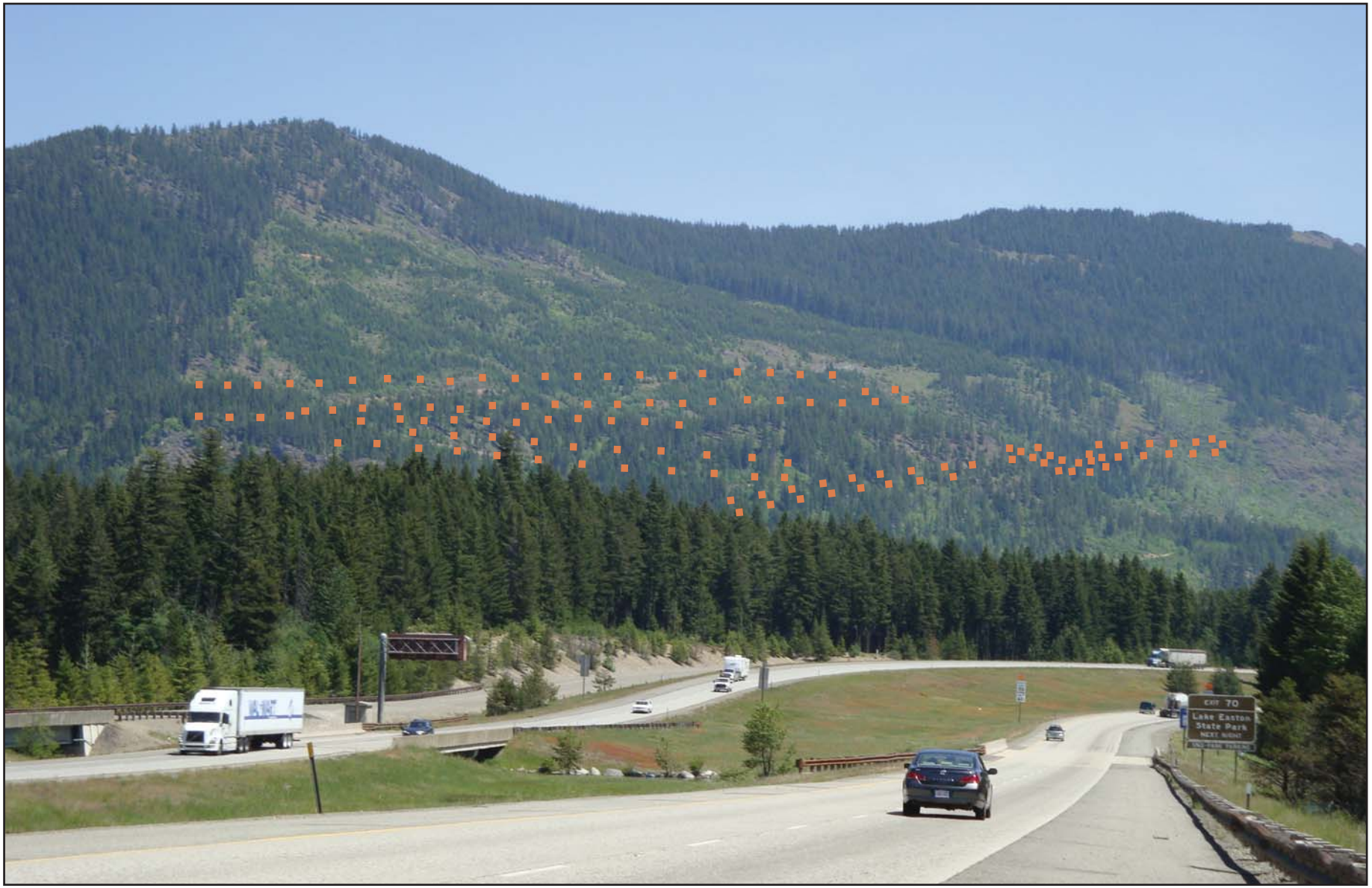


Figure 3-24
Marian Meadows
Existing Views of the Site from I-90



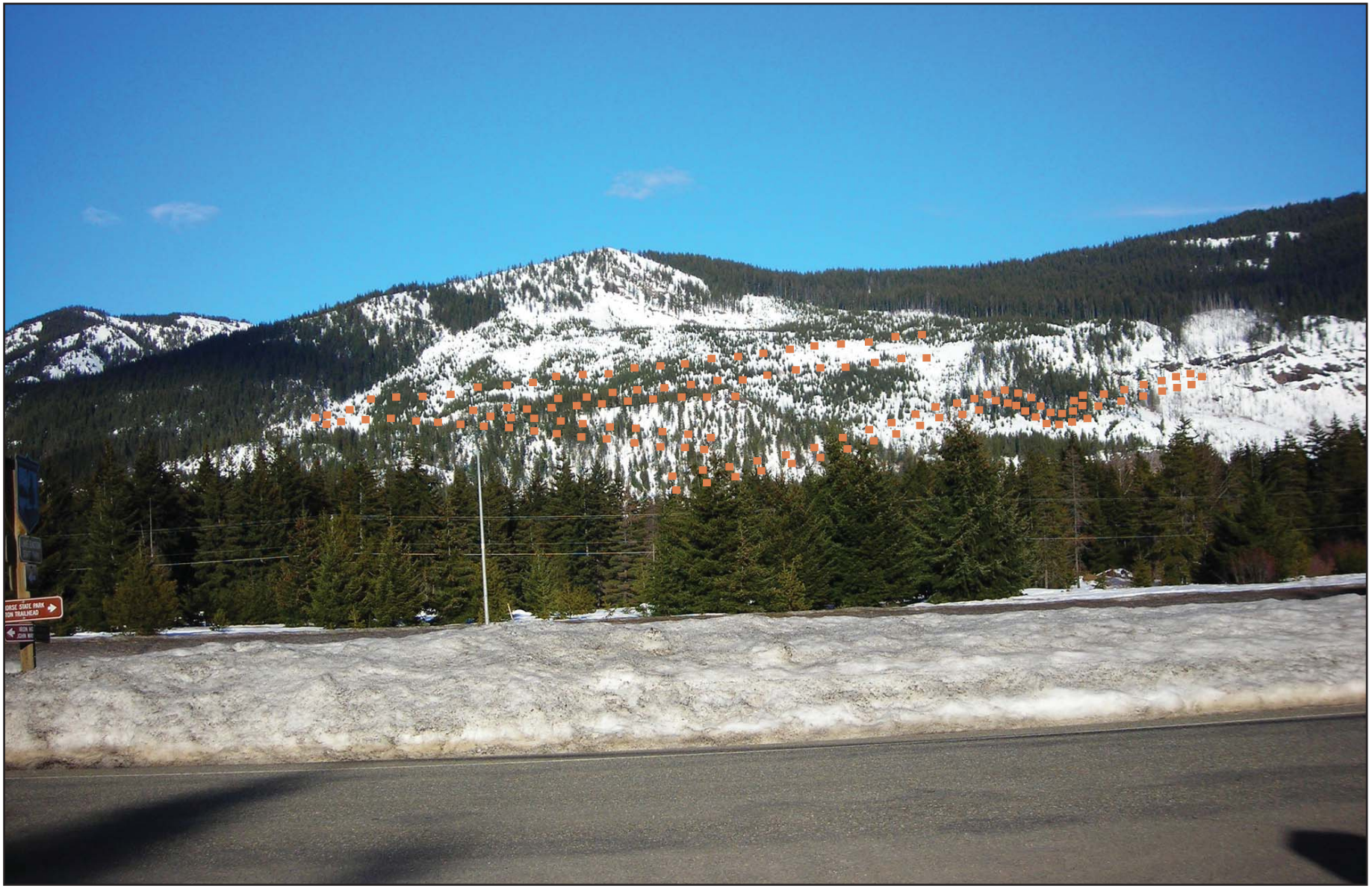
Parametrix 557-1763-007/03(11) 9/09 (B)

Figure 3-25
Marian Meadows
Existing Views of the Site from
Lake Easton State Park



Parametrix 557-1763-007/03(19) 2/10 (B)

Figure 3-26
Marian Meadows
Views of Alternative 1 from I-90



Parametrix 557-1763-007/03(19) 2/10 (B)

Figure 3-27
Marian Meadows
Views of Alternative 1 from
Lake Easton State Park

3.7 NOISE

1 What is noise?

Noise is generally defined as unwanted sound (EPA 1971).

The human ear responds to a very wide range of sound intensities. The decibel (dB) scale used to describe sound is a logarithmic rating system, which accounts for the large differences in audible sound intensities. This scale accounts for the human perception of a doubling of loudness as an increase of 10 dB; therefore, a 70-dB sound level will sound about twice as loud as a 60-dB sound level. People generally cannot detect differences of one dB. In ideal laboratory situations, differences of two to three dB can be detected by people, but such a change generally would not be detectable in an average outdoor environment. A three- to five-dB change would probably be perceived under normal listening conditions. Sound levels associated with a range of common noise sources are shown in Table 3-30.

What is a decibel?

Sound levels are expressed on a logarithmic scale in units called decibels (dB). A-weighted decibels (dBA) are the commonly used frequency that measures sound at levels that people can hear.

To the human ear, a one to three dBA change is hard to distinguish, but a five dBA change in noise levels is readily noticeable. A 10 dBA increase would sound like the noise level has been doubled.

Distance from the source, the frequency of the sound, the absorbency of the intervening ground, obstructions, and the duration and pattern of the noise-producing event all affect the transmission and perception of noise. The degree of this effect also depends on who is listening, what activities they are engaged in, and what the is the existing sound level. The variability in the way individuals react to noise makes it impossible to accurately predict how any one individual will respond to a given noise. However, when the community is considered as a whole, trends emerge that relate noise levels to potential effects.

Table 3-30 Sound Levels Produced by Common Noise Sources

Thresholds/ Noise Sources	Sound Level (dBA)	Subjective Evaluations	Possible Effects on Humans [1]
Human threshold of pain Carrier jet takeoff at 50 feet	140	Deafening	Continuous exposure to levels above 70 dBA can cause hearing loss in majority of population
Siren at 100 feet Loud rock band	130		
Jet takeoff at 200 feet Automobile horn at 3 feet	120		
Chain saw Noisy snowmobile Locomotive horn Impact pile driver	110		
Lawn mower at 3 feet Noisy motorcycle at 50 feet	100	Very Loud	
Heavy truck at 50 feet	90		
Pneumatic drill at 50 feet Busy urban street, daytime	80	Loud	
Normal automobile at 50 mph Vacuum cleaner at 3 feet	70		Speech interference
Air conditioning unit at 20 feet Conversation at 3 feet	60	Moderate	
Quiet residential area Light automobile traffic at 100 feet	50		Sleep interference
Library Quiet home	40	Faint	
Soft whisper at 15 feet	30		
Slight rustling of leaves	20	Very Faint	
Broadcasting studio	10		
Threshold of human hearing	0		

Exact threshold boundaries cannot be established because both the subjective evaluations and the physiological responses to sound are continuums. Consequently, overlaps exist among categories of response, depending on the sensitivity of the noise receivers.

[1] Source: EPA (1974).

2 What sources and intensity of noise are currently present in the area?

I-90 is the major source of noise in the vicinity of the project site. Other sources of noise include vehicles on local roads, and the occasional sound of trains and whistles on the BNSF railway line about 1.50 miles to the east adjacent to the town of Easton.

Existing noise levels on the site and in the vicinity are indicated in Table 3-31. The locations of the monitoring sites are shown in Figure 3-28.

What is Leq-Equivalent Sound Level?

Leq is the steady A-weighted sound level over any specified period that has the same acoustic energy as the fluctuating noise during that period. It is a measure of cumulative acoustic energy.

Table 3-31 Project Vicinity Noise Measurements

No.	Location	Date/Time	L_{eq} (dBA)	L_{max} (dBA)	L_{min} (dBA)
1	Project site, western flat portion, mid-north	06/12/08 11:00 a.m.	47.2	56.3	44.5
2	Project site, halfway up the road to the eastern portion	06/12/08 11:30 a.m.	49.7	60.0	46.2
3	Sparks Road at Turtle Town, next to I-90	06/12/08 1:00 p.m.	69.3	76.3	61.3
4	Sparks Road near Pit Way	06/12/08 1:30 p.m.	54.7	62.9	49.9

Noise from existing residential use in the area includes noise from roads, people's voices, and residential equipment such as lawn mowers and chain saws. In some cases, noise from recreational vehicles and snowmobiles, in season, may be a major component of noise. The noise level readings on the site of between 47 and 50 dBA are indicative of an area with little human activity and at a distance from traffic on local streets and I-90.

The commercial uses at Turtle Town on Sparks Road on the north side of I-90 are dominated by vehicle noise from I-90 at levels close to 70 dBA, as well as local sources of noise from vehicles entering and leaving the site, and incidental noise from refueling and outdoor activities. Noise levels of about 55 dBA farther east on Sparks Road reflect lower noise levels from I-90 due to distance and levels typical of background noise in a residential area.

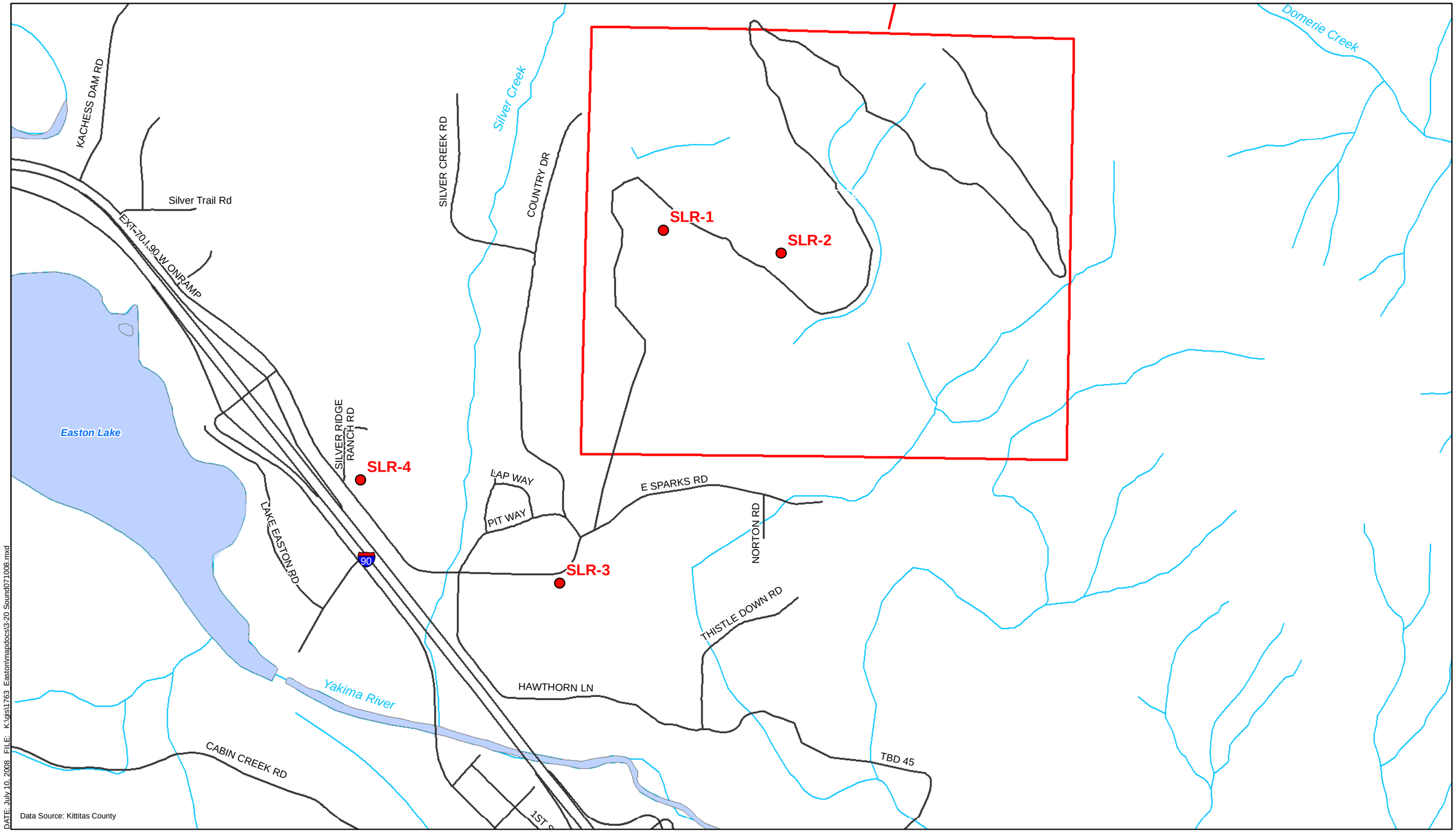
What are auditory and non-auditory impacts?

Auditory impacts are caused by high noise levels that can potentially damage hearing and produce either partial or total deafness. Non-auditory health impacts include sleep and speech disturbance and may also involve human physiological (other than hearing damage) or behavioral effects. Traffic noise is generally not loud enough over a long enough time period to cause hearing impairment and is generally more of a factor of non-auditory health impacts.

Noise is a substantial concern for land uses near airports. Typical propeller airplanes generate noise levels between 65 and 95 dBA depending on the activity the airplane is engaged in. The following discussion focuses on single-event noise levels because noise from the Easton State Airport is experienced from single planes landing and taking off. Usually such events are separated by a substantial interval, except when groups have arranged a rendezvous at the airport.

The majority of aircraft noise is produced at takeoff and landing. Figure 3-29 provides a "noise footprint" of typical noise levels produced by general aviation aircraft during landing and takeoff.

The dominant noise from most propeller airplanes is from the propeller itself. Propeller airplane noise varies depending upon the number of engines, the rotational speed of the propellers, the number of blades on each propeller, and the pitch of the blades. To some extent, the type of engine also affects the amount of noise produced.



Parametrix

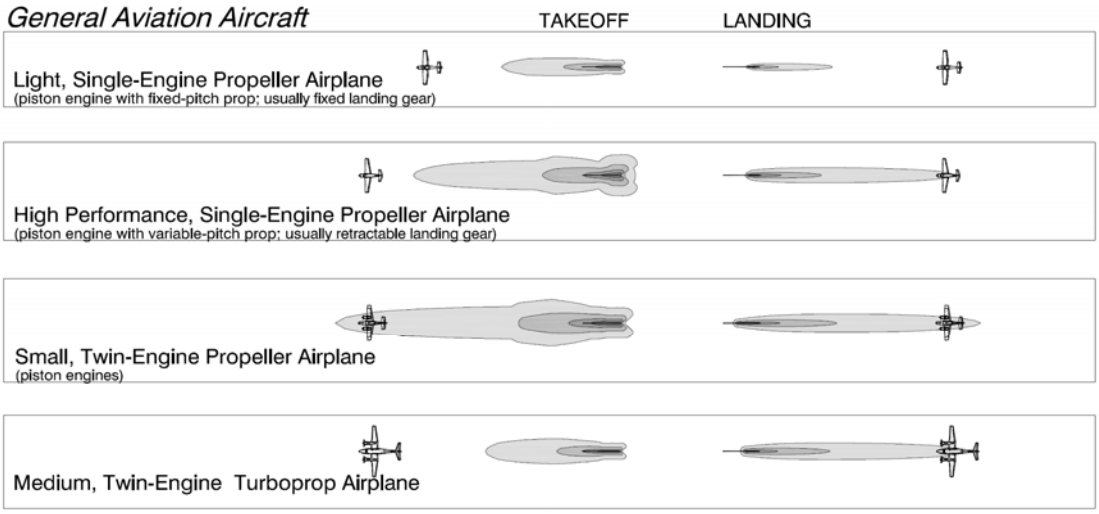
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Legend

- Sound Level Monitoring Sites
- Roads
- Project Area
- Lake
- Stream

Figure 3-28
Marian Meadows
Sound Level
Monitoring Sites

Figure 3-29 Aircraft Noise Footprints



Source: California Airport Land Use Planning Handbook (January 2002)

The contours represent the momentary maximum sound level experienced on the ground as the aircraft flies over. The outermost contour for each aircraft indicates a 65-dBA sound level. Additional contours are at 10-dBA increments (75, 85, and, in most cases, 95 dBA).

The noise levels produced by average propeller-driven small airplanes found at general aviation airports have not changed appreciably over the years. The potential for future technological improvements is limited. Moreover, small private airplanes are not replaced with newer models at anywhere near the rate common to commercial airline aircraft. Thus, for many years to come, the noise impacts of typical propeller airplanes are likely to remain similar to the present.

Although airborne aircraft operations are the primary source of aircraft noise in the vicinity of an airport, ground operations can also produce relatively high noise levels. Locations and activities relating to noise levels of ground operation include:

- Taxiing—Aircraft mostly use low power settings when taxiing between parking locations and a runway and produce low noise levels. Exceptions include the added power to begin moving an aircraft when stopped. Also, propeller airplanes need moderately high engine power to start the engine. Noise levels increase correspondingly for these few moments.
- Runway Holding Bays—For land uses near the end of a runway, run-up noise in preparation for takeoffs can be louder and more prolonged than overflight noise.

Pilot technique is also an important variable in aircraft noise. Practices that produce noise variations include**:**

Angle of climb while on takeoff (also affected by aircraft payload, air temperature, and wind); power adjustments during takeoff; propeller pitch setting on airplanes with variable pitch propellers, especially at high takeoff power settings; and flap settings (especially during landings).

As discussed above, airplane noise in an area such as Easton can be compared to the peak noise experienced from normal activities such as operation of a lawn mower or chain saw. Noise from the Easton State Airport is generally no higher and normally much less frequent than these sources of noise from residential use.

3 What noise standards apply in the area?

The proposal is subject to State of Washington and Kittitas County noise standards and regulations.

State of Washington noise regulations are found in WAC 173-60 (Table 3-32). Traffic traveling on public roadways is exempt from the State of Washington's maximum allowable noise levels. However, noise from individual motor vehicles is regulated by performance standards in state regulations (WAC 173-62). These rules set limits on the noise generated by various classes of motor vehicles.

Table 3-32. State of Washington Maximum Permissible Noise Levels (WAC 173-60-040)

	EDNA of Receiving Property		
EDNA of Noise Source	**Class A**	**Class B**	**Class C**
Class A (Residential, recreational, entertainment, and community services used for habitation)	55 dBA	57 dBA	60 dBA
Class B (Commercial)	57 dBA	60 dBA	65 dBA
Class C (Storage, industrial, agricultural)	60 dBA	65 dBA	70 dBA

EDNA = environmental designation for noise abatement

Construction noise between the hours of 7:00 a.m. and 10:00 p.m. also is exempt from the State of Washington's maximum allowable noise levels.

Noise regulations are addressed in Section 9.45 of the Kittitas County Code as a disturbance. The Code enumerates a list of disturbances, including:

- Operating motors, engines, motorcycles and snowmobiles in a capricious manner, to be plainly audible within any dwelling unit which is not the source or is generated within 200 feet of any dwelling unit.
- Playing amplified or otherwise loud music and voice amplification, either live or recorded.
- Yelling or shouting at a continuous loud level of sound.
- Allowing domestic animals to bark, howl, or otherwise make noise either on private or commercial premises for extended periods of time.
- Using noise-making fireworks except for duly authorized or approved public displays.

4 What are the expected effects of construction noise on nearby uses?

During construction, there would be a temporary increase in sound levels in the immediate vicinity of each of the three proposed actions due to the use of heavy equipment and the hauling of construction materials. The increase in noise levels would depend on the type of equipment being used and the amount of time it is in use. Table 3-33 displays ranges of noise produced by typical construction equipment.

Table 3-33. Typical Construction Equipment Noise

Construction Activity	Estimated L_{eq} at 50 feet (dBA)	Types of Equipment	Range of Noise Levels at 50 feet (dBA)
Clearing	83	Bulldozer	77–96
		Dump Truck	82–94
Grading	75–88	Scraper	80–93
		Bulldozer	77–96
Paving	72–88	Paver	86–88
		Dump Truck	82–94

Source: EPA (1971)

The most sensitive nearby land uses are the single-family residences to the southeast, east, and south of the site. The closest single-family residence to the southeast is about 100 feet from the project boundary. Residences to the west and south are generally slightly farther from the site due to larger lot sizes and greater lot depth.

These construction noise levels are somewhat higher than existing noise experienced by these residences. The character of the construction noise, however, is different from the more continuous noise from roadways. Construction noise varies in intensity and character and tends to be more intrusive for that reason.

Construction would generally be limited to daylight hours and would avoid noise disturbance during the nighttime sleeping hours, when people are most sensitive to disturbance.

What are some practices that can be employed to reduce noise impacts during construction?

Noise-reducing measures could include engine intake silencers and engine closures, muffler sizing, maintenance, and condition; positioning of equipment; shutoff of equipment during idling times, and substitution of hydraulic or electric models for impact tools.

5 How can construction noise be reduced?

The limited duration of construction noise peak levels generally does not require measures to reduce noise during daytime hours. Construction noise is not regulated by State of Washington regulations from 7:00 a.m. to 10:00 p.m. However, construction activities in Kittitas County will generally be limited to daytime hours. From November through February construction activities are typically limited to 8:00 a.m. to 6:00 p.m. and from March through October 7:00 a.m. to 8:00 p.m. During the summer months, these may

be amended to reflect those hours prescribed by the Washington State DNR Industrial Fire Precautions regarding starting and completion hours per precaution level. During "Hoot owl" level operations, it is generally permissible to work from 8 p.m. to 1 a.m. to lessen the fire danger. Work occurring outside of daytime hours is generally an option, with each case being looked at and reviewed by Kittitas County Planning Department as an administrative decision.

If necessary, additional practices could be implemented simply and inexpensively to reduce construction noise. Construction contracts will specify that mufflers be in good working order and that engine enclosures be used on equipment when the engine is the dominant source of noise.

Substituting hydraulic or electric models for impact tools such as jack hammers, rock drills, and pavement breakers could also reduce construction and demolition noise. Although back-up alarms installed for safety purposes are exempt from the noise ordinances, noises from such devices are among the most annoying sounds from a construction site. Where feasible, equipment operators could drive forward rather than backward to minimize this noise. Noise from material handling could also be minimized by requiring operators to lift rather than drag materials wherever feasible.

What other measures can be taken to limit noise during construction?

Stationary equipment will generally be placed as far away from sensitive receiving locations as possible whenever construction occurs within 100 feet of a site boundary. Where this is infeasible, portable noise barriers will be placed around the equipment with the opening directed away from any sensitive receiving property.

Notification of residents or other sensitive uses of nighttime work can reduce irritation from nighttime work because people expect it, they are not taken by surprise, and they can often take measures such as shutting windows in advance to reduce noise impacts.

There are also a number of operational measures that can reduce construction noise. Care in operation of equipment, such as preventing tailgate banging on dump trucks after emptying their load, and using bedliners to reduce the noise from placing materials in haul trucks. Back-up alarms are often annoying because they are designed to be attention getting; measures are available to render the noise less intrusive during nighttime work when sleepers are particularly sensitive.

6 What long-term noise disturbance will result from the proposal and alternatives?

New long-term noise impacts would occur as a result from development regardless of the chosen alternative. Noise from typical residential activities varies by season and includes activities such as landscaping, children playing, and operating motor vehicles. Impacts would vary slightly depending on the extent and concentration of residential development.

In general, the long-term noise impacts associated with a given residential development are directly related to the number and tenure of the persons inhabiting a development. Impacts would be the largest where residences are most densely clustered and highly tenured.

Alternative 1, the applicant's proposed PUD with 443 units on the entire site, would likely result in the second-most significant noise impacts of any of the alternatives because the proposal would allow a high number of residential units across nearly the entire site.

Alternative 2, PUD on the western portion of the site with up to 443 units depending on the proportion of multi-family units, would likely result in the most significant noise impacts of any of the alternatives because the proposal would allow the highest number of residential units in the smallest gross area.

Alternatives 3A and 3B, No Action Alternative comprising 3-acre lots with up to 147 lots, would likely result in the near the lowest noise impacts of any of the alternatives because development would be less dense throughout the site and noise buffers would be maintained.

Alternatives 3C, with 3-acre lots with about 33 lots, would likely result in the lowest noise impacts of any of the alternatives because there would be fewer lots overall.

Alternatives 3D, with 3-acre lots with about 113 lots, would likely result in noise impacts similar to Alternatives 3A and 3B due to the size, distribution, and number of lots.

Alternative 4, PUD with reduced density on the entire site with about 147 lots, would likely result in medium noise-related impacts throughout the site. The areas with small lots would experience local noise levels similar to Alternatives 1 and 2. Open space areas would maintain noise buffers between some clusters of residences.

Alternative 5 PUD on western portion of the site with about 113 lots would likely result in medium noise-related impacts within the western portion of the site. Higher-density development would concentrate noise impacts in a smaller gross area.

7 What are the likely cumulative impacts with development of nearby land at rural densities or at densities similar to the proposal?

Cumulative impacts on noise are likely related to both the number of people in the area producing noise and the relative distance between generators and receivers.

The combined development of Alternatives 1 and 2 with other development in the area at the existing zoning density of one unit per 3 acres would result in a community with about the same number of residents as Cle Elum and about 20 percent larger than the 2009 population of Cle Elum if all the units were occupied full-time by families. Subdivision at the density reflected in the Marian Meadows PUD application would allow a density up to about one unit per acre and result in the equivalent of a community with about 1,200 dwellings and a population of about 3,000. This is about 60 percent greater than the estimated 2008 population of Cle Elum of 1,865 (if all the units were occupied full-time by families).

In both cases, the increase in population likely would lead to higher noise levels characterized by residential areas in a small town rather than in a rural area. It is unlikely that such a difference would be

measurable, but it may be perceived by residents in terms of the frequency to which they experience noise disturbance

3.8 AIR QUALITY

1 Are there currently air quality problems in the area?

A review of available air quality indicator data from Ecology has determined that there are no known air quality problems in the vicinity of the proposal.

EPA has established National Ambient Air Quality Standards (NAAQS) under the Clean Air Act (40 CFR 6, 51 and 93). The NAAQS specify maximum concentrations for particulate matter (PM_{10} and $PM_{2.5}$), carbon monoxide, ozone, sulfur dioxide, lead, and nitrogen dioxide.

There are three air pollutants of major concern in the Kittitas Valley:

- Particulate matter, which includes both solid matter and liquid droplets suspended in the air. The major sources of particulates in the area are wind-borne dust and wood smoke. Wood smoke may include residential stoves and fireplaces, as well as smoke from burning logging debris and wood from wildfires.
- Carbon monoxide, which is primarily from motor vehicle exhaust.
- Ozone, which is contributed to by motor vehicle exhaust and other sources.

Pursuant to EPA guidelines, Kittitas County is not currently designated as a non-attainment area for any of the pollutants of concern.

What are particulates?

Particulate matter (PM) is a mixture of particles that can adversely affect human health, damage materials, and form atmospheric haze that degrades visibility.

PM with a diameter of less than or equal to 10 micrometers is referred to as PM_{10}. A PM_{10} particle is roughly 1/8 times the diameter of a human hair. Particles as small as 2.5 micrometers or smaller may be referred to as $PM_{2.5}$.

In general, the smallest particles pose the highest human health risks. PM exposure can affect breathing and aggravate existing respiratory and cardiovascular disease. PM can also alter the body's defense systems against foreign materials and damage lung tissue, contributing to cancer and premature death. Individuals with chronic obstructive pulmonary or cardiovascular disease, asthmatics, the elderly, and children are most sensitive to the effects of PM.

Air quality is influenced by natural conditions, such as climate, as well as human activities. The climate characteristics in the Easton area provide almost constant winds that blow from west to east limiting the potential for concentrations of pollutants. Climate in the Kittitas Valley is heavily influenced by the Cascade Mountain Range, which forms a north-south topographic and climatic barrier influencing prevailing wind direction, temperature, and precipitation. As air masses rise over the western slope of the Cascades, cooling and condensation produce heavy precipitation in the mountains. Temperature inversions that trap pollutants occur in the Ellensburg area, where the Kittitas Valley is a bowl enclosed by ridges. In the Easton area, in the upper Kittitas Valley, there are no topographic barriers to the

downhill flow of air masses and little evidence of poor dispersion conditions that would lead to exceedance of air quality standards. Information from the National Weather Service station at Stampede Pass and wind records collected for wind generation facilities near Thorpe confirm that low wind conditions are experienced very rarely in the area (WRCC 2008d; EFSC 2008).

Ecology maintains an air quality monitoring station in Ellensburg. That station monitored PM_{10} levels until 2004, when equipment was installed to monitor smaller particulates at the $PM_{2.5}$ level. No exceedances of air quality standards have been observed in Ellensburg for either particulate matter standard (Ecology 2008).

An air quality study in Cle Elum in late 2007 and early 2008 indicated patterns of increases of particulates that are consistent with use of wood for heating, with an early morning and late afternoon/early evening increase (Hopkins 2008). These data, however, do not indicate exceedance of standards. Given the lack of exceedance in Ellensburg, which has less favorable winds, the potential for inversions, and a greater population, it appears unlikely that exceedance of air quality standards for particulates would occur in the upper Kittitas Valley in general, and in Easton in particular.

Standards for carbon monoxide were assessed by WSDOT for the I-90 Hyak to Easton Widening project. The assessment determined that carbon monoxide levels are not likely to exceed standards with projected future traffic growth (WSDOT 2002).

2 What air quality standards apply in the area?

Two agencies have jurisdiction over the ambient air quality in the project area, EPA and Ecology.

As part of the Clean Air Act, EPA established ambient air quality standards for six criteria pollutants. Two classes of ambient air quality standards were established—primary standards to protect the public health, and secondary standards to protect the public welfare and the environment (for example, soils, vegetation, and wildlife).

When measured concentrations of a pollutant exceed the NAAQS, the area is designated as a non-attainment area for that pollutant. Kittitas County has not been designated a non-attainment area for any pollutants. The Seattle/Everett/Tacoma area was designated a carbon monoxide non-attainment area in the 1970s, 80s, and 90s. Programs to improve the emissions of motor vehicles implemented on a nationwide level, in conjunction with regional actions such as inspection of vehicle emissions systems, led to a reduction in pollutants such that the area was redesignated an attainment area for carbon monoxide in 1997. Similarly, the Seattle/Everett/Tacoma area was designated a non-attainment area in the past, but has achieved compliance with the ozone standard in the past 5 years.

An element of the strategy developed by Ecology in ensuring compliance with air quality standards is the regulation of burning related to agriculture or timber harvest, as well as wood stoves and fireplaces used for home heating. Ecology developed the Washington Air Quality Advisory (WAQA), which is a tool for informing people about the health effects of air pollution (Tables 3-34 and 3-35). The Ecology Air

Quality Program set a health goal for fine particulate matter ($PM_{2.5}$) of 20 microns per meter (20 $\mu g/m^3$), which is a lower standard than the EPA 24-hour standard of 35 $\mu g/m^3$.

Table 3-34 Washington Air Quality Advisory $PM_{2.5}$ Standards

Category	WAQA Estimated 24-Hour Average $\mu g/m^3$
Good (0-50)	0 to 13.4
Moderate (51-100)	13.5 to 20.4
Unhealthy for Sensitive Groups (101-150)	20.5 to 35.4
Unhealthy (151-200)	35.5 to 80.4
Very Unhealthy (201-300)	80.5 to 135.4
Hazardous (301-500)	>135.4

Table 3-35 Washington Air Quality Advisory Effects by Category

Category	WAQA Health Effects
Good	None
Moderate	Some people with lung and heart disease, stroke, diabetes, or a current respiratory infection may be sensitive to air pollution at this level and should consider limiting outdoor activity.
Unhealthy for Sensitive Groups	People with lung and heart disease, stroke, diabetes, or a current respiratory infection, infants, children, and older adults should limit outdoor activity.
Unhealthy	Everyone should try and limit outdoor activity. If possible, people with lung and heart disease, stroke, or respiratory infections, infants, children, and older adults should stay indoors.
Very Unhealthy	Everyone should try to stay inside. People with lung and heart disease, stroke, diabetes, or a current respiratory infection should limit indoor activity levels. Shut windows and doors if it is not too hot. Set air conditioners on the re-circulate mode if this is available.
Hazardous	Everyone should try to stay indoors. Limit physical activity. Shut windows and doors if it is not too hot. Set air conditioners on the re-circulate mode if this is available. If it is too hot to shut windows and doors, consider leaving the area until air quality improves.

In recognition of the effect of wood heating on air quality, Washington State has several laws addressing wood stoves including:

- RCW 70.94.450, which establishes the policy of the state to control, reduce, and prevent air pollution caused by wood stove emissions; encourages Ecology to educate the public about the effects of wood stove emissions and other heating alternatives; and promotes the desirability of achieving better emission performance and heating efficiency from wood stoves.
- RCW 70.94.455, which establishes standards for solid fuel burning devices and provides for the state building code to require an adequate source of heat other than wood stoves in all new and substantially remodeled residential and commercial construction.
- RCW 70.94.470, which establishes standards for smoke opacity to aid in enforcement.
- RCW 70.94.473, which provides that, during an air pollution episode, alternatives to wood burning will be used in buildings with alternative sources of heat, and for those without alternatives, only certified wood stoves can be used.

Kittitas County has no specific policies or standards for air quality.

3 During construction, are air quality problems expected?

During construction, dust from excavation and grading would contribute to ambient concentrations of suspended particulate matter. This environmental protection may include application of water or other dust suppressants during dry weather.

The site was recently logged thus limiting the extent of clearing and grubbing necessary to accommodate the proposed site development. However, disposal of existing, non-marketable trees and shrubs may involve slash burning. If this method is employed, the requirements of WAC 222-30-100 will be complied with for limitations during impaired air quality. Any slash burning would also be conducted pursuant to Kittitas County burning regulations and standards.

How were greenhouse gas emissions calculated for this analysis?

Total lifespan emissions for the applicant's proposed PUD and each of the alternatives were calculated in terms of metric tons of CO_2 equivalent ($MTCO_2E$).

This calculation includes emissions associated with the embodiment of the residential structures and pavement for driveways and roads, the emissions from energy associated with the maintenance and upkeep of these structures, as well as operational use such as heating. Also included are the emissions associated with the transportation needs of inhabitants of the structures over the structures' design lifespan.

Some phases of construction would cause odors detectible to some people away from the project site. This would be particularly true during paving operations with asphalt. Such odors would be short term.

4 What long-term effects on air quality are expected from the proposal and alternatives?

Regardless of the alternative that is ultimately selected, the existing data for Cle Elum and Ellensburg do not indicate exceedance of air quality standards, even with a greater population, less favorable winds, and the potential for inversions. The upper Yakima River Valley in the vicinity of Easton has virtually constant winds, no inversions, and no topographic or other features that contain air masses. Regardless of

the alternative, it is very unlikely that the potential population of the site and the area would result in exceedance of air quality standards, even with cumulative growth.

However, measurable long-term air quality impacts would occur under each alternative development scenario. Generally, long-term air quality impacts associated with the proposal and the alternatives can be assumed to be linearly correlated to the amount of residential units developed; the more units developed, the more significant the air quality impacts would be.

Alternative 1, the applicant's PUD proposal with 443 units on the entire site, is not likely to result in exceedance of air quality standards, even if wood heating was used. Some localized concentration of wood smoke may occur, especially in early morning low wind conditions, when fog and wood smoke tend to accumulate in low-lying areas. This may occur in the lower, flat portions of the site, but is unlikely in the steep-sloping eastern portion of the site. Such localized concentrations may be an annoyance for some residents and may adversely affect residents with respiratory conditions, especially on the flatter western portion of the site, which would be developed under this scenario.

Regarding contribution of carbon to cumulative impacts of global warming, the total lifespan emissions for Alternative 1 were calculated at an estimated 714,045 metric ton carbon dioxide equivalent ($MTCO_2E$). This is a standard measure of carbon produced in the manufacture of all components of development, including materials and construction of infrastructure and residences as well as life-span operating emissions. This measure is useful primarily in comparing alternatives.

Alternative 2, a PUD on the western portion of the site with up to 443 units, depending on the proportion of multi-family units, is not likely to result in exceedance of air quality standards, even if wood heating was used. Some localized concentration of wood smoke may occur, especially in early morning low wind conditions, when fog and wood smoke tend to accumulate in low-lying areas. This may occur in the lower flat portions of the site, such as the western portion of the site, where the PUD would be located in Alternative 2. Such localized concentrations may be an annoyance for some residents and may adversely affect residents with respiratory conditions. Because the highest-occupancy proposed PUD would be located in the western portion of the site under Alternative 2, it is anticipated that air quality impacts would be most significant under this scenario.

Total lifespan emissions for Alternative 2 were calculated at an estimated 618,356 $MTCO_2E$, or about 87 percent of Alternative 1.

Alternatives 3A, 3B, and 4 with up to 147 lots, are not likely to result in exceedance of air quality standards, even if wood heating was used. Some localized concentration of wood smoke may occur, especially in early morning low wind conditions, when fog and wood smoke tend to accumulate in low-lying areas. This may occur in the lower, flat portions of the site, but is unlikely in the sloping eastern portion of the site. Such localized concentrations may be an annoyance for some residents and may adversely affect residents with respiratory conditions, especially on the flatter western portion of the site, which would be developed under this scenario, albeit at a lesser density than other alternatives.

Total lifespan emissions for these alternatives were calculated at an estimated 244,290 $MTCO_2E$, or about 35 percent of Alternative 1.

Alternatives 3D and 5, with about 113 lots, are not likely to result in exceedance of air quality standards, even if wood heating was used. Some localized concentration of wood smoke may occur, especially in early morning low wind conditions, when fog and wood smoke tend to accumulate in low-lying areas. This may occur in the lower flat portions of the site, but is unlikely in the steep-sloping eastern portion of the site. Such localized concentrations may be an annoyance for some residents and may adversely affect residents with respiratory conditions. This would primarily affect the flatter western portion of the site, which would be developed under Alternative 5, albeit at a lesser density than Alternatives 1 and 2.

Total lifespan emissions for these Alternatives were calculated at an estimated 187,800 $MTCO_2E$, or about 26 percent of Alternative 1.

Alternative 3C with about 33 lots, is not likely to result in exceedance of air quality standards. Some localized concentration of wood smoke may occur, as described for other alternatives, above.

5 What are the likely cumulative impacts with development of nearby land at rural densities or at densities similar to the PUD proposal?

Air quality would be primarily affected by the use of wood stoves for heating.

The combined development of Alternatives 1 and 2 with other development in the area at the existing rural zoning density of one unit per 3 acres would result in a community about 20 percent larger than the 2009 population of Cle Elum, if all the units were occupied full-time by families. Cumulative subdivision at the density reflected in the Marian Meadows PUD application would allow a density up to about one unit per acre and result in the equivalent of a community with about 1,200 dwellings and a population of about 3,000. This is about 60 percent greater than the estimated 2008 population of Cle Elum of 1,865 (if all the units were occupied full-time by families).

Given the lack of exceedance of air quality standards in Ellensburg with a much larger population and less favorable dispersion conditions, it is improbable that either scenario would result in exceedance of air quality standards.

6 During construction, what measures can reduce air quality effects of the project?

During construction, several best management practices will be followed to ensure that air quality effects associated with the project are minimized to the extent possible. A Fugitive Dust Control Plan (FDCP) may be required. This will include:

- Well-maintained construction equipment and trucks will be used to reduce emissions; vehicles and equipment will be fitted with emission-controlling components such as air filters and catalytic convertors.

- Prolonged periods of idling vehicles and other engine-powered equipment will be avoided.
- During construction, areas of exposed soils will be regularly sprayed with water or other dust suppressants.
- Cleared area that will be exposed for prolonged periods will be paved, planted with a vegetation ground cover, or covered with gravel.
- Loads in trucks will be covered to ensure that dust and soil does not fly off and pollute the air.
- A program and schedule for road sweeping will be submitted concurrent with submittal of an application for the first phase or subphase of development.

Reduction in air emissions from outdoor burning may be accomplished by grinding or chipping all vegetation cleared rather than burning.

What is included in the Spill Prevention Control and Countermeasures Plan?
Such a plan normally would include:

1. Designation of responsible contractor personnel for implementation.

2. Prevention and containment provisions including location, design, and construction standards for:

a. Equipment staging and maintenance areas,

b. Fuel staging,

c. Hazardous material staging, and

d. Waste storage areas.

3. Monitoring provisions.

4. Spill notification procedures and designated responders.

5. Designation of response and cleanup protocols.

7 During operation, what measures can reduce air quality effects of the project?

Additional measures could reduce air quality effects associated with the proposal and the alternatives:

- A restriction on all wood burning stoves could be included to all privately owned units including the single-family residences. This restriction would reduce emissions from the project, but would likely be difficult to enforce over the lifetime of the project. Such a restriction would involve use of other fuels for space heating, which could include oil or propane. Natural gas is not available in the area.
- Residents can be educated regarding safe operation of devices that can have negative impacts on air quality such as barbecues, chemicals and pesticides, smoking, operation of combustion engines, and fireworks.

3.9 HAZARDOUS MATERIALS

1 Are there likely to be hazardous materials in the project area?

The site has not hosted past industrial or commercial activities that are likely to have resulted in hazardous materials being located on the site. It is possible that unregulated dumping on the site has resulted in deposition of household hazardous waste, but no such evidence has yet been observed in field work or reconnaissance on the site by numerous professionals.

Uses in the vicinity that may generate hazardous waste are limited to automobile service stations and repair with associated fuels, lubricants, chemicals, and former railroad facilities. Operation of the former railroad facilities in Easton may have involved fuels, lubricants, or other hazardous materials, but evaluation of presence of hazardous materials is outside of the scope of this analysis. The closest railroad facilities are located at a significant distance from the proposed site and are unlikely to affect future use.

2 What hazardous materials could be released during construction?

During construction, earth-moving activities could result in uncovering previously unidentified materials that may have been placed on the site without the knowledge of Kittitas County or the landowner; however, this is unlikely.

There is also the slight chance that past unrestricted access to the site may have resulted in dumping of hazardous materials that has resulted in localized contaminated soils.

During construction, fuel or other materials may be accidentally released during construction. Applications of paints, pesticides, chemicals, or discharges of wash water during construction could potentially result in unexpected releases of contaminants to the soil.

3 What measures would address hazardous materials during construction?

The potential for discovery or accidental discharge of hazardous materials during construction will be addressed by an Environmental Management Plan to be implemented by the contractor which would include, but not be limited to, the following elements:

(1) Designation of contractor representatives and procedures to check for the presence of contaminated soil and contaminated groundwater.

(2) Procedures for characterization, management, disposal, and follow-up reporting for contaminated soil, groundwater, and associated materials (such as underground tanks and septic systems).

If contaminated soils are encountered, the response is likely to be excavation and disposal of contaminated soils at an approved disposal facility. If contaminated materials are encountered of a magnitude beyond localized soil contamination, a site investigation may be warranted. If the results of the preliminary site investigation indicate the need for more detailed sampling and analysis, then a detailed site investigation may be performed. The scope of the detailed site investigation would be dependent upon the nature and extent of contamination.

To control accidental discharge of hazardous materials during construction, an SPCC Plan will be created for the project.

It is unlikely that the scope of construction would result in hazardous material spills that would be more than localized and require more than a routine removal and disposal response.

4 What long-term effects could the project and alternatives have on hazardous materials?

The long-term effects of the alternatives discussed in this analysis on hazardous materials are anticipated to be minimal. Residential standards for maintaining and disposing of hazardous materials established in RCW 70.105 will be applicable to all those inhabiting residences at the site.

5 What are the likely cumulative impacts with development of nearby land at rural densities or at densities similar to the PUD proposal?

The potential cumulative impacts of development of nearby land in the vicinity would result in additional residences. This would lead to more potential cases of residents employing hazardous materials but would not increase risk materially.

6 What measures can reduce potential hazardous material risks?

Hazardous material risks during construction generally would be addressed by a control and response plan.

Hazardous material risk of long-term use generally would be addressed by controlling uses using hazardous materials.

Hazardous household materials generally would be addressed through education and providing convenient means of safe disposal.

3.10 HISTORIC, CULTURAL, AND ARCHAEOLOGICAL RESOURCES

1 What historic, cultural, or archaeological resources are likely to be present in the project area?

The potential for cultural resources to be present on the site and in the area relates to the type of human habitation and use that may have occurred.

Prior to European-American contact, the area was occupied by the Kittitas or Upper Yakima Tribe. Ethnographers classify the area as part of a larger retention, the Southern Plateau, which extends from the Okanogan Highlands in the north to the southern edges of the Deschutes and John Day Rivers in the south, and from the crest of the Cascade Mountains in the west to the Bitterroot Mountains in the east.

Period I. 11,500 years ago to 5000/4400 B.C. includes Clovis and post-Clovis cultures that practiced a broad-spectrum hunter-gatherer subsistence strategy. People moved frequently and left no evidence of dwellings or structures. The great majority of artifacts are concentrated in the central and eastern portions of the region along the Columbia and Snake rivers and tributaries. A documented archaeological site in Kittitas County is located at Ryegrass Coulee near Vantage on the Columbia River. No sites have been identified in the upper Kittitas Valley.

Period II. 5000/4400 to 1900 B.C. is characterized by semi-subterranean pit houses along with evidence of increased exploitation of certain nutritious roots and salmon. Less investment is made in the manufacture of stone tools as judged by their decline in quality. The presence of semi-subterranean pit houses likely represents a region-wide shift in settlement patterns to some form of semi-sedentism. However, there are few dated dwellings in the region.

Period III. 1900 B.C. to A.D. 1700 is marked by the widespread reappearance of pit houses, increasing heavy reliance on fishing and storage of salmon, intensive exploitation of camas, and other patterns of use that persisted into the 19th century. These include seasonal (usually winter-early spring) villages in the canyons and exploitation of uplands and mountains from special use camps during the summer and fall. Concentrations of houses in villages appeared by A.D. 500, with longhouses after A.D. 500.

Cultural artifacts in the upper Kittitas Valley are most likely to reflect spring, summer, and fall activities related to gathering and processing of various foods found in the surrounding areas (Hunn 1990). Fisheries utilized by the Kittitas during the summer and early fall were located at the outlets of Lakes Cle Elum, Keechelus, and Kachess (Schuster 1990). In addition, fishing sites are found along the entire length of the Yakima River (DePuydt 1990). The Kittitas maintained particularly strong trade relations with the Snoqualmie, including wintering at their village below Snoqualmie Falls (Prater 1981).

European-American Contact. The horse arrived in the Kittitas Valley around 1740, after being traded by the Shoshone to other Plateau Indians and then to the Kittitas. With the resulting increase in mobility, they could then travel greater distances, often to the Great Plains in pursuit of buffalo or to intertribal trade centers and social gatherings. Plateau people were influenced by the Great Plains culture and adopted many of their practices, such as dress, dancing style, housing style, decorative, beaded horse garments, European trade goods, and changes in inheritance patterns (Meinig 1968; Schuster 1990).

Actual European-American contact began with the Lewis and Clark Expedition in fall 1805, well south of the Easton area. Fur traders soon followed Lewis and Clark. Alexander Ross of the Northwest Company came to the Kittitas Valley in 1814. Some time after 1840, the Kittitas began grazing herds of horses in the valley (Schuster 1990). In May 1841, Lieutenant (Lt.) Charles Wilkes of the United States Exploring Expedition sent Robert Johnson from Puget Sound overland to explore the interior of the Columbia. On his way, Lt. Johnson stopped in the Kittitas Valley to purchase fresh horses. Catholic missions were established in the Yakima River Valley in 1847(Schuster 1982).

European-American Settlement. In the 1850s the Donation Land Act was passed and Indian lands in the Northwest were opened for settlement. Washington Territory was formed in 1853. In June 1855 a treaty was entered into with tribes in Eastern Washington, which created the Consolidated Tribes and Bands of the Yakama Nation and established the Yakama Indian Reservation. Kittitas Indians were eventually relocated to the reservation. In September 1855, as a result of Indian Wars, Colonel George Wright constructed a base camp in the Kittitas Valley. Hostilities continued until September 1858.

By the 1860s, cattle were being driven from the Yakima Valley to the gold mines in Canada. After the Snoqualmie Wagon Road was completed in 1867, ranchers in the Kittitas Valley began to drive cattle to Puget Sound (Prater 1981). Sawmills were established in the Kittitas Valley as early as the 1870s.

The flat western portions of the project site and the bench area in the eastern portion was surveyed in 2006 by Reiss-Landreau Research on a grid of 10-meter transects. No cultural resources were found on the site.

In 1887, the Northern Pacific Railroad was completed from the Kittitas Valley through Stampede Pass and onto Tacoma, with railroad support facilities established at Easton. The construction of the railroad stimulated settlement of the Kittitas Valley and other areas of Eastern Washington. The Snoqualmie Wagon Road continued to be used largely for local circulation until the coming of automobiles. The Snoqualmie Wagon Road is now I-90.

Irrigation began as early as 1892. Construction did not begin in the upper valley until the Kittitas Reclamation District was organized in 1911 using water from the reservoirs at Kachess Lake and Keechelus Lake. The Main Canal constructed between 1926 and 1932 utilizes a water intake on the Yakima River just above Easton.

The General Land Office map (c.1898) shows a possible homestead on the project site in Section 1 associated with J.W. Combes as well as an irrigation ditch slightly to the north. Site investigation by archaeologist Chris Landreau led to the conclusion that relative to current section lines, the Combes homestead is farther south in an area where current homes have obliterated any remains. An additional archaeological site consisting of a historic roadway is located about a mile west of the project site.

2 What policies and regulations govern historic cultural or archaeological resources that may be present on the site or in the vicinity?

The provisions of RCW 27.53.060 govern the removal, alteration, or excavation of historic or prehistoric archaeological resources or sites and the removal of archaeological objects from a site. A permit process is designed to ensure that any artifacts on private land are dealt with by a qualified professional. For artifacts on public land, the law provides for preservation or conservation.

Kittitas County has policies for protection of cultural resources only within the jurisdiction of the Shoreline Management Act and the Snoqualmie Pass Subarea Plan.

RCW 27.44.030 through 27.44.050 declare a public policy to protect Indian burial sites, cairns, glyptic markings, and historic graves located on public and private land to encourage voluntary reporting and respectful handling in cases of accidental disturbance, and to provide for enhanced penalties for deliberate desecration. The law provides for a permit from the director of the Department of Archaeology and Historic Preservation to remove or alter any of the above-listed items, in coordination with the tribes.

RCW 68.60.040 and 68.60.050 protect tombs, plots, monuments, memorials, or markers in a cemetery, as well as other facilities such as fences, and provides penalties for unlawful opening of a grave or removal of personal effects or human remains. This applies to both cemeteries and historic graves.

3 What effects on historic, cultural, or archaeological resources may occur from the proposal and alternatives during construction and use?

The potential for effects on historic and cultural resources is essentially the same for the applicant's proposed PUD or any of the alternatives. If suspected historic, cultural, or archaeological resources are encountered during construction, construction activity would be immediately stopped, the area would be contained, and the Washington Office of Archaeological and Historical Preservation (OAHP) would be notified.

4 What are the likely cumulative impacts with development of nearby land at densities similar to the proposal?

The potential cumulative impacts of development of nearby land in the vicinity was developed for the area north of I-90 served by Sparks Road under two scenarios:

- Development at existing rural densities at one unit per 3 to 5 acres.
- Development at the intensity allowed under PUD regulations as proposed for the Marian Meadows site, resulting in about one unit per acre.

Impacts on archaeological resources are anticipated to be minimal under either development scenario.

5 What measures could reduce effects on historic, cultural, or archaeological resources?

Prior to any disturbance to known significant resource areas, an archaeological permit will be requested from Washington OAHP, state permission granted, and archaeological testing conducted to determine the significance and extent of the cultural resource.

Mitigation measures available to ensure protection of all significant cultural resources on the site include:

(1) Avoidance.

(2) Limited testing to determine the significance and extent of properties deemed potentially significant to the National Register of Historic Places.

(3) Using an approved cultural resources plan, a protective overburden may be placed on top of known significant properties creating an undisturbed barrier between the resource and development activity.

(4) Excavation to recover significant cultural information prior to negatively affecting any properties eligible for placement on the National Register of Historic Places.

Avoidance of impacts to all previously identified significant cultural resources can be obtained by establishing a 150-foot buffer around known resource areas. If it is determined that avoidance of a resource area is not possible, proposed construction or landscape alteration that intrudes into the prescribed buffer area can be conditioned on the applicant conducting archaeological subsurface testing.

This testing will be completed prior to any disturbance to adequately document the extent and potential of the cultural resources for nomination to the National Register of Historic Places.

Necessary mitigation measures would be determined after testing in consultation with the Washington OAHP and the Yakama Nation.

3.11 GEOLOGY, TOPOGRAPHY, AND SOILS

1 What are the geologic, topographic, and soil conditions in the area?

What is a talus slope?

A talus slope, or scree, is mass of rock fragments that have collected at the base of a cliff or steep slope from which they have fallen.

The topography and geography of the project site reflect the general characteristics of the area.

The eastern portion of the site on Easton Ridge is on a steep sloping hillside composed largely of bedrock of Teanaway Formation basalt, basaltic tuff, and breccia. The western edge of the steep portions of the site includes talus slopes of rocks formed by rockfall from above. The topography is stepped. A hillside rises from an elevation of about 2,200 feet to an initial ridge about 3,000 feet in elevation. A second slope rises to the crest of Easton Ridge at an elevation of about 4,400 feet. Between the two ridges is a less steep sloping area with a valley containing a stream.

What is an alluvial plain?

An alluvial plain occurs when deposits (usually silt or silty clay) from running water, such as streams, rivers, or floods, form a plain.

The western portion of the site consists of a gently sloping alluvial plain at an elevation of about 2,200 feet. There is an electrical transmission line at about the boundary of the alluvial plain and the sloping hillside.

The site topography and geology are typical of the Roslyn Basin of the Upper Yakima River Watershed, which is a classic U-shaped, glacially scoured valley. Figure 3-30 maps the geology in the vicinity. The valley was occupied by a large glacier complex that included coalescent glaciers from the Keechelus Lake, Kachess Lake, and Cle Elum Lake drainages. Deposits of at least three major glacial intervals have been mapped. These are the Lakedale Drift (15,000 years before present), the Thorp Drift (>700,000 years before present), and the Kittitas Drift (120,000 years before present). During Thorp and Kittitas times, the glaciers extended down the valley as far as the Teanaway River. The most recent glacial advance (the Fraser glaciation/Lakedale Drift) extended just east of the Easton area.

The bedrock of Easton Ridge is either Shuksan Greenschist or Silver Creek Pass Member andesite. The major structural feature in the area is the Straight Creek Fault (SCF). The SCF is a major right-lateral strike-slip fault extending north into Canada (Tabor et al. 2000). Portions of the SCF are thought to have been active within the last 10,000 years

What is a glacial drift?

Glacial drift is rock material that was transported and deposited by glaciers when they melted.

(Slemmons et al. 1981; Vance and Miller 1983). The southern extent of the SCF is interpreted to loosely follow Kachess Lake, pass through Easton, and curve to the southeast, following the Yakima River Valley, or alternatively through Ambolis Mountain, crossing the Yakima River Valley about 2 miles east of Easton (Tabor et al. 2000; Cheney 1999). The fault is inactive, pre-Tertiary in age (more than 65 million years before present), with right-lateral displacements of between 90 and 180 kilometers (Cheney 1999; Tabor et al. 2000). At the Marian Meadows site, one minor fault mapped by Cheney (1999) as the Tucker Creek Fault extends from Easton Ridge through the western edge of the site and trends from Easton Ridge to the southwest towards Lake Easton.

Deposits on the valley floor are unconsolidated including:

- Glacially deposited glacial gravel and sand outwash.
- Alluvium (water-carried deposits) consisting of moderately sorted cobble gravel along the rivers and poorly sorted gravelly sand on small alluvial fans where streams discharge from the hillsides (Tabor et al. 2000).

The soils on the site and in the vicinity reflect the different environments in which they were formed. Soils are summarized in Table 3-36 and shown on Figure 3-31. The alluvial plain portion of the site corresponds to the Kladnick soil, a well-drained, ashy, sandy loam found on slopes of 0 to 3 percent, with low shrink-swell potential, and no ponding or water saturation within the upper 72 inches. Raedeke Associates, Inc. (2006) described this soil as homogenous 7.5YR 4/3, brown sandy loam to 18 inches, with no redoximorphic features.

The major portion of the steep-sloping southwest face of Easton Ridge at the site corresponds to Roxer soil, a shallow well-drained gravelly, ashy, sandy loam on slopes of 45 to 60 percent, with low shrink-swell potential, and no ponding or water saturation within the upper 72 inches. Raedeke Associates, Inc. (2006) described soils of the Easton Ridge as 7.5YR 4/2 to 4/4, very gravelly sandy loam to 18 inches, with no redoximorphic features.

What is a Fault?

A fault is a crack in the earth surface where the rock on either side of the fault has moved in different directions. When the surfaces slide against each other suddenly, the energy released can create an earthquake.

A small portion of Easton Ridge is classified as Roxer Complex, divided into the Roxer soil composing about 40 percent of the Complex, and Roxer soil with basalt stratum as 55 percent of the Complex. The Roxer soil with basalt stratum is well drained on slopes of 45 to 65 percent, with low shrink-swell potential, no ponding or water saturation within the upper 72 inches, and bedrock at a depth of 40 to 50 inches.

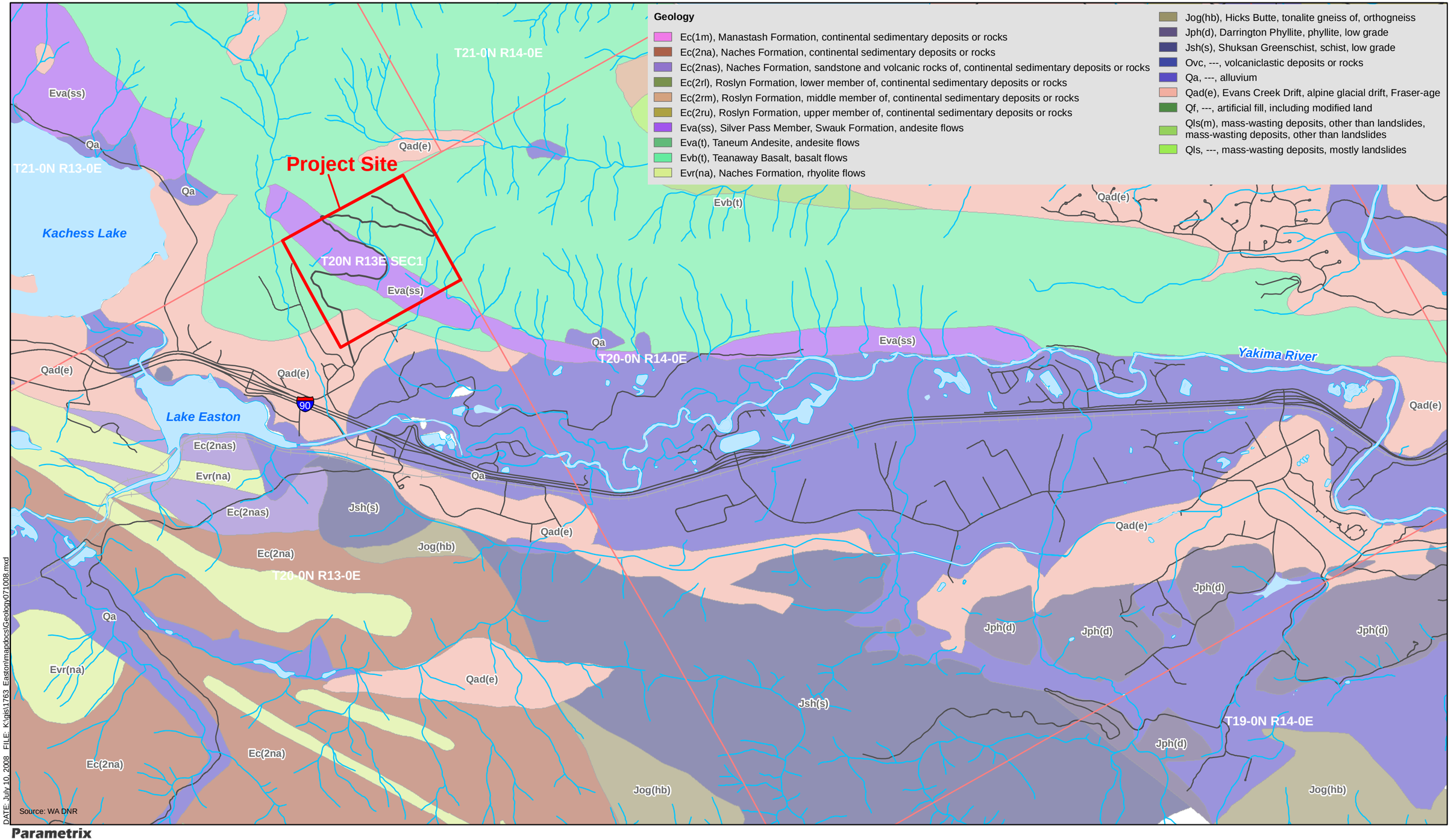
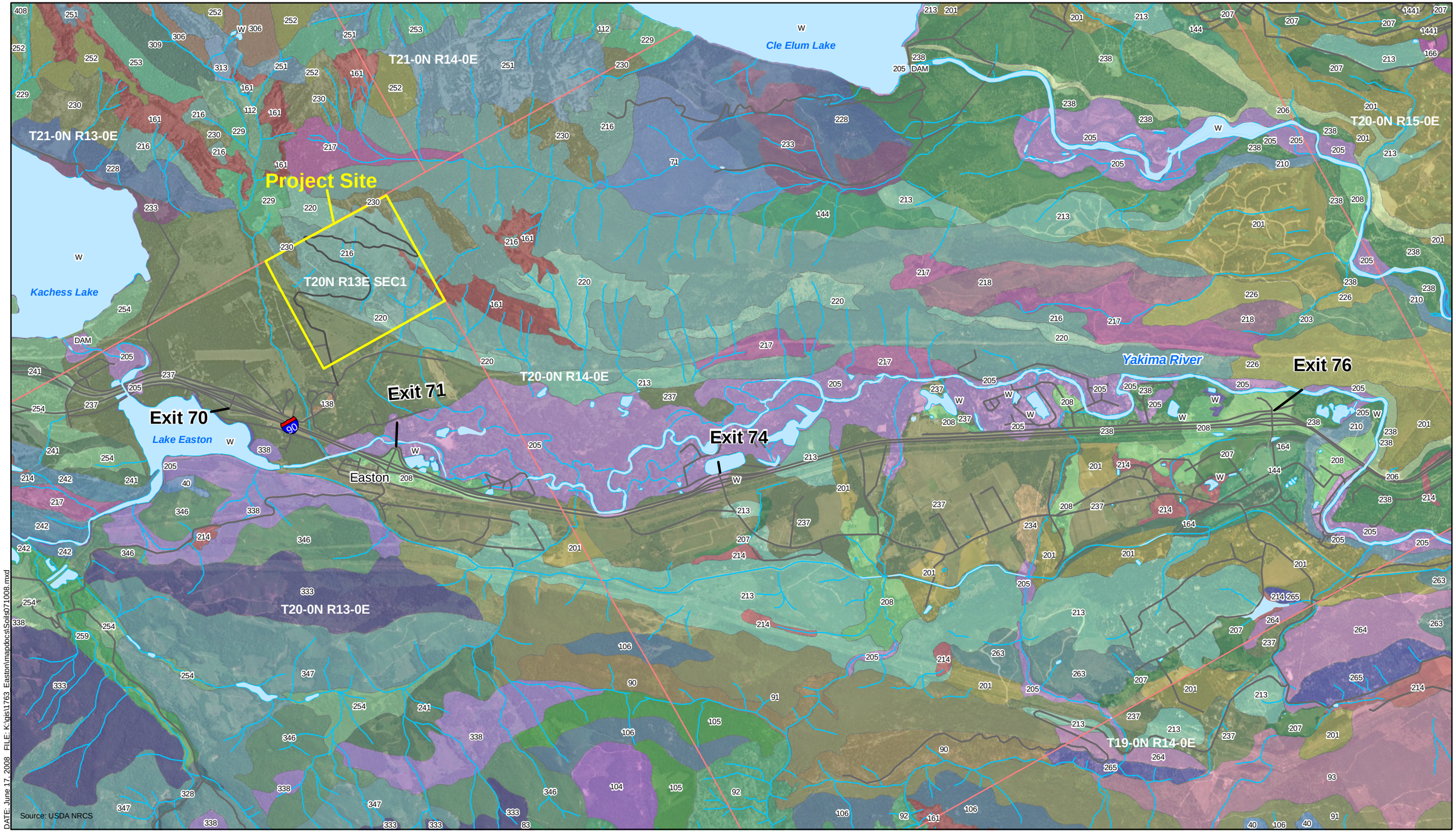


Figure 3-30
Marian Meadows
Vicinity Geology

Table 3-36. Soil Properties at the Marian Meadows Site

Soil name	Approximate percent of site	Soil type	Parent material	Infiltration rate	Natural drainage class	Erosion Factor, T	Wind erodability group	Shrink-swell potential	Ponded	Water saturation in upper 72 inches
Kladnick	24	ashy sandy loam	glacial outwash with a mantle of volcanic ash	high	Well-drained	3	2	Low	N	N
Roxer	68	gravelly ashy sandy loam	from basalt and glacial till with a mantle of volcanic ash	moderate	Well-drained	5	3	Low	N	N
Roxer Complex (Roxer 45% and Roxer-basalt substratum 55%)	2	gravelly ashy sandy loam/ basalt substratum	basalt colluvium and glacial till with a mantle of volcanic ash	moderate	Well-drained	3/5	3	Low	N	N
Rock Outcrop/Roxer Complex	4	--/as above	--/as above	very slow/moderate	--/Well-drained	--/3and5	--/3	--/Low	N	N
Rock Outcrop	2	--	--	very slow	--	--	--	--	N	N

Source; USDA (2008)



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Parametrix

0 3,500

Scale in Feet

Legend

- Project Site
- Township Boundaries
- Lake
- Road

Figure 3-31
Marian Meadows
Vicinity Soils Map

Rock outcrop occurs in a small portion of the Marian Meadows development site as unweathered rock or a mixture of Roxer Complex soils and rock outcrop (NRCS 2008).

2 What risks or hazards are associated with geology, topography, and soils?

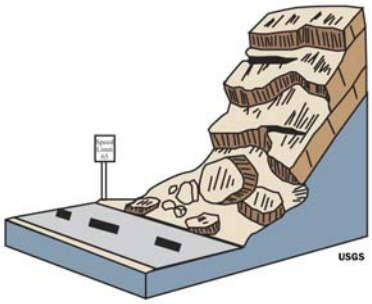
Geologic and natural hazards that could potentially affect the Marian Meadows development site include seismic activity and erosion hazards such as landslides or other types of mass movements.

Landslide Hazards

Landslide hazard areas are those portions of the landscape that have existing landslides or are at risk of future landslides. Mass movement (also called mass wasting) is the more general classification that includes landslides. Mass wasting involves the downward and outward movement of slope-forming materials such as rock, soils, artificial fills, and combinations of these materials (Gray and Sotir 1996). A type of mass wasting is surface erosion, consisting of detachment and transport of individual material particles.

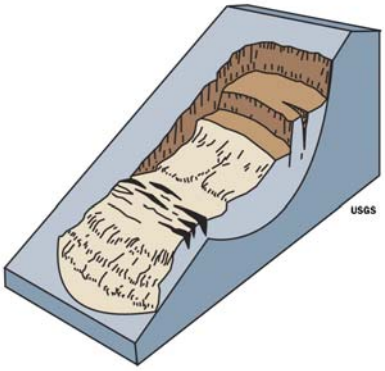
Several mass wasting classification systems are available for detailed studies, but these can be simplified into 1) those that are deeper and typically occur over extended time periods but can occur rapidly during earthquakes, and 2) shallow slides that occur fairly rapidly (Washington Forest Practices Board 1997). The main geological hazards with potential for occurring on the site and in the vicinity are rockfall, translational slides, soil creep, and erosion.

Rockfall includes freefall, tumbling, and rolling of fragments of rock or highly compact soils. Rockfalls typically originate from steep cliffs or features created by human activities such as road cuts. Material strength, surface gradient, joint pattern and spacing, geologic contacts, groundwater, and faulting are some of the primary factors related to rockfall occurrence. Run-out from the source area can extend quite far on steep slopes (Norman et al. 1996; Chatwin et al. 1991).
Typically, debris form a wedge or debris fan at the toe of the source area. An example of this feature is the talus slopes on the site. Other rockfall is related to road construction or other human-induced disturbance.



Rockfall

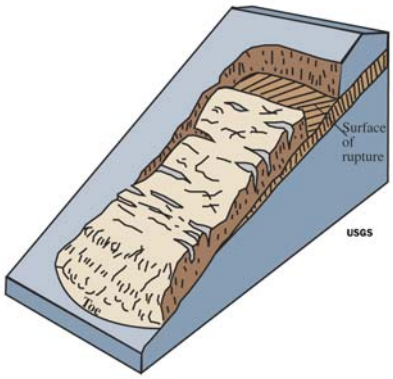
Deep-seated rotational slides are relatively deep movements that often occur slowly over time. These slides typically involve deep deposits and have a bowl-shaped or broad curving failure surface with a steep headwall scarp and additional scarps in the slide mass. Rotational slumps can be small, covering only a few yards (as is common along overly steep road cut and fill slopes), or they can be very large, covering many square miles. Source areas are associated with over-steepened valley walls with thick glacial and weathered bedrock deposits, geologic contacts and faults, and areas with concentrated groundwater conditions.



Rotational landslide

Translational slides occur along relatively shallow, fairly planar failure surfaces. A planar surface is a relatively even sloping surface. Shallow rapid translational slides often occur on shallow deposits over bedrock. Some of the causes of slides include:

- Alteration of the moisture content of the overlying material that forms a lubricated layer between the upper deposits and relatively impermeable deposits below.
- Additional weight on the overlying material that overcomes the friction between the upper and lower surfaces.
- Removal of materials at the toe of a slope that previously held the deposit in place.



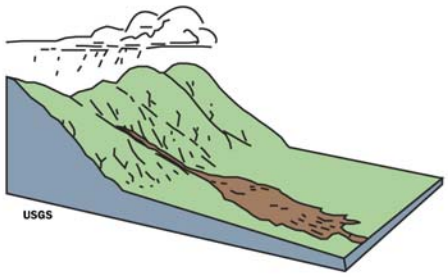
Translational landslide

Human activities that can contribute to translational slides include:

- Alteration of slopes by development or roads that intercept surface and shallow groundwater.
- Removal of vegetation that increases surface runoff and shallow groundwater.
- Diversion and concentration of increased water runoff down steep slopes that reduces stability of the surface soils. (Montgomery et al. 2000; Bunn and Montgomery 2004; Church 2002; Gomi et al. 2002; Dunne and Leopold 1978; and others).

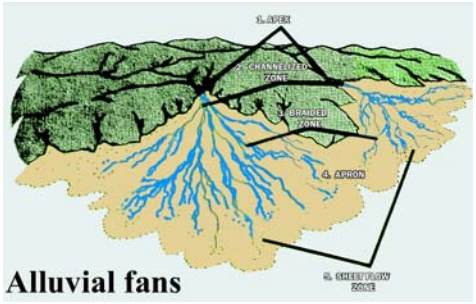
Soil creep and raveling are ongoing gradual movements of slope materials. Over many years, soil creep and raveling result in the accumulation of thicker soils at the lower portions of slopes and concave hollows. Motion is too slow to present a safety hazard but developments that require cutting into steep slopes need to plan for maintenance related to raveling and soil creep.

Debris flows and alluvial fans refer to the mechanism and the typical deposit of these types of geological hazards. They are generally associated with an episode of high water runoff that can be associated with storms, or they may be associated with other landslide types that suddenly release a large amount of mixed earth and water that move rapidly downhill. The characteristic deposit is the alluvial fan that is found at the point where a steep valley reaches a valley bottom and drops its load of heavy materials, spreading out in a fan shape. There is an



Debris flow

alluvial fan at the foot of the ravine that drains the central portion of the project site as indicated on Figure 3-32, an additional smaller fan near the northern property line, and an additional off-site fan at the foot of the drainage that traverses the southern portion of the site.



Alluvial fans

Erosion is the wearing away of the land surface by running water, wind, processes of mass wasting and corrosion (solution and other chemical processes), as well as waves or moving ice. The term "geologic erosion" refers to natural erosion processes occurring over long (geologic) time spans. "Accelerated erosion" generically refers to erosion that exceeds what is presumed or estimated to be naturally occurring levels, and which is a direct result of human activities.

Undisturbed areas of the Pacific Northwest typically have dense vegetation, decomposed organic material, and loose surface soils. These features reduce surface water runoff and associated erosion and rilling. Water runoff and erosion can occur when vegetation or surface soil layers are removed. If left unchecked, erosion areas can grow into problem areas, delivering significant amounts of sediment to lakes, streams, downslope properties, and wetlands, and possibly leading to landslides. Erosion is also related to channel migration, volcanic activity, lakeshore processes, agriculture, and clearing and grading.

T21-0N R13-0E

T21-0N R14-0E

T20N R13E SEC1

Silver Creek

Domerie Creek

T20-0N R13-0E

T20-0N R14-0E

Lake Easton

90

Yakima River

Source: Kittitas County

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Parametrix

N

0 1,000

Scale in Feet

Legend

Project Site

Township Boundaries

Lakes

Streams

Intermittent Stream

Perennial Stream

Hazardous Slope

25 - 50% Slope

Greater than 50% Slo

Figure 3-32
Marian Meadows
Steep Slopes and Geologic Hazards

Vegetation, landform shape, slope gradient, slope length, soil type, rainfall intensity, drainage conditions, and other factors affect erosion rates. Undisturbed areas on the upper eastern slopes of the mountainous areas of the Cascade Mountains typically have dense vegetation, decomposed organic material, and loose surface soils. These features reduce surface water runoff and associated erosion and rilling. Slope gradient, slope length, and the shape of the slope affect the rate of erosion through the extent to which gravity acts on the movement of soil particles, the rate at which water moves across slopes, and the extent to which water flows are concentrated into rills and gullies. Soils that are impermeable or minimally permeable generate surface water runoff with lower intensity rainfalls and begin to erode sooner than very porous soils. Most soil types can erode when disturbed, but not all erosion is transported to adjacent properties or surface waters. Consequently, the proximity to surface waters is a component of the type or level of risk associated with erosion hazard areas.

A landslide hazard study of the Kachess Watershed, by the Washington DNR's Forest Practices Division, identified and mapped landslides and rated the hazard potential (Powell 2005). This assessment estimated that at least 69 percent of the mass-wasting features identified were in clear-cuts less than 5 years old. This correlation between mass wasting and clear-cuts may be due to the difficulty of identifying mass wasting features under forest canopy. The most common landslides were shallow landslide failures in clear-cut areas and on toes of deep-seated landslides located along stream drainages and in inner gorges. Generally, landslides were larger and deeper on the west side of Kachess Lake compared to the east side. Although the slopes are steeper on the east, they are generally more stable, possibly resulting from the dip-slope orientation of the strata.

Seismic hazards are another term for hazards related to earthquakes. Earthquake hazards are related to the presence of faults where sections of the earth surface move in different directions. The largest regional fault zone is the Cascade subduction zone that has the potential to produce earthquakes of a magnitude of 8 about every 500 years. The effect on sites in Eastern Washington may be attenuated somewhat by distance from the expected epicenters off the Washington coast (Frankel 2007). Most earthquakes in the Cascade Mountains have been relatively shallow. Reconstructions of the 1872 North Cascades earthquake, the largest historic earthquake in Washington, suggest an epicenter near Entiat with a magnitude of 6.8 (Bakun et al. 2002). In the Easton area, Modified Mercalli Intensities (an index of property damage on a scale of 1 to 12) are reported as between 6 and 7 (Coombs et al. 1976; WPPSS 1977). A Mercalli scale intensity 7 earthquake results in negligible damage in buildings of good design and construction, slight to moderate in well built ordinary structures, and considerable in poorly built or badly designed structures, with some chimneys broken.

What is the Mercalli Scale?

The modified Mercalli scale is used to describe the intensity of an earthquake on a scale of 1 to 12.

Lower numbers on the intensity scale generally describe how an earthquake is felt by people (1 is not felt by people). The higher numbers on the scale describe observed structural damage (12 is nearly total damage and destruction of

Risks associated with earthquakes include (Noson 1988):

- Structural damage to buildings may result from the forces of the earth movement.
- Landslides and rockfalls may be triggered during earthquakes. Many areas of unconsolidated soils that are normally stable may become unstable during earthquakes. Areas of rock that are stable under normal conditions may fail with ground shaking.
- Liquefaction occurs when sand or silt saturated with water is shaken violently enough to become "quicksand." The liquefied material may then cause lateral-spread landslides or loss of bearing strength under foundations or roadways, depending on the depth and thickness of the liquefied zone and local topography. The groundwater table is generally low enough in the project area to avoid this occurrence; however, local areas of high groundwater may occur in relation to inflow of water in the alluvial fan.

The greatest potential for seismic hazards on the site is rockfall and shallow landslides.

3 What policies and standards address geological hazards?

The GMA directs cities and counties to designate critical areas (RCW 36.70A.170) and adopt development regulations that protect critical areas (RCW 36.70A.060). Critical areas include geologically hazardous areas (RCW 36.70A.030[5][e]) that are defined as "areas that because of their susceptibility to erosion, sliding, earthquake, or other geological events, are not suited to the siting of commercial, residential, or industrial development consistent with public health or safety concerns" (RCW 36.70A.030[9]).

WAC 365-190-080(4)(a) provides additional guidance and generally directs that some geological hazards can be reduced or mitigated by engineering, design, or modified construction or mining practices so that risks to health and safety are acceptable, and notes that when technology cannot reduce risks to acceptable levels, building in geologically hazardous areas is best avoided.

Kittitas County has adopted the following GPOs:

Erosion/Landslide Hazards

GPO 2.76 Design provisions should be adequately reflected in the Kittitas County Building Code.

GPO 2.77 Natural resource-based access and activities should not be unduly restricted or prohibited in areas of known geologic hazards.

GPO 2.78 Risk of erosion should be considered accordingly throughout Kittitas County, based on localized rainfall average.

GPO 2.79 Kittitas County recognizes the policies of the proposed Snoqualmie Pass Subarea Comprehensive Plan regarding Snow Avalanche Hazard Areas, including possible hazards outside of the Snoqualmie Pass subarea.

Seismic Hazard Areas

GPO 2.80 Because of existing Kittitas County Building Code, the risk from tertiary effects does not indicate an unusual hazard at this time.

Volcanic Hazards

GPO 2.84 The planning of volcanic hazards should be addressed through Kittitas County emergency management procedures, better planning of warning, and emergency communications.

GPO 2.85 Manual disposal of ash fallout into bodies of water shall not be allowed; alternatives for the handling and disposal of ash fallout should be considered by Kittitas County in emergency management procedures.

Development standards in the zoning code include the following:

17A.06.010 Kittitas County Uniform Building Code. The Kittitas County adopted version of the Uniform Building Code contains provisions for geologically hazardous areas and shall apply to all such areas (Ord. 94-22 [part], 1994).

17A.06.015 Areas requiring specialized engineering. Areas identified as high risk erosion/landslide geologic hazard areas, including cliff or talus slopes, may require specialized engineering to ascertain the property is suitable for development purposes. The director is authorized to require such engineering (Ord. 94-22 [part], 1994).

17A.06.020 Natural resource based activities. Natural resource based activities shall not be unduly restricted or prohibited in areas of known geologic hazards (Ord. 94-22 [part], 1994).

17A.06.025 Areas of snow avalanche hazards - Snoqualmie Pass. In conjunction with the Uniform Building Code, Kittitas County shall enforce the policies contained within the Snoqualmie Pass Subarea Comprehensive Plan for avalanche hazard areas (Ord. 94-22 [part], 1994).

17A.06.035 Disposal of volcanic ash fallout. Intentional disposal of volcanic ash fallout into any bodies of water shall not be allowed (Ord. 94-22 [part], 1994).

Building Code. The county has adopted the International Building Code, which includes standards for design and construction for seismic hazards. The Building Code has general standards for foundations that address the stability of underlying soils (1802) and footings on or adjacent to slopes (1805.3). The building code does not provide guidance to determine whether technology will reduce risks to acceptable levels, or whether building in a specific geologically hazardous area is best avoided.

4 How would geology, topography, and soils pose risks or hazards to facilities or persons living in the proposed project area?

The geology of the site has not been subject to detailed assessment. The assessment of risk from geologic hazards is analyzed in terms of the potential exposure to risk from the alternative PUD densities and pro-

forma layouts from the perspective of whether potential building areas are exposed to high risk areas. This comparative analysis does not take the place of detailed geotechnical analysis at the time of specific subdivision and other development proposals.

The project site was not explicitly mapped by DNR; however, hazard ratings for different types of landforms can be applied to the site. The western flat portion of the site has negligible geologic hazards (except for potential seismic hazards discussed below). The steep sloping eastern portion of the site has moderate to high potential rockfall and landslide and erosion hazard related to slope and soil type.

The on-site activity with the most extensive effects on existing topography and underlying geologic deposits is road construction on the eastern portion of the site. New roadways would be needed to meet current county grade standards. Existing logging roads on the site are generally too steep to meet subdivision standards. This would result in an entirely new roadway across very steep slopes from near the northern property line to the existing saddle or swale about a third of the way up the site. Other new roadways would be required in the steep sloping area in the eastern section of the site and on steep slopes in central portions of the site. Because of steep cross slopes, the area disturbed for side slopes for roadways would be extensive.

Erosion. Any disturbance of ground cover would increase the potential for erosion. Development of roads and housing on steep sites increases initial exposure because of the large area needed to "catch the slope" when creating a flat surface such as a road on a steep slope. On a 15 percent slope, the construction of a 26-foot-wide road surface with an uphill roadside ditch for drainage would result in a 2 to 1 side slope on either side that would extend about 5.50 feet to the point of intersection with existing grade. On a 30 percent slope, this lateral extent would be about 11 feet, on a 40 percent slope about 15 feet, and on a 70 percent slope about 25 feet. There is also the potential for erosion from existing logging roads on the site that have not been adequately stabilized prior to retirement. Many of these roads currently exhibit severe gullying. There is also the potential for erosion from continued ORV use on existing logging roads on private and public lands. Of particular concern to the City of Roslyn is the potential for water quality impacts from erosion related to ORV use on their watershed, which is within the National Forest. The extent of erosion risk on public lands is likely to be most effectively addressed by enforcement of the Forest Service Motorized Travel Management program currently under development. After adoption, ORVs or snowmobiles would be prohibited in certain areas, likely including the watershed. The effectiveness of this program will depend on enforcement.

Landslide and Rockfall. The potential for landslide is dependent on the character of underlying unconsolidated deposits and also on the dip slope of underlying bedrock. Deposits that are stable under natural conditions can be rendered subject to movement by a variety of human alterations including removal of materials from the toe of the slope, additional loading on the slope from the weight of fill for roads or homes, or through lubrication of the interface between permeable and impermeable deposits through changes in surface and groundwater flows from re-routing flows or from impervious surfaces. Information on the steeper eastern portion of the site is not well enough known to accurately assess risk

and would need to be assessed on a case-by-case basis with infrastructure and housing construction. It is possible that there are large areas subject to landslide, but more likely that smaller isolated shallow landslide failures would occur.

Rockfall hazards are present in any case where bedrock is disturbed on slopes and rock is not removed to a stable surface. There are, however, limitations on the accuracy of field work and assessment in reliably identifying the extent of removal needed to achieve a stable rock face. Rockfall is common in the area and is present on the site, as indicated in Figure 3-33, on existing logging roads on the eastern portion of the site. These roads, however, were constructed to lesser standards for temporary use than would be expected for permanent subdivision roads.

Seismic and rockfall hazards are increased during seismic events that may mobilize otherwise stable formations.

Figure 3-33 Existing Rockfall on Marian Meadows Site



Avalanche. Avalanche danger is present in any area with steep slopes and high snow accumulation. There are no landslide chutes identified on the property. However, areas of bedrock may mask the presence of snow movement because trees that otherwise would be displaced are not present. Large scale clearing of steep areas can lead to increased avalanche hazard through removal of trees and vegetation

that otherwise immobilize snowfall and prevent its movement under natural conditions. Current information indicates a relatively low risk of avalanche on the site, based on current information.

Potential Risk. The potential risk to persons and properties from geologic hazards, other than alluvial fans and debris flow, is limited to the steeper eastern portion of the site and the portion of the flat site close to steep slopes and rock faces where falling rocks could move a substantial distance prior to coming to a risk. The risk to individuals is likely to be episodic from individual unexpected events of limited extent, rather than to landslides or earth movement over a large area. Persons living in an area of landslide, rockfall, or alluvial fan hazard, however, are exposed to a low level of probability of occurrence over a long period of time, which can lead to a relatively higher risk to a given individual.

The greatest potential for seismic hazards on the site are rockfall, shallow landslides, and debris flow across alluvial fans and water flow downgradient of the fans where water is likely to flow after dropping sediments on the fan.

The geology of the site has not been subject to detailed assessment. Detailed geotechnical assessment is most appropriate at the time of preparation of detailed subdivision plans with road and lot layouts. The assessment of risk from geologic hazards is analyzed in terms of the potential exposure to risk from the alternative PUD densities and pro-forma layouts from the perspective of whether potential building areas are exposed to high risk areas. This comparative analysis does not take the place of detailed geotechnical analysis at the time of specific development proposals. **Alternative 1** would involve residential development on the entire site. This alternative has the greatest potential impacts from geologic hazards due to the extent of disturbance from road construction and future residential construction on the steep slopes in the eastern portion of the site. In addition, approximately 50 to 100 lots on the western portion of the site are exposed to extreme hazard from alluvial fans and debris flow.

Alternatives 2, 3C, and 5 would have much less potential impact from geologic hazards due to avoidance of the steep eastern portion of the site where the majority of hazards exist. Alternative 5 also substantially reduces potential risk on the western portion of the site by eliminating development within alluvial fan and debris flow areas. Alternative 3C has lot sizes of sufficient size that provision could be made for avoidance of alluvial fan and debris flow areas while allowing building on portions of the lots outside the hazard areas.

Alternative 3A, 3B, and 3D would involve residential development on the entire site. These alternatives would have substantial potential impacts from geologic hazards due to the extent of disturbance from road construction and future residential construction on the steep slopes in the eastern portion of the site. The potential risk of Alternative 3D is only slightly less because of fewer larger lots because disturbance from the road system is likely to be similar. These alternatives would substantially reduce potential risk on the western portion of the site by eliminating development within alluvial fan and debris flow areas.

Alternative 4 would have less impact on the steep eastern portions of the site than Alternatives 1, 3A, 3B, and 3D because development on the steep eastern portion of the site is clustered to avoid the most

sensitive portions of that area. This alternative substantially reduces potential risk on the western portion of the site by eliminating development within alluvial fan and debris flow areas.

The proposed mini-storage development is located to a large extent on alluvial hazard and flow hazard areas. The portion on the alluvial fan is subject to a high level of hazard with little potential for avoidance because of the unpredictability of such events. The development of residential use on the site to the west increases the potential for hazard from debris flow conveyance on the mini-storage to the extent that channeling flows to avoid residences concentrates flows in the area of the mini-storage.

5 What potential is there for utilizing mineral resources on the site?

As indicated above, deposits on the valley floor are unconsolidated including glacially deposited glacial gravel and sand outwash and alluvium (water-carried deposits) consisting of moderately sorted cobble gravel along the rivers and poorly sorted gravelly sand on small alluvial fans where streams discharge from the hillsides (Tabor et al. 2000). Based on information from well logs, basin-fill sediments in the area are less than 200 feet thick consisting of coarse sands and gravels (Jones et al. 2006). The existing abandoned off-site gravel pit just south of the intersection of Pit Road and Sparks Road provides a readily accessible view of the characteristics of this deposit.

The Ellensburg Cement Products Company maintains a surface mine for concrete aggregate about a mile south of the site. The underlying deposits in this area are likely to be similar to the Marian Meadows site, although surficial deposits are characterized by more recent fluvial deposits from the Yakima River. If tests confirmed that gravel deposits on-site had suitable hardness and chemical constituents for aggregate, standard pit-excavation of gravels could be developed on the southern two-thirds of the Marian Meadows site.

There also are extensive areas of exposed bedrock on the site that are largely Teanaway Formation basalt, basaltic tuff, and breccia. The western edge of the steep portions of the site includes talus slopes of rocks formed by rockfall from above. Bedrock can be mined by blasting and crushing to provide aggregate that may be used for base or surface courses on roads, and may be used as aggregate in asphaltic concrete. There is an existing area on site that was used by Plum Creek Timber Company as a quarry. The use on private logging roads, however, is not an indication that aggregate produced from that source meets accepted industry standards. Logging roads are generally used intensely for short periods of time and are not designed to the same standards as permanent facilities. If the bedrock on the site meets standards for aggregate, much of the steep eastern portion of the site could be utilized for extraction.

Use of crushed basalt or gravels for road and other purposes is dependent on its hardness and chemical composition. Typically, aggregate resources are subject to standards for resistance to abrasion and degradation. Abrasion standards are designed to set standards for the hardness of the rock and the resistance to withstand grinding actions during mixing, handling and transportation, as well as from traffic loads. Chemical test are designed to measure the extent to which aggregate is subject to weathering from cyclic wetting and drying. Most public agencies in Washington State require aggregate

to meet specifications developed by WSDOT, which have specific standards for gradation and size, toughness and abrasion resistance, durability and soundness, particulate shape and surface texture, specific gravity, and chemical reactiveness (WSDOT 2010).

Of particular interest for gravels from the alluvial deposits in the area as a potential source of aggregate for concrete or in crushed form for asphalt concrete, is chemical constituents on the matrix coating on the gravel clasts. In large portions of the Yakima River Valleys, the matrix coating on gravels have a high percentage of silica and a strong alkali-silica reactivity or iron-oxide precipitate which tents to result in low strength adherence of the cement mortar to the gravel aggregate (Barksdale 1991).

Extraction of aggregate on the site would have a variety of potential impacts on nearby land use and terrestrial habitat relating, largely due to noise and vibration impacts, as well as the change in topography and land cover and aesthetic concerns. Noise and vibration are typically produced by equipment used to extract and process aggregate, as well as heavy trucks used for transportation. Blasting required for utilization of bedrock also has very specific noise and vibration impacts that tend to affect a larger area than other operations. Kittitas County employs a CUP process to determine whether such a use is essential or desirable to the public convenience and not detrimental or injurious to the public health, peace, or safety or to the character of the surrounding neighborhood (KCC 17.60A.010).

All alternatives may be regarded as eliminating the potential for extraction of alluvial gravel resources on the site by covering the resource with infrastructure and residential land uses that would make extraction infeasible. The exception may be the open space areas in ASZ 4 included in Alternatives 4 and 5. Bedrock extraction on the steep eastern portions of the site not actively used by residences may be technically feasible; however, the development of residences in close proximity would result in substantial noise and vibration impacts on nearby residences, both on- and off-site. Bedrock extraction on the steeply sloping portions of the site farther to the east above elevation 2,500 feet may have reduced noise and vibration impacts on residences on the lower, western portion of the site, due to distance, and topographic screening that may be deemed acceptable. Transportation from the upper portions of the site would involve additional expense and risk to operators. Development of the site prior to aggregate extraction would reduce the probability that mining would be considered to meet standards for public health, peace, or safety or to the character of the surrounding neighborhood. Aggregate extraction may be a feasible interim use with residential development located on the site after reclamation; however, topographic modification and removal of vegetation may make such areas less desirable for residences.

The mini-storage development east of the BPA easement is generally located on underlying alluvial or talus deposits as well as an active alluvial fan. Its development may be considered to reduce or eliminate the potential for extraction of alluvial gravel resources for aggregate. The driveway and buildings, however are generally located far enough from bedrock that it would not preclude exploitation of the resource. The use also would not be as sensitive to noise, vibration, or other proximity impacts as residential use.

6 What measures may reduce the effects of geology and soils on facilities and persons in the proposed project area?

Based on the limited assessment of on-site conditions and assessment of the potential exposure to risk, avoidance of development on the steep-sloping eastern portions of the site is the most effective means of reducing the risk to infrastructure, housing, and the people who use them. Alternatives 2 and 5 avoid the steepest portion of the site where rockfall and shallow landslides pose the greatest potential risk. Alternatives 2, 4, and 5 also avoid areas of potential debris flow and alluvial fans.

In addition, the portion of the flatter eastern portion of the site where rockfall or landslides may be deposited is at risk and includes the area generally east of and including the BPA transmission line easement.

If development is approved on the steeper eastern portions of the site, appropriate geotechnical evaluation that may be implemented prior to consideration of a specific subdivision design and roadway layout and during construction is essential to identifying and implementing appropriate risk-reducing measures. Evaluation during construction is essential because the nature of underlying geologic deposits cannot be accurately assessed from surface conditions without extensive subsurface investigation. The alternative of extensive subsurface drilling to characterize subsurface conditions is effective but very expensive. Monitoring during construction with provisions to revise construction plans to meet specific performance standards is equally effective, if unforeseen conditions are adequately identified and mitigated. These measures can have unforeseen consequences on the amount of grading and vegetation removal.

Construction practices that over-excavate uphill areas of potential landslide or rockfall would reduce the risk of failure, but at a much greater cost of construction and with much greater displacement of vegetation. If not effectively stabilized, such cleared areas also would result in additional erosion.

3.12 SURFACE WATER RESOURCES

1 What surface water resources are present in the project area?

The Marian Meadows development site is located in the Easton sub-basin of the upper Yakima River watershed, EPA Hydrologic Unit Code (HUC) 17030001. The Yakima River watershed, upstream from Easton, covers approximately 188 square miles (USGS 1991), of which approximately 64 square miles are the Kachess River and Kachess Lake watershed.

The U.S. Geological Survey (USGS) has monitored stream flow for the Kachess River at Easton (Gaging station 12476000) from 1904 to 1978 and for the Yakima River at Easton (gaging station 12477000) from 1910 to 1915 and from 1941 to 1955.

Silver Creek, a tributary of the upper Yakima River, has headwaters on Kachess and Easton Ridges. A portion of Silver Creek lies located approximately 0.25 mile west of the Marian Meadows development site. The creek's discharge has not been gauged.

Kachess Lake Dam was constructed on the Kachess River in 1912 by the U.S. Bureau of Reclamation. Discharges to the Yakima River at Easton are regulated by dam operations. Shortly after 1925, the Easton Diversion Dam, Kittitas Canal, and distribution system for the Kittitas Reclamation District were completed (USGS 1991). The Kittitas Canal withdraws streamflow that is equivalent to 10 percent of the total annual flow in the Yakima River at Kiona, Washington.

On the Marian Meadows development site, there are several defined stream channels in the steep eastern portion of the site. The central and southern streams are fed by springs and were observed to flow year-round based on field visits in June and September 2006 and July 2009. The southern stream is used as a water source by residents to the south of the site, as evidenced by a number of plastic pipes providing conveyance, although it is not known whether this use is for domestic or irrigation purposes or whether water rights have been granted for this use. This perennial watercourse drains to the west and southwest to discharge to the Yakima River in the vicinity of I-90 Exit 71 as indicated in Figure 3-35.

Several watercourses have been mapped in field visits in the western portion of the site indicated in Figure 3-34. They appear to convey infrequent very high flows from the northern and central watercourses and are likely related to alluvial fans that indicate infrequent but very high flows that may be associated with debris flow. These watercourses are up to 5 to 8 feet wide at the base and between 20 and 30 feet wide at their maximum extent. They generally drain to the south and southeast. The drainage courses become shallower in the southern portions of the site, which may indicate a transition to sheet from or a transition to infiltration. The swales may have previously existed across properties to the south that have been recently regraded. This drainage is shown in USGS and DNR stream type maps as illustrated in Figure 3-35, crossing the western flat part of the site and continuing to the south at about the mid-point of the flat portion of the site to join the perennial stream described above.

Surface Water Quantity

Streamflow in the upper Yakima River has been regulated for almost a century, primarily for agriculture diversion and hydroelectric generation (USGS 1991). The 1980 Quackenbush Decision ordered that adequate streamflow be provided for salmon spawning in the upper Yakima River (USGS 1991). In 1994, pulsed flows were ordered by the court to further support spring out-migration of salmon.

The mean annual flow recorded at Kachess River at Easton (No. 12476000) and for the Yakima River at Easton (No. 12477000) are 292 cubic feet per second (cfs) and 592 cfs, respectively, for the periods of record (USGS 2008).

Surface Water Quality

Washington State surface water quality standards are defined in WAC 173-201A (2006) and were approved by the EPA in February 2008. The standards implement portions of the federal Clean Water Act. The upper Yakima basin is designated as Water Resource Inventory Area (WRIA) 39, as shown in Figure 3-34. The headwaters of Yakima River above Cle Elum have designated uses as core summer

salmonid habitat for aquatic life (WAC 173-201A-200[1]) and extraordinary primary contact for recreational use (WAC 173-201A-200[2]).

The upper Yakima River above Cle Elum to its headwaters is classified as a class AA, which means it has the ability to support all beneficial uses to a high degree. This may include a range of use including human use and fish and wildlife habitat.

Floodplains in the project vicinity are shown in Figure 3-36 and do not extend into the Marian Meadows development site.

2 What regulations apply to surface water quantity or quality?

Regulations for surface water quantity are addressed in Section 3.13, Groundwater Resources below.

Wager quality standards are administered by Ecology to comply with the federal and state Clean Water Acts.

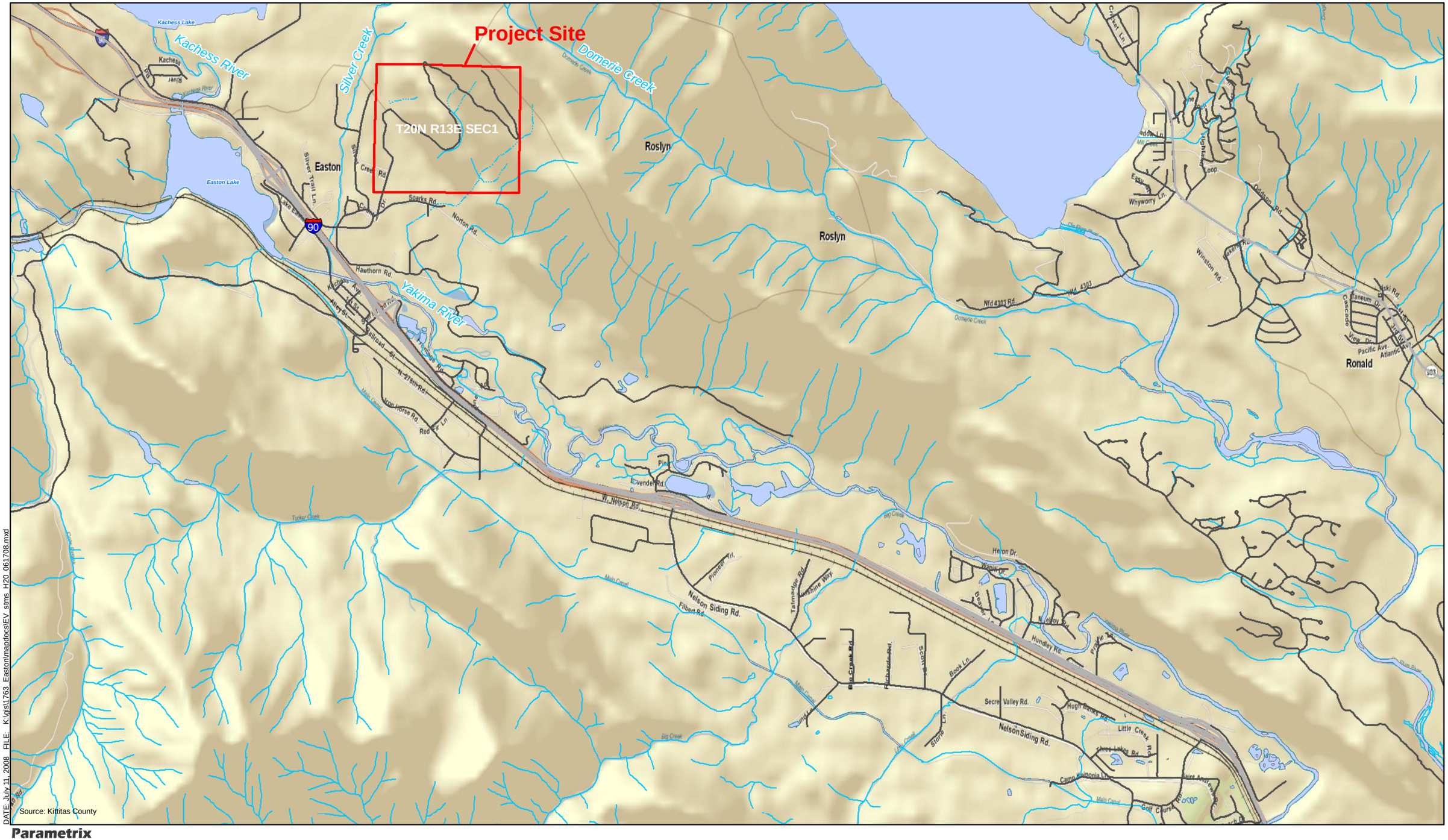
The standards found in WAC 173-201A-200(1) relate to both existing conditions and intended use. The numerical criteria for the core summer salmonid habitat designated use are as follows:

- Seven-day average of the daily maximum temperatures will be no more than 16 degrees Celsius (°C).
- One day lowest minimum dissolved oxygen will be above 9.5 mg/L.
- Turbidity will not exceed 5 nephelometric turbidity units (NTUs) over background when the background is 50 NTUs or less; or a 10 percent increase in turbidity when the background turbidity is more than 50 NTUs.
- pH will be within the range of 6.5 to 8.5.
- Fecal coliform organism levels must not exceed a geometric mean value of 50 colonies/100 ml.

The antidegradation policy is designed to protect surface water with a quality that is higher than the standards from being unduly degraded to the standards. The antidegradation policy has three tiers of protection:

- Tier I is used to ensure existing and designated uses are maintained and protected.

Tier II is used to ensure that waters of a higher quality than the criteria assigned in the



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Parametrix

N

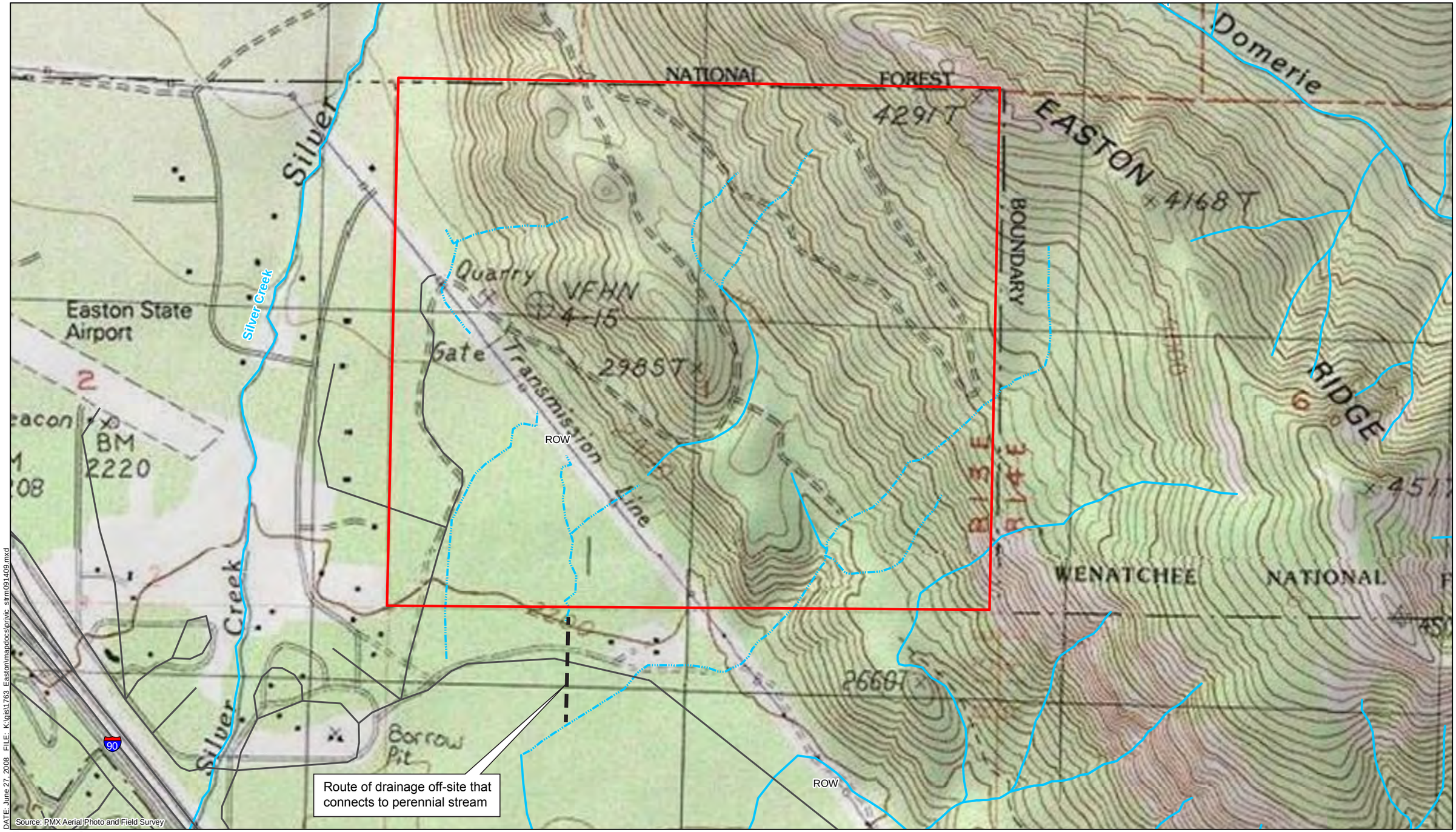
0 3,500

Scale in Feet

Legend

- Project Area
- Roads
- Lake
- Intermittent Stream
- Perrenial Stream

Figure 3-34
Marian Meadows
Vicinity Streams
and Water Bodies



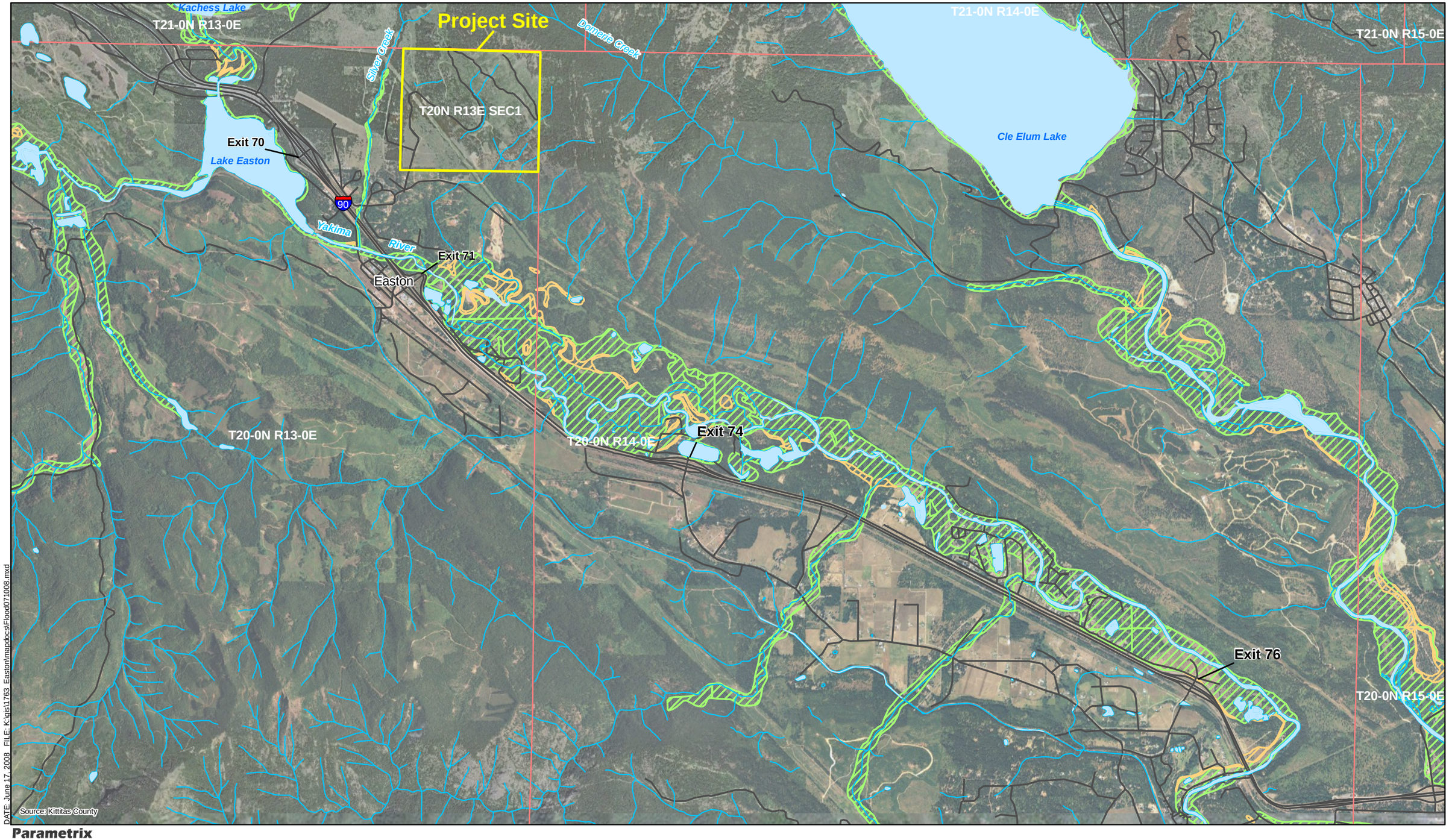
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Parametrix

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N
Scale in Feet

- Intermittent Stream
- Perennial Stream
- Streets
- Project Site

Figure 3-35
Marian Meadows
Streams and Waterbodies in the Project Vicinity



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Parametrix

0 3,500
N
Scale in Feet

Legend

- Lakes
- Project Site
- Township Boundaries
- Roads
- Stream

Floodplains

- 100 YEAR
- 500 YEAR

Figure 3-36
Marian Meadows
Vicinity Floodplains

- standards are not degraded by new or expanded sources of pollution from specific types of activities directly regulated by Ecology (e.g., NPDES, 401, 404, Forest Practices).
- Tier III is used when a high quality water is designated as an "outstanding resource water." The water quality and uses of these waters must be maintained and protected against all sources of pollution.

3 What regulations apply to development near streams or other waterbodies?

Kittitas County Code 17A.07.010 riparian habitat provides the following buffer areas for streams as indicated in Table 3-37.

Table 3-37 Kittitas County Stream Buffer Specifications

Type 1 waters	40–200 feet from ordinary high water mark (OHWM)
Type 2 waters	40–100 feet from OHWM.
Type 3 waters	20–50 feet from OHWM.
Type 4 waters	10–20 feet from the intersection with a Type 1, 2 or 3 water for a distance of 40 to 500 feet. From the point at which the buffer ends (40 to 500 feet upstream from the confluence), there shall be a 15-foot structural setback from the OHWM.
Type 5 waters	None required (buffering will be provided by the Type 1, 2 or 3 waters' buffers). Note: Building setbacks from a Type 5 water will be 15 feet, unless a buffer greater than or equal to the 15-foot setback is in place.

4 What stormwater regulations apply to runoff from the proposal?

Kittitas County has adopted the Ecology Stormwater Manual for Eastern Washington with local regulations in Kittitas County Code 12.6, Stormwater Management Standards and Guidelines. The manual provides a methodology for calculating runoff depending upon the severity of design storms based on a variety of factors with data derived primarily on past weather reports. It also includes a methodology for assessing rain-on-snow events.

The manual, however, does not assess the potential for hazards such as debris flows.

Kittitas County Code 12.06.060 provides the following basic requirements for stormwater management:

A. Discharge at Natural Location: All surface and stormwater runoff from a proposed development that would construct new or modify existing drainage facilities should be discharged at the natural location and not be diverted onto or away from the adjacent downstream property. Diversions may be allowed if it corrects an existing problem and meets federal and state regulations.

B. Tributary Area Analysis: Proposed developments shall identify the upstream tributary drainage area and provide an analysis of the pre-existing drainage, discharge, volume, and quality and an analysis of the impact of the proposal on the drainage system.

C. Proposed projects must control the peak rate runoff to not exceed the pre-development peak rates for the site (existing condition). The methods of peak rate runoff control may include detention, retention, and/or infiltration. On-site bio-filtration or treatment facilities in combination with infiltration systems is the preferred method for management of on-site stormwater and shall be considered before transporting stormwater off-site.

D. For all proposed developments requiring a drainage conveyance system, the conveyance system must be analyzed, designed, and constructed to handle existing off-site tributary flows and on-site stormwater flows caused by development of the project.

E. Developments involving clearing and grading and that propose new or modification of existing drainage facilities should include an erosion/sedimentation control plan providing measures to prevent sediment-laden runoff and pollutants from leaving the site during construction. Erosion/sedimentation control may be achieved by structural control measures (sediment trap or pond, or oil/water separators), covers (mulch, sodding, plastic covering) and/or construction practices (filter fabric and quarry rock driveway pads).

F. Maintenance and operation of all private stormwater facilities is the responsibility of the property owner or a properly formed homeowners association and shall be done in compliance with Kittitas County maintenance standards.

G. For the construction or modification of any stormwater facility other than roadside ditches, the applicant shall be required to have a construction bond. The construction bond shall be posted prior to beginning construction. The bond shall be in an amount sufficient to cover the cost of work on or off the site (Ord. 2005-30, 2005)

Various methods for managing stormwater are provided including discharge to surface water or infiltration.

The practice in Kittitas County typically has been to prepare detailed stormwater management plans for subdivisions after preliminary plat approval at the time of design of roads and other facilities. For this site, at least some reliance on infiltration is likely, given both soil conditions. This may be accommodated by standard roadside ditches, depending on the results of detailed analysis, or may include a combination of infiltration and overland conveyance through ditches that eventually would discharge to either Silver Creek or the Yakima River.

5 What stormwater facilities are included in the proposal and alternatives?

No specific designs for stormwater facilities are included at the preliminary plat stage. Such detailed designs are generally developed after preliminary approval and are reviewed and approved for compliance with engineering standards and installed prior to the final plat approval.

6 What impacts to surface water, flooding or other resources may be associated with the proposed and alternative means of stormwater management?

The surface water hydrology of the site has not been subject to detailed assessment. Detailed hydrologic assessment is most appropriate at the time of preparation of detailed subdivision plans with road and lot layouts. The assessment of potential surface water impacts is analyzed in terms of the potential exposure to risk from the alternative PUD densities and pro-forma layouts. This analysis does not take the place of detailed hydrologic analysis and preparation of stormwater management plans at the time of specific development proposals.

It is unlikely that water from the site would reach surface water streams except under the most extreme rain-on-snow conditions. All alternatives are likely to handle normal stormwater up to typical 2- and 10-year storms through standard facilities. It is likely that infiltration would be utilized as well as conveyance in roadside ditches.

The most significant hazard not addressed in standard engineering design is from isolated events leading to unpredictable volumes of water collecting in narrow canyons and causing catastrophic debris flows. Such events have occurred periodically on the site as is evidenced by alluvial fans that have formed at the base of several drainages as well as the several drainage courses across the site that are up to 8 feet deep and 20 feet wide. The channels generally become indistinct near the southern boundary of the site indicating either infiltration of water or human actions that have obliterated the channels.

Under normal conditions, any overland flow from the site is conveyed to a stream channel at about the center of the flat western portion of the site as shown in Figure 3-34, and flows through the large lot area to the south where it joins with the perennial stream flowing off the southern portion of the site and connects with the Yakima River. In the event of very large rainfall or rain-on-snow events with frozen ground, flow may exceed the capacity of the established channel and create new channels along the path of least resistance and may result in flood damage to intervening improvements.

7 What are the likely cumulative impacts on surface water with development of nearby land at existing zoning densities or PUD densities?

The worst-case events are most likely under frozen ground conditions limiting infiltration. The additional impervious surfaces from any of the alternatives would not natural exceed runoff during a frozen ground condition.

8 What measures may reduce the effects of the proposal on surface water resources?

Compliance with county stormwater management requirements and the Ecology Stormwater Manual for Eastern Washington would provide for normal runoff from rainfall events based on standard storm event models.

Conveyance of worst-case events that have occurred on the site as evidenced by alluvial fans and existing dry watercourses may reasonably be accommodated by a system of berms to contain overland sheet flow and conveyance of at least the volume of existing watercourses. This action should be based on data derived from detailed mapping and cross-sections of existing watercourses and may include upgrading of off-site conveyance.

Implementation of normal stormwater management practices specified in the Ecology Stormwater Manual for Eastern Washington is likely to adequately manage runoff from typical 2- and 10-year storms through standard facilities reviewed and implemented in the subdivision approval process. It is likely that infiltration would be utilized as well as surface conveyance. Larger surface flows are likely for rain-on-snow events with frozen ground and would need to be addressed by specific plans developed for future subdivision. In addition, the adequacy of downstream conveyance, including county road ditches and natural drainage conveyance across private property would need to be addressed. It is likely that downstream conveyance capacity would need to be increased, as well as provisions implemented to prevent erosion of natural channels from increased peak flows and duration of flows.

The most significant hazard not addressed in standard engineering design is from isolated events leading to very large volumes of water collecting in narrow canyons that are discharged as debris flow across alluvial fans and then across the site. The most effective mitigation for such water and debris fans is to avoid any human occupancy or improvements on the alluvial fan and its likely expansion area. This avoidance is illustrated in Alternatives 2, 4, and 5. In addition, a conveyance system is needed for peak events discharging across the site incorporating ditches and possibly berms to protect adjacent development. In addition, downstream conveyance, including county road ditches and natural drainage conveyance across private property would need to be sized for such extreme peak events. The size of existing conveyance channels across the site provides an indication of the volumes needed to be conveyed in such events.

3.13 GROUNDWATER RESOURCES

1 What groundwater resources are present in the project area?

Groundwater Occurrence

The Marian Meadows development site is located within what Jones et al. (2006) classified as the Roslyn basin of the upper Yakima River watershed. The Roslyn basin is delineated by geologic structure and sedimentary deposits and runs from near Easton to south of Teanaway, covering an area of about 80 square miles. Deposits filling the basin consist of alluvial, lacustrine, and glacial deposits. The basin-fill deposits were divided into three hydrogeologic units, based on the information from 307 well logs (Jones et al. 2006).

The uppermost unit is coarse-grained and between 0 and 360 feet thick, with a median and mean thickness of 80 feet as shown in Figure 3-37. The middle unit is clay and silt-rich lacustrine deposits, between 0 and 520 feet thick, with a median and mean thickness of 170 and 180 feet, respectively. The lowermost unit consists of coarse sands and gravels, with thickness of 0 to 240 feet and a median and mean thickness of 50 and 60 feet, respectively. This unit is less extensive than the upper two units, occurring only in the deeper parts of the basin (Jones et al. 2006).

In the Easton area basin-fill sediments are less than 200 feet thick consisting of the uppermost unit. The middle and lower units are absent in this area but become existent about 3 miles south of Easton. The aquifer within the uppermost unit is likely to be unconfined in the Easton area.

What is an unconfined aquifer?

An unconfined aquifer is open to receive water from the surface. There is no overlying impervious rock layer.

What is specific capacity and transmissivity?

Specific capacity is a measure of the production of a well in an unconfined aquifer. It is a general indication of the amount of water that can be held in the voids between grains of solid material. It is calculated by the pumping rate divided by drawdown.

$$T = \frac{Q}{(h_0 - h)} \frac{2.3}{4\pi} \log \frac{2.25\,Tt}{r^2 S}$$

where,

$Q/(h0 - h)$ = specific capacity of the well (ft^3/ft drawdown),

T = transmissivity (ft^2/day),

t = period of pumping (day), and

S = aquifer storativity (dimensionless).

The estimated transmissivity of the aquifer in the Easton area ranges from 677 to 19,006 ft^2/d, with an average of 6,770 ft^2/d and a median of 5,240 ft^2/d. Based on the sediment grain-size character, the specific yield likely is in the range of 0.05 to 0.20.

Groundwater Movement

Currently, there are no published reports regarding groundwater movement in the Roslyn basin. As part of the Yakima River Basin Project, a joint study by the USGS, Yakama Nation, U.S. Bureau of Reclamation, and Ecology, a report on Hydrogeologic Modeling and Assessment is pending. Based on thermal profiling of the riverbed, the portion of the Yakima River at Easton and below Easton ponds is a gaining reach (Vacarro and Malloy 2005; Vacarro 2007). This would imply that groundwater generally follows the trend of the Yakima River and moves toward the river throughout the gaining reach.

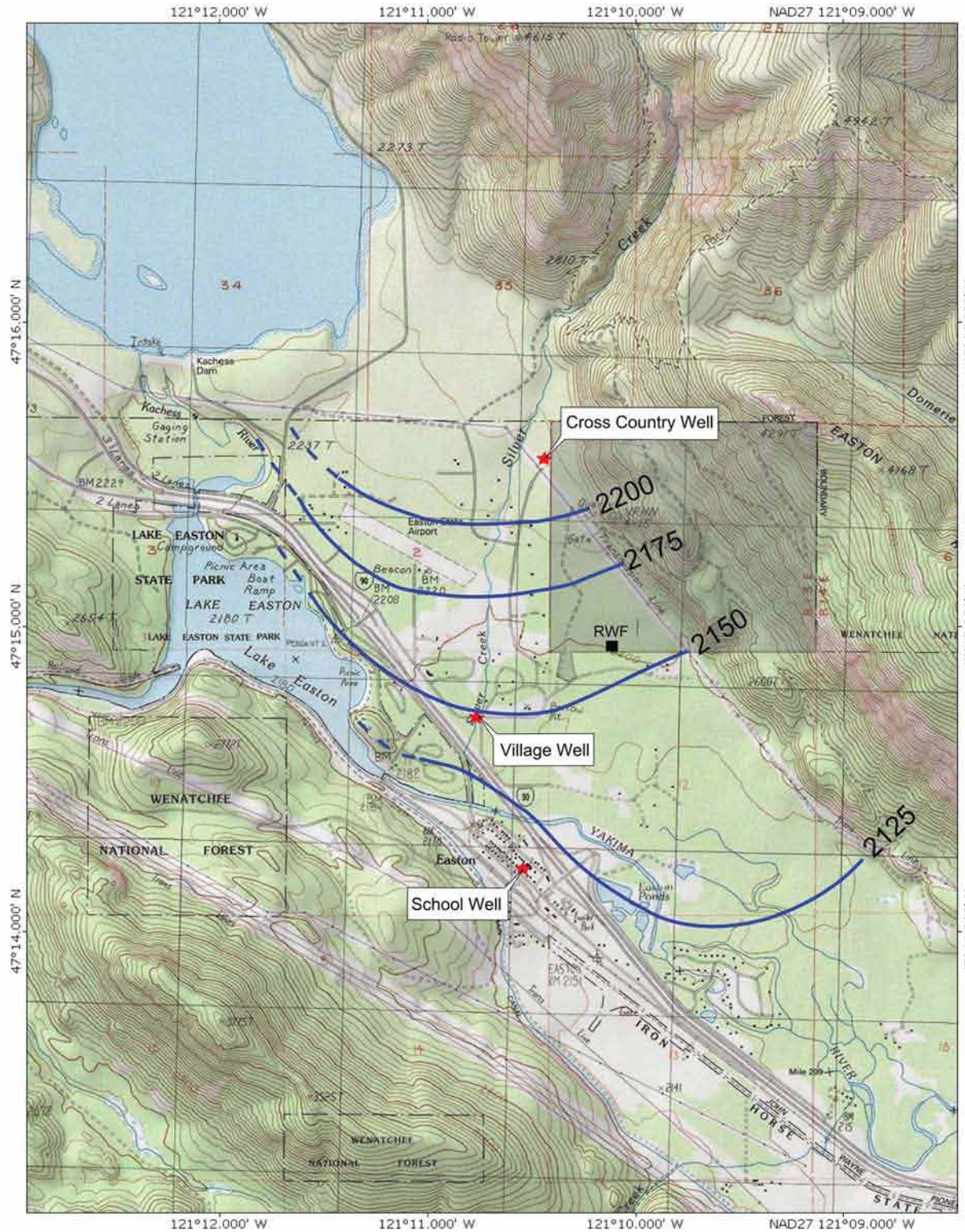
A contour map of the water table elevation was constructed using readily available well logs (Ecology 2008) for the Easton area (see Figure 3-37). The water table contours suggest that groundwater in the valley-fill near Easton flows southward or southeastward toward Lake Easton and the Yakima River. Depths to groundwater near Lake Easton and Silver Creek suggest these surface water features are losing to the aquifer, whereas at Easton Ponds and the nearby reach of Yakima River these features are gaining water from the aquifer. Groundwater in the valley-fill sediments at the Marian Meadows development site likely flows to the south-southeast.

This interpretation is confirmed by a geologist field visit and the observation that the bed of Silver Creek at Sparks Road is about 10 to 20 feet higher than the bottom of a former gravel pit across Pit Way to the east. The bottom of the gravel pit is generally dry, or has very shallow ponding, which indicates that the water table lies at or below that level. It follows that Silver Creek would lose water to the aquifer under this condition. The observation that Silver Creek dries up every year also is consistent with this interpretation.

Groundwater Recharge

Vacarro and Olsen (2007) estimated that groundwater recharge in the Easton area averaged 20 inches per year (in./yr) under predevelopment conditions and now averages 50 in./yr (current conditions). The estimate was developed with a precipitation-runoff modeling approach for this portion of the upper Yakima basin, which takes into account precipitation, temperature, land cover and use, soil properties, and irrigation application rates.

This interpretation is generally confirmed by calculation of the specific capacity for five wells in the Easton area (see Figure 3-38).



Source: PgG

Parametrix 557-1763-007/03(19) 9/09 (B)

N

0 4,000

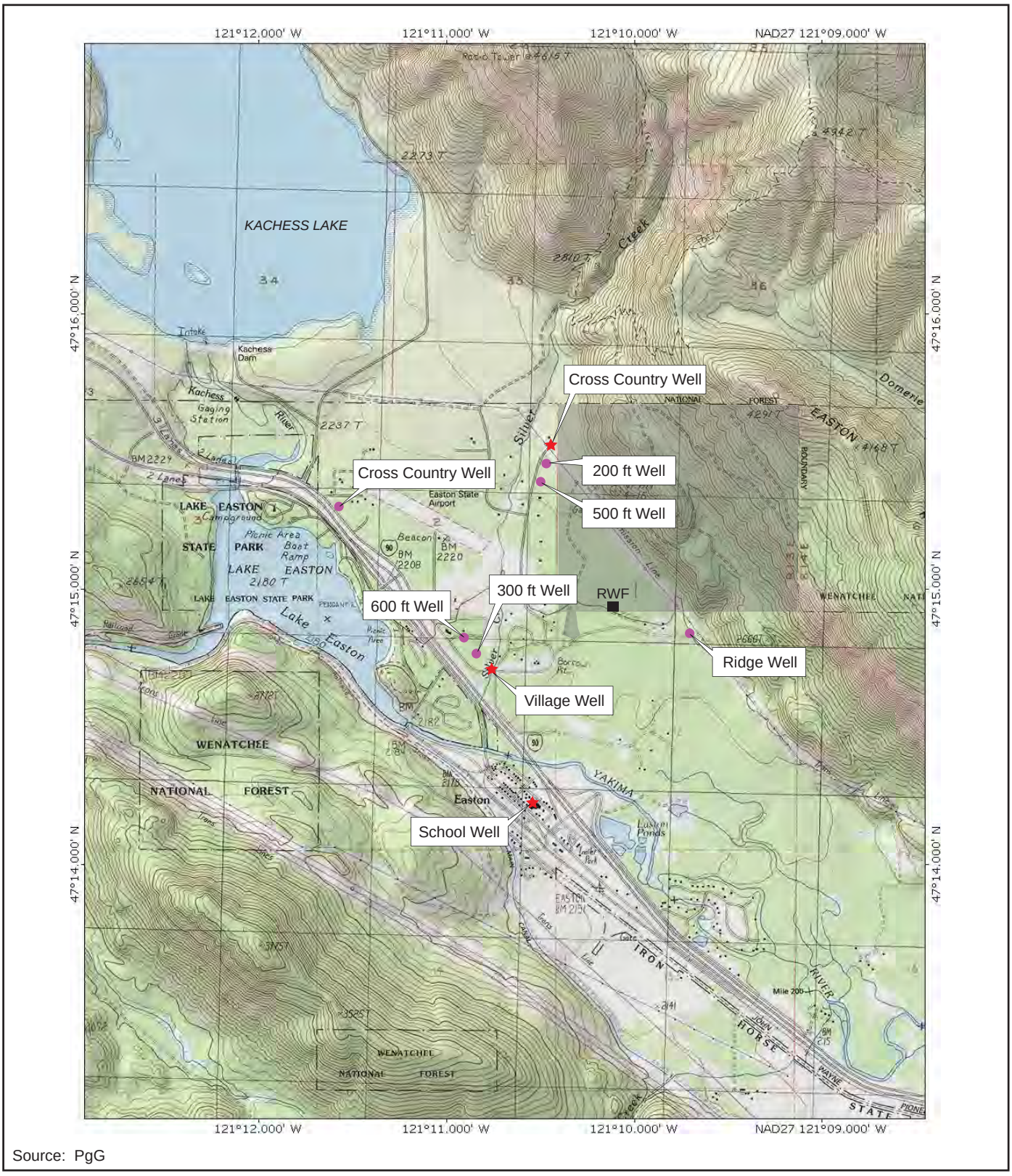
Scale in Feet

2200 Groundwater Elevation Contour (dashed where inferred)

Marian Meadows Development site

RWF Proposed Reclaimed Water Facility

Figure 3-37
Marian Meadows
Groundwater Contours



Source: PgG

Parametrix 557-1763-007/03(19) 9/09 (B)

N

0 4,000

Scale in Feet

Marian Meadows Development site

RWF Proposed Reclaimed Water Facility

Existing Easton Village Well

Model Observation Wells

Figure 3-38
Marian Meadows Major Wells in the Project Vicinity

Groundwater Quality

Easton's water supply is primarily provided by the Easton Water District (formerly Kittitas Water Conservation District No. 3). Groundwater is supplied by two production wells—No. 1 (Cross Country Well Village Well) and No. 2 (Village Well), while well No. 3 (School Well) is used only for emergency supply.

Groundwater quality was assessed based on information from the Easton Water District wells. Water from these wells meets drinking water quality standards under WAC 173-200 (SENTRY 2008). Iron and manganese have been found to exceed secondary or aesthetic drinking water quality standards in wells No. 1 and No. 2. Specific conductance for well No. 2 was 90 µmhos/cm and 116 and 180 µmhos/cm at well No. 1 Nitrate-as-N values average 0.25 mg/L and 0.19 mg/L at well No.1 and No. 2, respectively, which are well below the standard of 10 mg/L. The groundwater is slightly to moderately hard.

2 What policies and regulations apply to groundwater quantity or quality?

Groundwater, like the other waters of the state, is considered to be a public resource. A discussion of state water rights is provided in a separate subsection below.

The Kittitas County Comprehensive Plan includes the following policies relating to groundwater.

Kittitas County recognizes the importance of groundwater to the economic well being of the area. This section shall not impair or interfere with any lawful right to withdraw and/or use groundwater. (see Section 2.2[B] Water-rights). Kittitas County currently understands the importance of a groundwater recharge study of the Yakima River Basin as a whole.

GPO 2.91A Kittitas County shall ensure that citizens' water rights are adequately addressed and protected to the fullest extent in any groundwater study conducted by any governmental entity, including state and federal agencies.

GPO 2.91B The County shall support the development of a comprehensive review of the water resources in the county.

GPO 2.109F It is the policy of Kittitas County to recognize the water rights of citizens and entities within its borders as determined in the Yakima basin general adjudication and not to impair or adversely affect the water rights of its citizens by any action of county government.

3 How does water rights law apply to new groundwater withdrawals in the area?

In the Yakima River basin, groundwater resources are generally considered to be interconnected with surface water and are essentially governed by the same water rights, although there are different procedures for processing surface and groundwater rights.

Washington State water law is similar to other western states in that all water resources are essentially owned by the public. The granting of a water right is the assignment by the public of the right to use water for a beneficial purpose. This right does not vest a person with an ownership interest, but only authorizes a right to use the water. The establishment of beneficial use refers to the type of use, the location to which the water is applied, and the measure and limit of the water right. In general, water rights are allocated based on "first in time, first in right." That means that the water rights that were established earlier in time take precedence over water rights obtained later. The date at which the application of water to a beneficial use initially occurred is called the priority date. In times of water shortages, that priority allows the user to continue to withdraw water to the detriment of all those who have later priority dates ("junior rights"). In turn, the user must cease withdrawing water if it will impair the use of water by those who have earlier priority dates ("senior rights").

Water rights in the Yakima River basin have been in a state adjudication since October 1977 and have been completed for many sub-basins. The adjudication involves thousands of parties spread over the entire 6,062-square-mile basin. The general adjudication does not create new water rights, it only confirms existing water rights. It will result in a judgment setting forth all confirmed water rights with "priority" dates so that in times of shortage all water right holders will know who is and who is not entitled to exercise their rights. As an additional complexity, there are also uncertainties over federal and Indian reserved water rights being addressed.

What is the statutory basis of water rights in Washington State?

Prior to statehood in 1889, water rights were regulated by federal law and common law practices.

One of the major federal actions prior to statehood was the negotiation of treaties with Indian tribes. These treaties established rights to take fish in usual and accustomed places in common with others. This treaty provision has led to the corollary interpretation that water must be provided in rivers and streams to preserve fish runs.

Prior to 1917, water generally was appropriated by persons wishing to irrigate or use water for other purposes without specific oversight or a provision to resolve conflicts. In 1917, the Washington State Legislature enacted the first comprehensive water code, which is codified in RCW 90.03.

In 1945 the Legislature extended the water rights program to groundwater through RCW 90.44.050

In 1975 the Legislature added the requirement that sufficient water flow be reserved for fish in streams in which all water is not currently appropriated. No in-stream flows have been established by the statute for the Yakima River because water rights already had been allocated in excess of low summer stream flows.

The Easton sub-basin is one of the areas in which water rights have been adjudicated. The major water withdrawal in the Easton basin is for the Kittitas Reclamation District water intake on the Yakima River just above Easton, which is used to irrigate lands a considerable distance down the valley.

Federal actions to preserve water rights conferred by Indian treaties for fishing rights and reservation use also affect water rights in the basin. The 1980 Quackenbush Decision ordered that adequate streamflow be provided for salmon spawning in the upper Yakima River (USGS 1991). In 1994, pulsed flows were ordered by the court to further support spring out-migration of salmon.

There are two methods of establishing groundwater withdrawals. Both options establish a priority date and are subject to the premise that water rights that were established earlier in time take precedent over water rights obtained later.

Small withdrawals are provided an "exemption" from the process for certification provided in RCW 90.44. This regulation does not provide an exemption from any applicable laws, but only exempts the withdrawal from the Ecology's administrative process of issuing a withdrawal permit after investigating whether it will interfere with existing water rights. Withdrawals exempt from the permit process include:

- For single or group domestic uses in an amount not exceeding 5,000 gpd. The exemption from certification does not apply to a residential subdivision served by private wells where the groundwater withdrawal to serve all lots would exceed 5,000 gpd.
- The watering of a lawn or a non-commercial garden not exceeding 0.50 acre in area.
- For stock-watering purposes.
- For an industrial purpose in an amount not exceeding 5,000 (gpd).

For non-exempt withdrawals, a permit is required under RCW 90.44.050 that requires Ecology to ascertain that the permit will not interfere with other water rights.

Very little, if any, processing of new applications for groundwater withdrawals is occurring in the Yakima River basin. More than 400 pending water right applications are pending in WRIA 37, the oldest of which were filed in 1973. Within a few miles radius of the Marian Meadows site, nine other applications have been filed, the oldest of which was filed in 1980.

The essential holdup of new application processing is due largely to a Memorandum of Understanding (MOU) between Ecology and the Yakama Nation relating to federally granted water rights to tribes. Under this MOU, no application will be evaluated until the Yakima Groundwater Study is completed. This study is underway by the USGS, in cooperation with the U.S. Bureau of Reclamation, Ecology, and the Yakama Indian Nation, and will evaluate the hydrologic system in the Yakima River basin, including groundwater and surface water interactions and relationships.

Ecology has the authority to curtail exempt groundwater withdrawals. For example, in *Postema v. Pollution Control Hearings Bd.*, 142 Wn.2d 68, 94-95, 11 P.3d 726 (2000), the Supreme Court held that where Ecology has closed a surface water source to new withdrawals, it may prohibit new groundwater withdrawals that "will have any effect on the flow or level of the surface water." Ecology also has authority under RCW 90.44.130 "to limit withdrawals by appropriators of groundwater so as to enforce the maintenance of a safe sustaining yield from the groundwater body." RCW 18.104.040(4)(g) also

authorizes Ecology to limit well construction in areas "requiring intensive control of withdrawals in the interest of sound management of the groundwater resource." Depending on the specific facts and circumstances, these statutes could affect exempt withdrawals just as they could affect withdrawals for other purposes.

A petition for closure of the Upper Kittitas watershed to further withdrawals was submitted to Ecology in 2006. In response to that petition, Ecology agreed with Kittitas County to enter into a study of groundwater resources in the area and take appropriate action when the study is completed. Ecology has adopted additional interim standards that apply to the area, including the following (Ecology 2008):

- New residential development relying on the groundwater exemption is limited to a maximum of 5,000 gpd for **all lots** (WAC 173-539A-050[1]). In calculating use, either 1,250 gpd for domestic and irrigation purposes is presumed, or if a condition is recorded as a covenant 350 gpd may be assumed (WAC 173-539A-050[3]). This may result in 4 to 14 units per exempt well.
- New residences on parcels of less than 10 acres that were created after March 28, 2002, that rely on a new use of the groundwater exemption are limited to 1,250 gpd (WAC 173-539A-050[3]).
- New residential structures on parcels that were created on or before March 28, 2002, within upper Kittitas County and that will rely on a new use of the groundwater exemption shall be limited to 5,000 gpd (WAC 173-539A-050[4]). This is not a change from the existing law.
- Hydrogeologic assessments that may be required by Kittitas County are to be reviewed by Kittitas County and Ecology and must meet specific requirements. It is inferred that conditions will be imposed based on the reports using SEPA authority (WAC 173-539A-060).
- Measurement and reporting of water use is required of exempt withdrawals (WAC 173-539A-070).

Transfer of water rights is one mechanism for new development to obtain water, in the absence of new water rights being granted. The water rights transfer accomplished for the Suncadia development near Roslyn is an example of this transfer. All water rights changes and transfers in the Yakima basin are being processed through one of the eastern Washington County Water Conservancy Boards. Such water right transfers occur on a regular basis, especially between agricultural properties. A Conservancy Board is active in Kittitas County.

The process for locating and transferring an appropriate water right can be time consuming and difficult. The majority of water rights available for acquisition is likely to be for irrigation and will have a period of use limited to the irrigation season. Because water markets are not well established in Washington, there is no baseline for the price of water rights. Most sales are private and cost per ac-ft is generally not reported. Current estimates of water right costs range from $1,000 to $5,000 per ac-ft and depend on a number of factors including priority date and seasonal restrictions.

The major existing groundwater right in the areas is for the Easton Water District for 137 ac-ft per year. An application for additional water rights of 112 ac-ft has been pending since 1990.

4 What effects will the alternatives have on groundwater resources availability?

Water withdrawal for domestic use would reduce groundwater resources in the area. It is likely that the major effect would be the cumulative effect of reduction in overall resources available in the watershed for other beneficial uses, including agriculture, fish habitat, and recreation.

The use of sewage treatment faculties that return domestic water to groundwater can reduce the loss of groundwater resources and decrease watershed-wide effects. This is about equally effective whether water returned to groundwater is from a sewage treatment plant or septic tanks. Discharge to groundwater may be beneficial in maintaining low summer flows in surface water because groundwater is much less subject to loss through evaporation.

5 What risks to groundwater will occur during construction?

The major potential impact to groundwater on this site during construction is contamination from spills of fuel, lubricants, or hazardous materials. The depth to groundwater reduces some of the risk. Implementation of hazardous material control strategies during construction would also reduce this risk potential.

6 How would the adequacy of groundwater availability for existing uses be affected by the project over the long term?

Because of the apparent productivity of the local aquifer, it is unlikely that users in proximity that use groundwater for domestic purposes would be directly affected by additional groundwater withdrawal to serve any of the alternatives.

The alternatives would contribute to watershed-wide impacts of groundwater withdrawal because groundwater availability would be reduced for a variety of uses including agriculture, aquatic habitat, and recreation.

These impacts are intended to be addressed in consideration of granting new water rights in the basin.

7 What are the likely cumulative impacts on groundwater availability with development of nearby land at existing zoning densities or at PUD densities?

Because of the apparent productivity of the local aquifer, it is not likely that the level of additional withdrawal from cumulative development at rural or PUD densities would adversely affect existing uses that depend on groundwater that are in proximity.

The impacts of cumulative development would increase the watershed-wide impacts of groundwater withdrawal because water availability would be reduced for a variety of uses including agriculture, aquatic habitat, and recreation.

8 What risks to groundwater quality and domestic water sources would result from the proposal and alternatives?

The major risk to groundwater quality and domestic supply is the potential for failure of the sewage treatment facility to meet discharge standards, as discussed in Section 3.5, Utilities. Discharge of untreated wastewater would cause the average nitrate concentration in groundwater to increase to approximately 15 mg-N/L (within a plume that would migrate downgradient from the infiltration pond). For full buildout of Marian Meadows, with 443 ERUs, the nitrate concentration would increase to approximately 19 mg-N/L. These values would be far above the background concentration in the aquifer of 0.22 mg-N/L and would exceed the drinking water standard of 10 mg-N/L. (The concentrations of other dissolved compounds in the untreated wastewater plume might also exceed the drinking water standards.)

Several domestic wells are located along the southern edge of the Marian Meadows property, adjacent to the proposed infiltration pond. The exact direction of the plume migration cannot be predicted with available information but would be generally to the south or southeast. The exact locations of neighboring domestic wells are not known, but they potentially could be affected by the plume for a period of time.

The somewhat rectangular plume would migrate at a rate of approximately one foot per day. Thus, a single well that pumped the average concentration in the plume would experience concentrations that rise to near the maximum concentrations reported above, then decrease to values unaffected by the upset condition, over the course of several months to a year. In all, the plume would persist for many years in the aquifer before reaching the river.

Groundwater quality from on-site sewage use at the lot sizes proposed generally is not projected to have adverse impacts if constructed in compliance with state standards. Because of the permeable soils in the area, systems may be required to use "sand-lined trenches" to provide a layer of soil that provides for adequate retention time for treatment (Gilbert 2008). A sand-lined trench is a combined treatment component and soil dispersal component. Proper function requires that influent to the sand filter be distributed over the media in controlled, uniform doses. In order to achieve accurate dosing, these systems require timed dosing with associated pump systems. The effluent is absorbed into the native soil at the bottom of the sand-lined trenches, which accomplishes dispersal into the subsoil environment and further treatment (DOH 2007). This is described further under Sewage Disposal in Section 3.5. The general lack of suitable soils on the steeper eastern portion of the site is likely to result in use of community drainfields on the flatter eastern portions of the site for allowed development in those areas. The higher flows from such systems with the permeable soils in the area poses greater risks to groundwater quality. Detailed soil assessment and engineering design of such systems is required, as well as separate environmental review.

There are expected to be no groundwater quality effects on surface water through the interflow of groundwater into surface streams. The groundwater in the area does come close to the surface 1 to 2

miles south of the site and may recharge the Yakima River during low flows. The flows in the Yakima River in this area, even during summer months, are great enough that groundwater contributions are not likely to have a substantial impact on water quality.

3.14 VEGETATION AND WETLANDS

1 What vegetation is present in the project area?

The project area is the area generally bounded by Kachess Lake to the north, I-90 to the west, the Wenatchee National Forest to the east, and the Yakima River floodplain to the south. The area consists primarily of second-growth mixed coniferous-deciduous forest and residential areas (primarily to the southwest), which are characterized by houses, lawns and livestock pastures, and associated outbuildings. Residential development to the south and west is mostly relatively low density (5- to 8-acre lots), but there are pockets of higher density residential areas as well as 0.25-acre lots (Figure 3-40). Most of the residential development has retained conifer forest cover on the individual parcels. Large areas of mid-successional conifer forests exist on the forest land to the north, with a mixture of open conifer, rock outcroppings, and cliffs to the east. Wildfires moved through the area, primarily to the east and southeast of the property in 1999.

The property is located on the southwest-facing slopes of Easton Ridge, which divides the Yakima River drainage from Domerie Creek and the Cle Elum River drainage. The project site varies considerably between the western, flat portion of the site (about 120 acres) and the eastern steep-sloping portion (about 400 acres). Vegetation found on the project site reflects a combination of natural and managed disturbance, topography, and historical and current management/use.

There are six types of vegetation communities that occur on the project site:

1. Disturbed areas (two locations of past rock extraction activities);
2. Early successional conifer forest (including clear-cut areas and burn areas);
3. Conifer;
4. Open conifer;
5. Wetland and stream (riparian); and
6. Right-of-way (occurs beneath the BPA transmission lines).

What is an early successional forest?

Early successional habitat occurs in a forest after a natural or human disturbance such as a fallen tree, wind, or fire. This stage in forest land is brief. The forest canopy (without management) will close, and the early successional vegetation will disappear in favor of a more mature forest.

Table 3-38 reflects the approximate composition of vegetation communities within the project site. On the Marian Meadows property, the vegetation communities differ from one another based on stand structure and to a lesser degree species composition, as well as vegetative characteristics (for example, canopy coverage and presence or lack of understory and herbaceous layers).

Table 3-38 Vegetation Communities Comprising Marian Meadows

Vegetation Community	Approximate Acreage of Total Site (acres)	Approximate Percent of Total Site (%)
Disturbed	6.5	1
Early Successional Conifer	332.8	59
Conifer	51.8	9
Open Conifer	155.1	28
Wetland and Stream (Riparian)	1.6	Less than 1
Right-of-Way	12.9	2

Western Site Only

Early successional forest on the western, flat portion of the site consists primarily of a young, coniferous sapling plantation as a result of planting activities following fairly recent (late 1990s) timber harvest (Figure 3-39). There is little to no canopy coverage in most portions of this area, where harvest methods predominantly included clear-cutting. Approximately 90 acres of the western flat portion of the site are characterized by the early successional conifer type of vegetation community. A few locations scattered throughout the western, flat portion of the site can be characterized as open conifer (approximately 13 acres), with low tree densities and limited canopy coverage in a few locations where mature trees remain.

Vegetation in the early successional conifer and open conifer associations in the western part of the site consists of a widely scattered mix of shrubs, young conifers, and some mature black cottonwood (*Populus balsamifera*) trees. Dominant conifers include Douglas fir (*Pseudotsuga menziesii*) with lesser amounts of lodgepole pine (*Pinus contorta*) and western red cedar (*Thuja plicata*). Young stands with trees less than 8 inches in diameter are the predominant structural type occurring in this portion of the project site. Where shrub/scrub vegetation is present, the shrub layer consists primarily of common snowberry (*Symphoricarpos albus*), beaked hazelnut (*Corylus cornuta*), ocean spray (*Holodiscus discolor*), and vine maple (*Acer circinatum*). Herbaceous vegetation is very sparse, with scattered patches of diffuse knapweed (*Centaurea diffusa*) existing throughout much of the flat western portion of the property.

The BPA transmission line easement that separates the eastern and western portions of the site is characterized by shrubs, small trees (scrub), and disturbed areas (off-road vehicle tracks, etc.), particularly along the dirt roads within the right-of-way. Land beneath the transmission lines is maintained to be unforested. Approximately 13 acres of the total project site are characterized by this type of vegetation community.

Eastern Portion of the Site

The eastern, steep portion of the site comprises areas of older, second-growth coniferous forest and younger, regenerating open conifer vegetation (Figure 3-39). The vegetation associated with these areas is primarily a result of past logging activities (selective logging conducted in the late 1980s and early

1990s). The early successional conifer forest vegetation in this portion of the project site primarily results from the fires that swept through in 1999. Approximately 243 acres of this portion of the project site are characterized by the early successional conifer forest community. Other vegetation communities occurring on this portion of the project site include approximately 142 acres of open conifer and 52 acres of conifer vegetation associations.

Vegetation in this portion of the site is dominated by Douglas fir, with lesser amounts of black cottonwood, grand fir (*Abies grandis*) and western red cedar. The shrub layer consists of redstem ceanothus (*Ceanothus sanguineus*), red flowering currant (*Ribes sanguineum*), western serviceberry (*Amelanchier alnifolia*), Scouler's willow (*Salix scouleriana*), and lesser amounts of common hawthorn (*Crataegus monogyna*). Ground cover is limited in the eastern, sloping portion of the property. The eastside mixed conifer forest possesses elevation ranges of 1,000 to 7,000 feet, mostly between 3,000 and 5,500 feet. Stand canopy structure is generally diverse, although single-layer forest canopies are currently more common than multi-layered forests with snags and large woody debris (Crawford 2007). Shrub layers in this portion of the project site are mostly open; partial closure occurs in few places, mostly limited to successional growth areas where fires occurred and within critical areas (streams, steep slopes, etc.). Moderately large, mature conifer trees (up to 24 inches in diameter) are scattered throughout the eastern portion of the property, mostly concentrated along the steepest west- and south-facing slopes beneath the lower bench. Larger snags and some coarse woody debris have been maintained in the open conifer and conifer communities in this area, and also exist in portions of the early successional forest areas primarily where the fire passed through in 1999.

Kachess Lake
Kachess Dam
Kachess Gaging Station
River
2237 T
Easton State Airport
Beacon
BM 2220
BM 2208
LAKE
STATE
Lake Easton
WENATCHEE
Yakima River
Silver Creek
Domerie Creek
Domerie
RIDGE
EASTON 4168 T
NATIONAL
Quarry
Borrow Pit
Railroad
Open Conifer
Early-Successional-Forest
Conifer
ROW
Disturbed
Low Dens Res
Airstrip
Meadow
High Dens Residential
Industrial
Cliff/Rock

DATE: July 10, 2008 FILE: K:\gis\1763 Easton\mapdocs\1 Wildlife\Habitat.mxd

Source: PMX Aerial Photo and Field Survey

Parametrix

N

0 1,200

Scale in Feet

Project Site
Half Mile Buffer of Project Site
Intermittent Stream
Perennial Stream
Streets

Vegetation Type

Conifer
Open Conifer
Meadow
Early-Successional-Forest
Cliff/Rock
Disturbed
High Dens Residential
Industrial
Low Dens Residential
Airstrip
Utility ROW
Field Inventoried Wetlands
Lake

Figure 3-39
Marian Meadows
Generalized Land Cover and Habaitat Types

Moist areas within the eastern portion of the property are characterized by red alder (*Alnus rubra*), thimbleberry (*Rubus parviflorus*), devil's club (*Oplopanax horridus*), slough sedge (*Carex obnupta*), red elderberry (*Sambucus racemosa*), and lesser amounts of false Solomon's seal (*Smilacina racemosa*). The wetland and riparian vegetation associations occur on approximately 1.6 acres of this portion of the project site. Please see Question 2 in this wetlands section for additional information on wetland communities.

Project Vicinity

Vegetation in this area has been most affected by timber harvesting and fire suppression. Timber harvesting has focused on large shade-intolerant species in mid- and late-seral forests, leaving shade-tolerant species. Fire suppression enforces those logging priorities by promoting less fire-resistant, shade-intolerant trees. The resultant stands at all seral stages tend to lack snags, have high tree density, and are composed of smaller and more shade-tolerant trees. Mid-seral forest structure is currently 70 percent more abundant than in historical, native systems. Late-seral forests of shade-intolerant species are now essentially absent. Early-seral forest abundance is similar to that found historically but lacks snags and other legacy features. Historically, large open ponderosa pine stands were almost immune to damage from frequent, low-intensity fires that burned across the landscape. Removal of the large pine component, in growth of smaller trees at high density, and fuel buildups in the understory all make fire a much more damaging disturbance agent now than it was historically (Agee 1993).

Silver Creek and its associated riverine wetlands and riparian vegetation areas are located approximately 300 feet from the northwest corner of the project site. Silver Creek flows in a southwestern direction into the Yakima River approximately 0.5 mile southwest of the project site. Silver Creek tends to dry up in the summer in dry years, which is consistent with the function of the immediate project area as a groundwater infiltration area. There is a dam on the creek north of the development site formerly used for water supply (Mayo 2008).

The upper Yakima River watershed originates near the crest of the Cascade Range, upstream of Keechelus Lake on Snoqualmie Pass. The Yakima River flows 214 miles southeastward from Keechelus Dam to its confluence with the Columbia River at approximately river mile 335. The general area of the Upper Yakima Valley west of Cle Elum is characterized by ranges of coniferous forest in the upper elevations to shrub-steppe in the lower watershed (Haring 2001). Overall, the existing land cover in the Yakima basin in 2003 was approximately 50 percent non-forested or rangeland, 29 percent forested, 21 percent agricultural, and less than 1 percent urban developed land (Tri-County Water Resources Agency 2003).

What is a wetland?

For an area to be classified as a wetland there are three characteristics that must be present under normal conditions. The three characteristics are:

1. The presence of vegetation that grows in water or waterlogged soils (hydrophytic vegetation).

2. The presence of wetland hydrology.

3. The presence of moist (hydric) soils.

2 What wetlands are present in the area?

Wetlands in the area are generally associated with surface waterbodies and streams, or with locations where groundwater surfaces and recharges surface water as described in the geology and groundwater sections above. The U.S. Department of Agriculture (USDA) soil survey for Kittitas County maps hydric soils, which are generally rare in the area.

The project site vicinity wetlands are characterized by National Wetlands Inventory (NWI)-mapped wetlands that primarily are associated with rivers, streams, and lakes. Riverine wetlands associated with Silver Creek and the Yakima River are mapped in the vicinity. NWI-mapped wetlands associated with Silver Creek are located just north of the northwest corner of the project site. Palustrine wetlands are mapped in the area of the confluence of an unclassified stream and the Yakima River, approximately 1.1 miles to the south/southeast of the project site, and just northeast of the Sun Island development. A small, palustrine wetland is mapped about 0.25 mile north of the project site, approximately halfway between Silver Creek to the west and the tip of Domerie Creek to the east. This is the general area of the headwaters of the Domerie Creek drainage, on the other side of Easton Ridge (Figure 3-40).

No wetlands were identified in the western, flat portion of the site during reconnaissance field visits conducted in October 2006 (Raedeke Associates 2006) or in June 2008 and July 2009 by Parametrix, Inc.

Wetlands identified by field visits are primarily limited to the benched portion of land in the eastern part of the project site (Figure 3-41). Wetlands occur in two geomorphic settings in this portion of the project site including groundwater discharge points along hillslopes, and linear depressions within the riparian zone of the DNR Type N stream.

A hillside seep where water daylights at the ground's surface occurs along the existing logging road leading up to the bench. The area surrounding the seep is characterized by fast-growing deciduous tree species including red alder and black cottonwood, understory shrubs of redstem ceanothus, and tapered rush (*Juncus accuminatus*), Watson's willow herb (*Epilobium ciliatum*), and dagger-leaf rush (*Juncus ensifolius*). Because of the presence of all three wetland characteristics, this area would qualify as a jurisdictional wetland.

Wetland Classification System

Riverine wetlands **are wetlands contained within a channel. Water is usually, but not always, flowing in the riverine system.**

Palustrine wetlands **include all non-tidal wetlands dominated by trees, shrubs, persistent emergent vegetation, or emergent mosses or lichens. They also can occur in some tidal areas of low salinity.**

Lacustrine wetlands **have all of the following characteristics: located in a depression; lacking areas with greater than 30 percent areal coverage of vegetation; and the total area (including any open water) exceeds 20 acres.**

Wetlands are also associated with the DNR Type N stream running in a southwestern direction through the project site, from the upper slopes through the bench, down to the base of the ridge, and almost to the BPA transmission line easement where it discharges into a large alluvial fan. These wetlands are confined to areas immediately adjacent to the stream channel at lower gradient (less steep) points along

the stream's course. These areas are primarily located where the stream runs alongside the logging road providing access to the mid-bench and upper portions of the project site, along the east side of the road at the first major switchback. These wetlands are dominated by red alder (*Alnus rubra*), thimbleberry (*Rubus parviflorus*), devil's club (*Oplopanax horridus*), slough sedge (*Carex obnupta*), red elderberry (*Sambucus racemosa*), and lesser amounts of false Solomon's seal (*Smilacina racemosa*). Because other portions of this stream and its on-site tributaries are ephemeral (seasonal/intermittent) and traverse areas of steep topography, hydrology is likely not present for long enough periods during the growing season for areas adjacent to those portions of the streams to meet wetland criteria, and qualify as jurisdictional (regulated) wetlands. Hydrophytic vegetation was not present in additional streamside areas investigated during the June 2008 field visit.

The hillside seep identified above can be classified as palustrine, shrub-scrub under the U.S. Fish and Wildlife Service (USFWS) wetland classification methodology (Cowardin et al 1992). These wetlands are characterized by woody vegetation that is less than 20 feet tall, and are generally dominated by true shrubs and young trees. Wetlands associated with the DNR Type N stream traversing the project site are generally not located within the active channel; thus, these wetlands would not be considered riverine wetlands. Wetlands associated with the stream in its upper reaches can be classified as palustrine forested wetlands, characterized by woody vegetation that is over 20 feet tall and possessing an overstory of trees, an understory of young trees and shrubs, and an herbaceous layer. A potential wetland area inventoried at the base of the DNR Type N stream just east of the BPA transmission line easement within the alluvial fan area can be classified as a palustrine, emergent wetland, characterized by erect, rooted herbaceous hydrophytes that are present for the majority of the growing season.

The general area of the Upper Yakima Valley west of Cle Elum is also characterized by NWI-mapped wetlands that are associated with bodies of water. In addition to the NWI-mapped wetlands described above, lacustrine wetlands associated with Lake Easton, Kachess Lake, and Cle Elum Lake are mapped in the general area by the NWI. Wetlands associated with the Cle Elum River (both north and south of the lake), the Waptus River, and Gold Creek are mapped by the NWI, as are palustrine wetlands along French Canyon Creek and Box Canyon Creek. NWI-mapped lacustrine wetlands are associated with many areas of open water occurring along streams/creeks (Delate Creek) in the general area, and on the slopes of Mount Daniel. NWI-mapped wetlands of all three types described above are present along stretches of the Cooper River between State Creek and Delate Creek.

The Washington Natural Heritage Program (WNHP) database has no record of any high quality natural heritage wetland or other natural heritage features occurrence in the Public Land Survey System's (PLSS) Sections, Township and Range within which the project site is located (DNR 2008).

See Appendix A for the list of rare plants known to occur in Kittitas County, Washington (DNR 2008). This list indicates that one federally listed (endangered) plant species, nine federal plant species of concern, and 32 additional state-listed plant species are known to occur in Kittitas County. None of the listed plant species appearing on this list were observed during the June 2008 field visit.

3 What policies and standards address wetlands

The GMA directs cities and counties to designate critical areas (RCW 36.70A.170) and adopt development regulations that protect critical areas (RCW 36.70A.060). Critical areas include wetlands.

Kittitas County has adopted the following general goals, policies, and objectives:

Wetla nds

Wetlands play a significant role in the reduction of water pollution, erosion, siltation, and flooding, and provide significant wildlife, fisheries, and plant habitats; their destruction or impairment may result in increased public and private costs or property losses.

GPO 2.54 Kittitas County should accept landowner claims that a defined wetlands is artificial unless the determining regulatory agency deemed otherwise based on the I-V tiered wetland rating system outlined in this policy document.

GPO 2.55 Kittitas County should accept the premise that the substantial irrigated agricultural activities enhance and maintain some wetlands environments within this area.

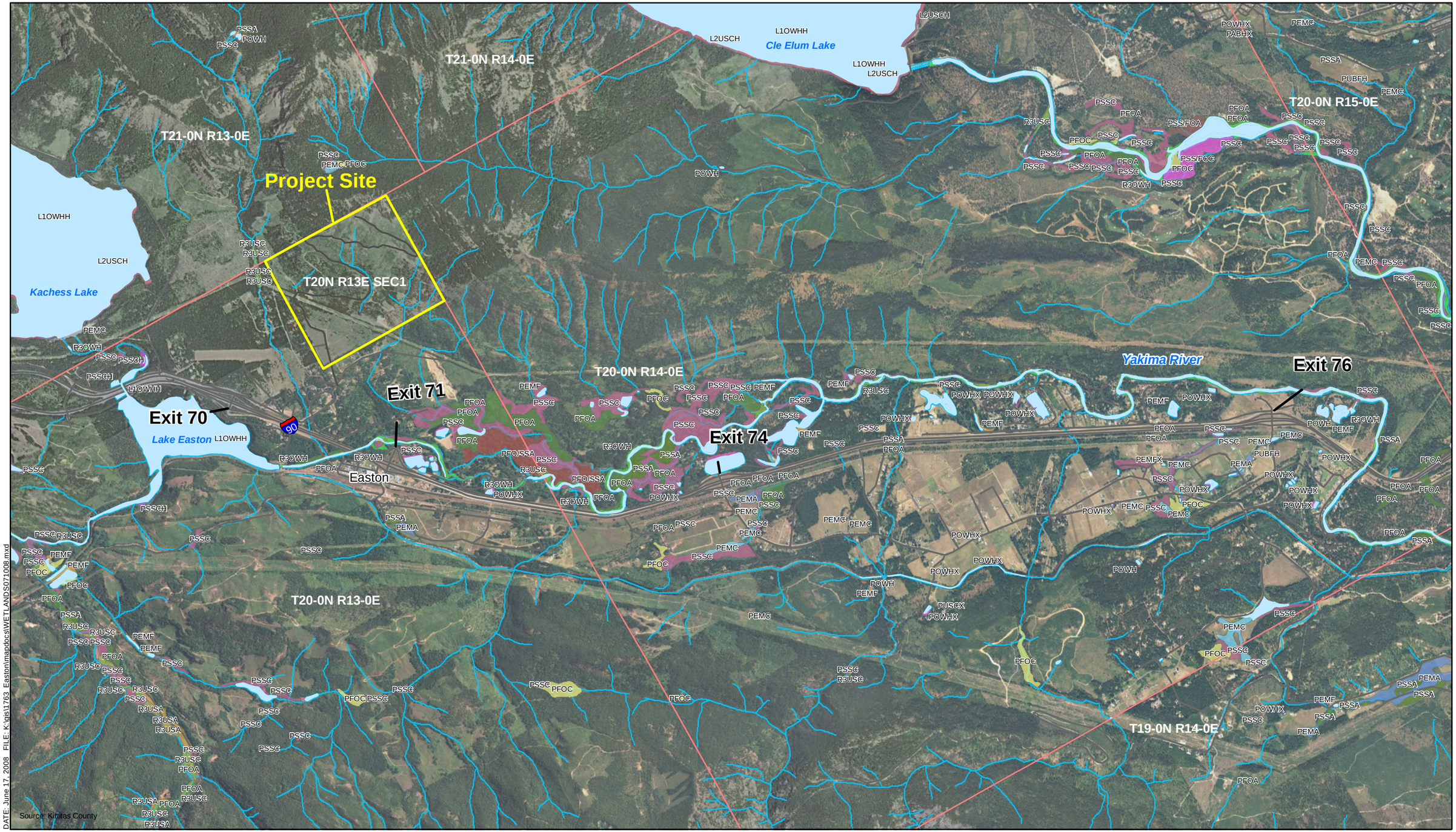
GPO 2.56 Kittitas County should encourage the development of a regulatory program for wetlands protection that is both sufficiently flexible to allow reasonable use and enjoyment of private property and generally consistent with the requirements of the Growth Management Act.

GPO 2.57 Kittitas County should encourage the implementation of wetlands protection strategies that will achieve, to the maximum extent practicable, a zero net loss of natural wetlands acreage, functions, and values and, if reasonably possible, a gain of wetlands habitat in the long term.

GPO 2.58 Any wetlands protection measures imposed by Kittitas County should not interfere with stock water or irrigation water rights recognized in the Acquavella adjudication process.

GPO 2.59 Any wetlands protection measures imposed by Kittitas County should not interfere with a person's ability to engage in existing agricultural land use activity associated with his property. Agricultural land use activities include, but are not limited to, the grazing and watering of livestock, plowing, seeding, cultivation, harvesting for the production of crops; upland soil and water conservation practices, the maintenance of farm for stock ponds, irrigation ditches, drainage ditches, underground drainage systems and farm roads, and the control of noxious weeds.

GPO 2.60 Preliminary determinations by the Kittitas County Planning Department concerning the potential presence of wetlands that may be impacted by an activity requiring a permit or approval from the County department should be based on data contained in the U.S. Fish and Wildlife Service Inventory for Kittitas County. The Fish and Wildlife Service Inventory should be augmented over time with more specific information concerning wetlands location, class, and type generated through the administration of the wetlands protection program.



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Parametrix

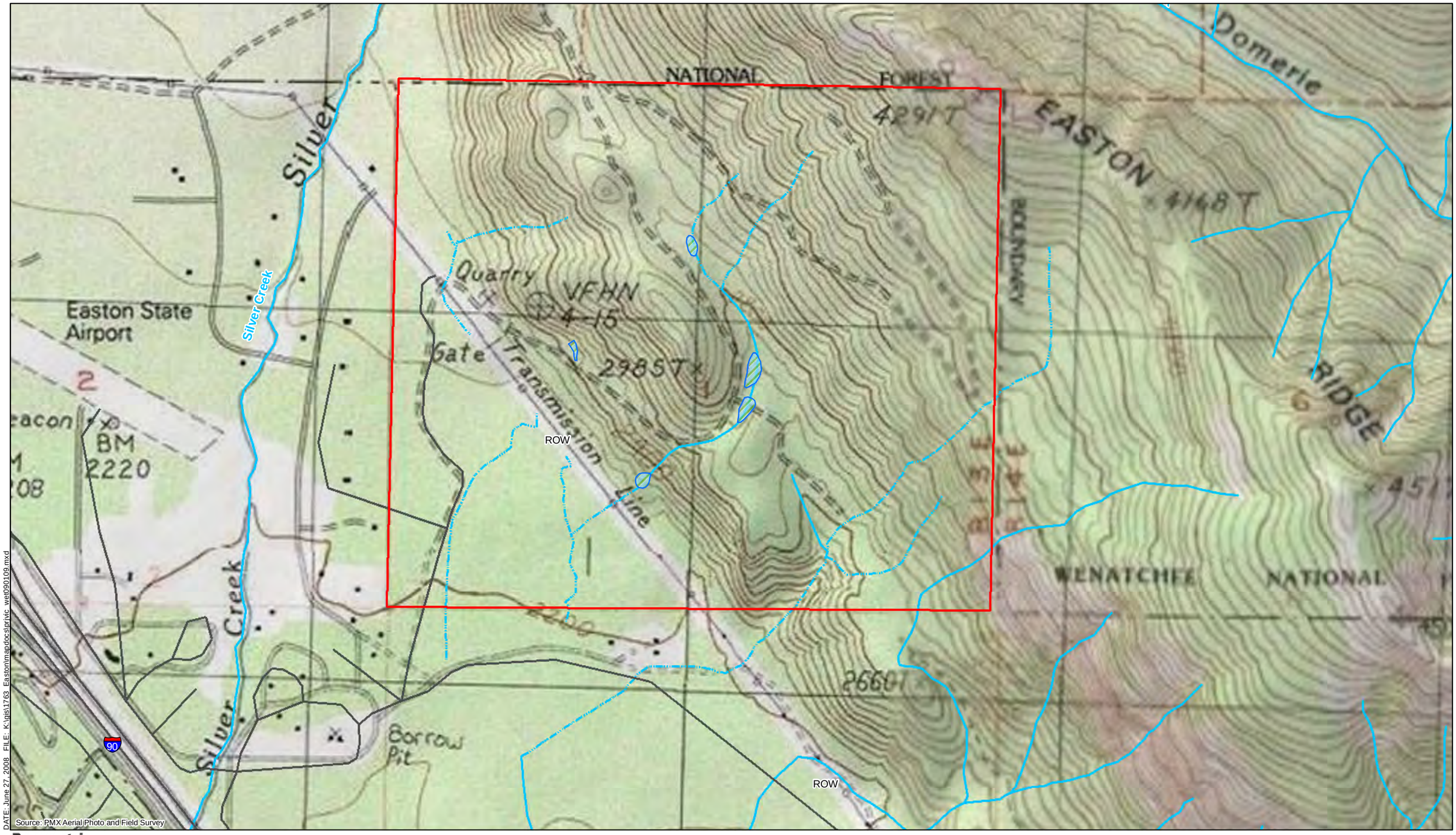
0 3,500
Scale in Feet

- Project Site
- Lakes
- Township Boundaries
- Roads
- Streets

NWI Wetlands

- L2USCH
- PABHX
- PEMA
- PEMC
- PEMF
- PEMFX
- PFO/SSA
- PFO/SSC
- PFOA
- PFOC
- POWH
- POWHB
- POWHX
- PSS/FOC
- PSSA
- PSSC
- PSSCH
- PSSF
- PUBFH
- PUSCX
- R3OWH
- R3USA
- R3USC
- U

Figure 3-40
Marian Meadows
NWI Mapped Wetlands



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N

0 800

Scale in Feet

- Field Inventoried Wetlands
- Intermittent Stream
- Perennial Stream
- Project Site
- Streets

Figure 3-41
Marian Meadows
Wetlands in
the Project Vicinity

GPO 2.61 Water conservation and enhancement shall take precedence over inadvertent and/or unintentional wetland regulation and preservation.

GPO 2.62 Kittitas County should give positive tax incentives to private property owners who maintain, reclaim, or enhance class I, II, III, and IV wetlands.

GPO 2.63 Kittitas County should support or encourage the purchase and dedication of lands by public or private organizations for wetlands and apply sound management principles to said property.

4 What effects would construction of the proposal have on vegetation and wetlands?

Alternative 1 would involve residential development in the vicinity of existing wetlands in the bench area of the eastern portion of the site. Direct impacts would depend on the size of buffers included in the proposal. Regardless of the preservation of wetlands or the size of buffers, some change in the hydrologic conditions that support the wetlands can be expected either from diverting water that currently infiltrates into the ground and recharges the wetlands, or through additional discharge of stormwater into watercourses and to the wetland. In either case, the natural hydroperiod of the wetlands would change and have a ripple effect on functions.

With the buffers currently required by Kittitas County codes, much of the upland area used by wetland-related species, such as amphibians, during a part of their lifestage would be reduced. This may have an impact on a number of functions, most seriously to the area available for foraging. Even with more extensive buffers than required by county codes, some impacts would be experienced from displacement of upland habitat.

Proximity impacts from residential use from noise, light, and domestic animals likely would affect animals using wetland areas and contribute to a decline in populations.

Residential development would impede animal movement and likely lead to less effective movement between wetlands on the site and other wetlands in the vicinity. The development would also reduce the effectiveness of habitat use and possibly lead to isolation of populations that would be less likely to recover if subjected to catastrophic decline due to disease or factors such as fire.

Alternatives 2, 3C, and 5 would have much less impact on wetlands in the eastern portion of the site because the area would remain undeveloped and subject to disturbance only on the cycle of one a decade or less often for forest management practices. Some disturbance could be expected from recreational activities, but at a much lower intensity than from residential use.

Alternatives 3A, 3B, and 3D would involve residential development in the vicinity of existing wetlands in the bench area of the eastern portion of the site. Direct impacts would be somewhat less than Alternative 1 because of the lower intensity of use and would also depend on the size of buffers included in the proposal. Regardless of the preservation of wetlands or the size of buffers, some change in the

hydrologic conditions that support the wetlands can be expected either from diverting water that currently infiltrates into the ground and recharges the wetlands, or through additional discharge of stormwater into watercourses and to the wetlands; however, the magnitude would be lower than Alternative 1. In either case, the natural hydroperiod of the wetlands would change and have a ripple effect on functions.

With the buffers required by Kittitas County codes, much of the upland area used by wetland-related species, such as amphibians, during a part of their lifestage would be reduced. This may have an impact on a number of functions, most seriously to the area available for foraging. Even with more extensive buffers than required by county codes, some impacts would be experienced from displacement of upland habitat; however, some habitat value likely would remain due to the larger lot size.

Proximity impacts from residential use from noise, light, and domestic animals, impedance of animal movement, and the potential for isolation of populations would occur, but at a lower level than Alternative 1.

Alternative 4 would have similar impacts as Alternative 1 on wetlands because development is clustered in the flatter bench area where the wetlands are present.

5 What permanent effects on vegetation and wetlands would result from the proposal and the potential for other development in the area?

Cumulative impacts of other development in the vicinity likely would not affect the wetlands on the eastern portion of the site because they are effectively isolated from the location of additional development by a steep sloping area.

6 What measures can reduce permanent effects on vegetation and wetlands?

The reconnaissance level of field work performed for this analysis was designed to identify general areas where wetlands are present. Detailed delineation was not performed. If development is allowed in the areas where wetland features have been identified, detailed delineation and assessment of options for development layout should be performed.

The most effective mitigation of impacts on wetlands is from avoidance of development in proximity, as illustrated in Alternatives 2 and 5.

Other mitigation measures include:

- Provide buffers around wetlands and manage vegetation to reduce proximity impacts to wetlands and provide an area for upland habitat for key lifecycle stages adjacent to wetlands.
- Manage vegetation and impervious areas to preserve as much area as possible for natural infiltration of rainfall into the ground to provide natural recharge.
- Manage stormwater to reduce peak flows and avoid discharge into wetlands, or utilize infiltration systems that mimic natural infiltration.

- Provide water quality treatment to reduce adverse effects of fertilizers, herbicides, and pesticides on wetland-related animal communities.

Off-site mitigation, including contribution to mitigation banks, can compensate for impacts that cannot be effectively mitigated on the site.

3.15 FISH AND WILDLIFE

1 What fish species and habitat are present in the project area?

The project site is located in WRIA 39—Upper Yakima River. The streams on the project site do not support fish species due to the intermittent or seasonal flows, or are too small and too shallow to provide adequate fish habitat for resident fish species. However, the streams on the project site do contribute to the general habitat and species in the project vicinity.

On the flat western portion of the project site, there are two swales that originate in the vicinity of the transmission line corridor and extend south-southwest to exit the property near the middle of the flat portion of the site. The continuation of the swale to the south has been obliterated by grading on adjacent properties. This swale is mapped as a Type N (non-fish bearing) stream by DNR, and may intermittently convey snowmelt. There was no evidence of surface flow or channel scouring during an October 25, 2006, site visit by the applicant's consultant (Raedeke Associates 2006) or by Parametrix staff in June 2008 and June 2009. It is likely that these swales were created by infrequent high-flow events associated with the debris flows and alluvial fan hazard areas discussed above under geological hazards and surface water.

What is the eastern bench area?

The bench area is located in the eastern portion of the site. The "bench" is where the land levels out for a short distance in the middle of the steep slope.

On the steep eastern portion of the site, there are four non-fish bearing streams. On the far south portion of the site a stream originates in a spring system near the eastern end of the site and flows to the southeast down a steep swale and off the site. A small stream originates in local runoff in the southeastern portion of the upper area and flows over basalt cliffs and off the site. A stream in the central portion of the site flows to the south between two ridges then flows to the east immediately south of the main access road to the south. This stream channel is up to 5 feet wide and 8 inches deep in places and originates in a wetland complex. It disappears in an alluvial fan on the flat western portion of the site. A fourth stream originates on the far northern portion of the site from local runoff and groundwater from a steep ravine. It flows down a steep ravine near the northern property line and disappears in an alluvial fan.

Water from these streams largely infiltrates to groundwater. Although none of the streams support fish, they do provide some aquatic habitat that may support amphibians. All of these streams contribute water to recharge of waters in the major waterbodies in the project vicinity. These waterbodies include Silver

Creek, Yakima River, Kachess Lake, Kachess River, Keechelus Lake,, Lake Easton, and Cle Elum Lake (Figure 3-34).

Silver Creek drains a large area between Kachess and Cle Elum lakes and passes just west of the western boundary of the project site, entering the Yakima River approximately 0.5 mile southwest of the site. Silver Creek dries up in late summer on dry years south of the National Forest boundary. Resident cutthroat trout were identified in the stream reach upstream of the dam from electrofishing surveys in the 1990s (Mayo 2008; WDFW PHS June 20, 2008). The culverts under I-90 and Sparks Road are mapped as partial fish passage barriers (Salmonscape 2008). Silver Creek does not have current or historical salmonid use (Haring 2001).

The Yakima River between Lake Easton and the confluence with the Cle Elum River is considered to support bull trout, spring Chinook, summer steelhead, and coho salmon (Haring 2001). Reaches of the Yakima River between Easton Dam and Cle Elum River and between Easton Dam and Keechelus Dam are considered high priority reaches for preservation for spring Chinook and coho salmon because the reaches support large, often continuous blocks of high-quality habitat (Entrix 2004; WDFW 2002; Salmonscape 2008).

A number of the lakes and ponds in the general vicinity of the project site, including Easton Ponds (former gravel pits) and Lake Easton, are stocked with brown trout and/or rainbow trout. Kachess Lake supports a kokanee population as well as rainbow trout, cutthroat, burbot, and bull trout (WDFW PHS June 20, 2008).

2 What terrestrial species and habitat are present in the project area?

Terrestrial Habitat

Wildlife habitat in the project area is defined primarily by the types and existing condition of vegetation that are present. Other factors that influence wildlife use of the project area include non-vegetative features, such as rock outcroppings and cliffs, as well as the cultural carrying capacity. Vegetation in the project area is described in Section 3.14, Vegetation and Wetlands. Discussions in this section focus on the wildlife habitat value of the project area. The flat western portion of the project site was clearcut in the 1980s and 1990s. Vegetation in this section includes small trees, shrubs, and grasses.

The BPA transmission line easement that separates the eastern and western portions of the site is maintained to remove large trees. Land cover in the right-of-way consists of shrubs, small trees, and disturbed areas, particularly along access roads.

The steep eastern portion of the site supports a mixture of second-growth conifer forest, regenerating clearcut, and open-canopy conifer forests that developed following logging activities in the 1990s. Dominant tree species include replanted Douglas fir (*Pseudotsuga menziesii*) and ponderosa pine (*Pinus ponderosa*).

The stream network on and above the bench supports narrow riparian and wetland habitats with red alder (*Alnus rubra*), swamp gooseberry (*Ribes lacustre*), slough sedge (*Carex obnupta*), and large-leaved sedge (*Carex amplifolia*) (Raedeke Associates 2006). This vegetation provides potential habitat for amphibians, birds, and small mammals.

A complete list of wildlife species potentially occurring in the project area is presented in Appendix A.

Near the project site there are large areas of conifer forests on National Forest land to the north, a mixture of open conifer and rock outcroppings and cliffs to the east, and residential development to the south and west. The residential developments have relatively low population density but there are pockets of higher-density residential areas as well.

Carrying Capacity

The carrying capacity of an area determines the size of the population that the area will support. Carrying capacity is dynamic, changing from season to season and from year to year. Several factors determine carrying capacity can be considered both in biological terms and in cultural terms. Biological carrying capacity represents equilibrium between the availability of habitat and the number of animals of a given species the habitat can support over time. It is dynamic and can change from season to season and from year to year.

Cultural carrying capacity is the number and type of a given species that people will tolerate over time (Decker and Purdy 1988). Cultural carrying capacity is most often applied to management of carnivores such as wolves in relation to the amount of predation on domestic animals such as sheep and cattle. As applied to herbivores, it is often applied to the amount of agricultural damage or damage to suburban ornamental plants and gardens by deer and other species that is tolerable to a given community.

This analysis focuses largely on factors that affect biological carrying capacity through degradation of habitat, or restriction of movement between habitat areas.

Wildlife Species

A diverse mix of wildlife species uses the project site's upland, riparian, and wetland habitats, including deer, elk, coyote, snowshoe hare, small mammals (voles and mice), snakes, lizards, and birds. Wildlife species that have been documented or that may occur in the project area were identified through literature review, field visits, and reports from local residents. Wildlife species that may use the site are discussed below by major taxonomic groups. Endangered, threatened, sensitive, and candidate species are discussed in Question 3 of this section.

Reptiles and Amphibians: The amphibian and reptile species potentially occurring on the project site include three species of salamanders, the rough-skinned newt, four frogs, western toad, two lizards, and four snakes. Because the site lacks ponds and has limited areas of wetlands with open water, species that require still-water habitat for breeding are likely present only as adults or dispersing juveniles in terrestrial habitats. The stream network on the eastern portion of the site may provide suitable habitat for tailed frogs, Pacific giant salamanders, and rough-skinned newts. Pacific tree frogs and long-toed

salamanders may breed in temporary ponds that occur in roadside ditches. Many of the amphibian species use a variety of upland habitats as adults. The reptile species most likely present on the site include the common garter snake, western terrestrial garter snake, northern alligator lizard, and western fence lizard. Other snake species, such as rubber boa, could occur in habitats that have adequate cover.

Birds: Overall, approximately 97 bird species have ranges that overlap the site (Washington Nature Mapping Project 2008). Breeding bird survey data indicate that 82 species are confirmed, probable, or potential breeding species within approximately 3 miles of the site (Seattle Audubon Society 2008). Some of these bird species make substantial use of the clear-cuts, whereas other species are dependent on the open or closed-canopy forests (e.g., warblers) or riparian habitats (e.g., song sparrow). Other bird species that have been observed in the project area include dark-eyed junco, chipping sparrow, and spotted towhee.

Please refer to Appendix A, Table A-1, for a list of the bird species that potentially occur near the project site.

Please refer to Appendix A, Table A-2, for a list of the mammal species that potentially occur near the project site.

Mammals: A wide variety of mammals occurs in the central Cascade Mountains and up to 60 mammal species potentially occur on or near the project site. Of these, mule/black-tailed deer, elk, snowshoe hare, Douglas squirrel, chipmunk, coyote, voles, and cougar have been documented on the site by Raedeke Associates (2006), Parametrix (site visit in December 2007), anecdotal information from local residents, or WSDOT and U.S. Forest Service reports.

The open habitat of the western portion of the site provides potential habitat for small mammals such as shrews, pocket gophers, voles, mice, skunks, and weasels. Squirrels and chipmunks likely occur throughout the site. These small mammals are important prey for carnivorous mammals, hawks, owls, ravens, and crows. Other species of small mammals rely on the dense forest canopy and/or shrub layers such as found in the eastern portion of the site.

Ten species of bats that use forested habitat in the central Cascade Mountains may occur on the site. Several of the species forage for insects by flying over clear-cut and burned forests as well as along streams and wetlands. The Marian Meadows site clear-cuts and open conifer forests are likely used by foraging bats.

Carnivores including black bear, cougar, coyote, bobcat, skunk, weasel, and raccoon are present in the project vicinity and may occur on the site. The mid- and large-sized carnivores have large home ranges and move throughout the region, including habitats on the opposite side of I-90 (see connectivity discussion below). Grizzly bear, gray wolf, pine marten, and fisher are mammal species with extremely large home ranges that could periodically use habitats in the project vicinity.

Mountain Goat: Mountain goats also occur in the project vicinity. The primary habitat requirement for mountain goat is rugged terrain, such as steep, rocky cliffs, rock pinnacles, ledges, and talus slides (Washington Nature Mapping Project 2008). Mountain goats typically use areas near treeline, but move to

lower elevation cliffs in winter. They also use conifer forest for cover and feed mostly on early successional vegetation in meadows and slides. The area immediately north and northeast of the Marian Meadows site is delineated as a regular concentration area (Kachess Lake Winter Range) for mountain goats as shown in Figure 3-42 (WDFW PHS digital data, October 19, 2010).

WDFW estimates the population in the Cascade Mountains declined from 8,500 animals in 1961 to about 2,500 in 2005 (excluding large populations within Mount Rainier National Park and Yakama Indian Nation lands, where no surveys were conducted). The predominant cause of this decline is likely the high level of harvest through hunting that began in the 1940s and peaked in the 1960s. However, despite an almost complete ban on hunting during the past two decades, recovery has not been apparent in most areas of the Cascades. In addition to the effects of past harvest, the modern landscape may also affect the viability of mountain goats in the Cascade Range. Numerous Forest Service roads, several major state highways, and one interstate highway now cross the range. Several ski resorts and residential areas have been developed near major passes, and timber harvest has altered montane forests surrounding alpine mountain goat habitat. This change in the landscape may reduce migration between habitat patches and fragment the population (Shirk 2009).

Rocky Mountain Elk: Elk (*Cervus elaphus*) are found in the general project vicinity. Both species occur on the project site at various times of the year. They are game species; with winter range and calving areas designated priority habitats by WDFW.

Elk are present in the area surrounding the Marian Meadows site throughout the year (Singleton and Lehmkuhl 1999). The level of elk and deer use in the project vicinity during winter months varies from year to year depending on snow accumulations. Raedeke Associates (2006) reported that deer and elk use of the Marian Meadows project site was moderately low. Residents of the area, however, report frequent elk use (Jensen 2007).

The Domerie Flats elk winter concentration area occurs in the project vicinity, extending from just within the eastern boundary of the Marian Meadows site, eastward along the Yakima River and to an area below Cle Elum Lake Dam, approximately 4 miles east of Marian Meadows (WDFW PHS digital data, June 20, 2008). Most use of the winter concentration area occurs along the Yakima River riparian area and near the Cle Elum River, where more than 100 elk congregate. The Marian Meadows property is at the edge of the wintering area and receive use primarily during migration periods and relatively mild winters. In very severe winters, the sub-herd may move farther south to a larger winter range area on Wenatchee Ridge above the Columbia River between Ellensburg and Wenatchee. As elk move between the Kachess Lake area and the Yakima River Valley, they pass through the flat, western portion of the project site, as well as the upper slopes and drainages.

Raedeke Associates (1999) conducted a radio telemetry study of nine elk in the Marian Meadows project area. In that study, elk made frequent use of the river valley bottom immediately south of the Marian Meadows project area during winter and summer periods. Some of the monitored elk moved between Kachess Lake and I-90, while others passed on the east side of the lake northeast of the Marian Meadows

site. Although Raedeke Associates (2006) reports that the 1999 telemetry showed that elk generally avoided the more developed areas surrounding the Marian Meadows project site, the 1999 radio telemetry data do include a number of "winter elk" and "summer elk" locations very close to the Marian Meadows site. Anecdotal information from local residences, including photographic evidence submitted with scoping letters, indicates that elk use the flat western portion of the property during the fall and winter, if snow is not too deep. Elk regularly move through remnant patches of habitat within the matrix of low-density residential development as they move to and from the Yakima River floodplain wintering areas during seasonal migrations. The degree to which elk can move through the residential area is limited by the presence of tall property fences and dogs at some of the properties.

The elk in the project vicinity are part of a sub-herd of the Colockum herd (WDFW 1997). The Colockum elk herd ranges over 1,600 square miles between the Columbia River and the Cascade crest and U.S. Highway 2 to the north and I-90 to the south (WDFW 2006). Generally, this sub-herd winters along the Yakima and Cle Elum rivers and has summer ranges near Kachess Lake and at higher elevations. Overall, the Colockum herd survey data suggest a declining elk population trend between 1995 and 2006 (Bernatowicz 2006). WDFW, however, has recently been managing this sub-herd with special harvests to control increasing numbers of elk in agricultural areas and more developed areas (Bernatowicz 2006).

Elk use of the project area depends in large part on the annual patterns of elk habitat use and movement between areas of concentrated use. The basic habitat needs of elk are food, water, and cover, water, and security. Foraging habitat consists of open habitats areas that contain 50 to 100 percent herbaceous vegetation (grasses, forbs, or legumes shrubs). Generally forage areas are preferred that are less than 600 feet from hiding cover. Hiding cover generally consists of dense vegetation that can conceal a full-grown animal. Thermal cover provides shade in the summer and provides for protection from wind chill in the winter.

Elk will move between these habitat areas of different habitat types in a given day depending on whether they are feeding, resting, or engaging in other activities. Elk also move between different habitat types at different times of year, remaining in higher-elevation areas during summer and moving to lower elevations during winter. Most elk migration through the site occurs when snow has accumulated at high elevations but remains relatively sparse in the valley bottoms. With the exception of females that are preparing to give birth, elk generally remain in groups throughout their lives. Human disturbance of elk can cause increased energetic demands, decreased reproductive success, increased predation, and the avoidance of habitats that would otherwise be utilized (Storlie 2006). Research on elk in other areas found that the negative impact of roads generally increases with increased human use (Wisdom et al. 2005a; Pedersen et al. 1980). The avoidance of roads in open habitat is greater than in forested areas. Powell and Lindzey (2003) found elk avoid areas within 1.2 miles of major roads in summer and 0.6 mile in winter in open habitat in Wyoming. Wisdom et al. (2005b) found that off-road vehicle use had the greatest negative impact on elk compared to other recreational activities. Disturbance of cows during

calving season has been shown to have a significant effect in reduced reproductive success (Phillips and Alldredge 2000). The project site and vicinity receives substantial off-road vehicle and snowmobile use. In response, elk may move more quickly through less desirable areas as they migrate to and from winter range areas.

Elk populations may be sensitive to the degradation of corridors that are used for movement between available habitat areas (Bernatowicz 2006). The disturbance from humans has the greatest potential for adverse effects on cows that are moving to calving areas during the northern movement in the spring, and on young calves in the southern movement in the fall. Solitary cows migrating to calving areas do not have the greater protection afforded by traveling with the herd and are therefore especially sensitive to the proximity of humans. Solitary cows and calves are also likely to be more vulnerable to harassment and predation from domestic dogs that are often allowed to roam freely in rural areas. Adult and juvenile male populations are likely to be less sensitive, or alternatively more adaptable.

Mule deer (*Odocoileus hemionus*) occur on the project site at various times of the year. Similar to elk, deer are a game species; winter range and fawning areas are designated priority habitats by WDFW. Little information is available on the historical or current condition of the deer range in the upper Yakima watershed. An increased incidence of fires and altered timber harvest practices have probably reduced woody browse since the 1980s. Residential development in prime winter range is adversely affecting the overall mule deer population in the region (WDFW 2007).

White-tailed deer (*Odocoileus virginianus idahoensis*) may also be present in the project area, but in much smaller numbers than mule deer (WDFW 2010). In eastern Washington, white-tailed deer typically occur in low-elevation stream and river corridors, in agricultural areas, and near populated places (WDFW 2004). None of the game management units immediately adjacent to the project area is managed for the hunting of white-tailed deer (WDFW 2010), which suggests a low likelihood of this species occurring in the area.

Wildlife Corridors: There are limited data on wildlife travel corridors in the Marian Meadows project vicinity. To assess the overall wildlife connectivity issues for the DEIS, biologists reviewed information from the WSDOT I-90 studies, an elk telemetry study completed for the Suncadia development (originally known as the MountainStar Resort) near Roslyn (Raedeke Associates 1999), and other literature.

The I-90 corridor presents a significant barrier to wildlife movement and results in numerous wildlife deaths from vehicle collisions. In addition, the checkerboard ownership pattern (alternating sections of federal and private ownership), increasing residential development, and historical timber harvests have created substantial barriers to movement and a general lack of habitat connectivity in the region. The I-90 corridor is widely considered to present a bottleneck for movement of terrestrial species in the Central Cascades.

In a collaborative study, WSDOT, along with the U.S. Forest Service, WDFW, USFWS, and various non-governmental organizations, have identified various "Connectivity Emphasis Areas" (CEAs) where WSDOT will improve terrestrial wildlife movement through the I-90 corridor between Snoqualmie Pass and Easton in conjunction with highway improvements. The Marian Meadows project site is located 1.2 miles east of the nearest I-90 CEA, which is located at Kachess River. Another CEA is on the Easton Hill portion of the highway, just west of the Kachess River CEA.

In the Easton Hill segment of I-90, elk road-kills were documented in all four seasons of the year in the 1990 to 1998 period (Singleton and Lehmkuhl 1999). These observations indicate that some elk regularly attempt to cross I-90 even though most often remain on one side of the highway. Between 1990 and 1998, there were no deer road-kills along I-90 near the project, because most deer had moved to the Cle Elum area (Singleton and Lehmkuhl 1999).

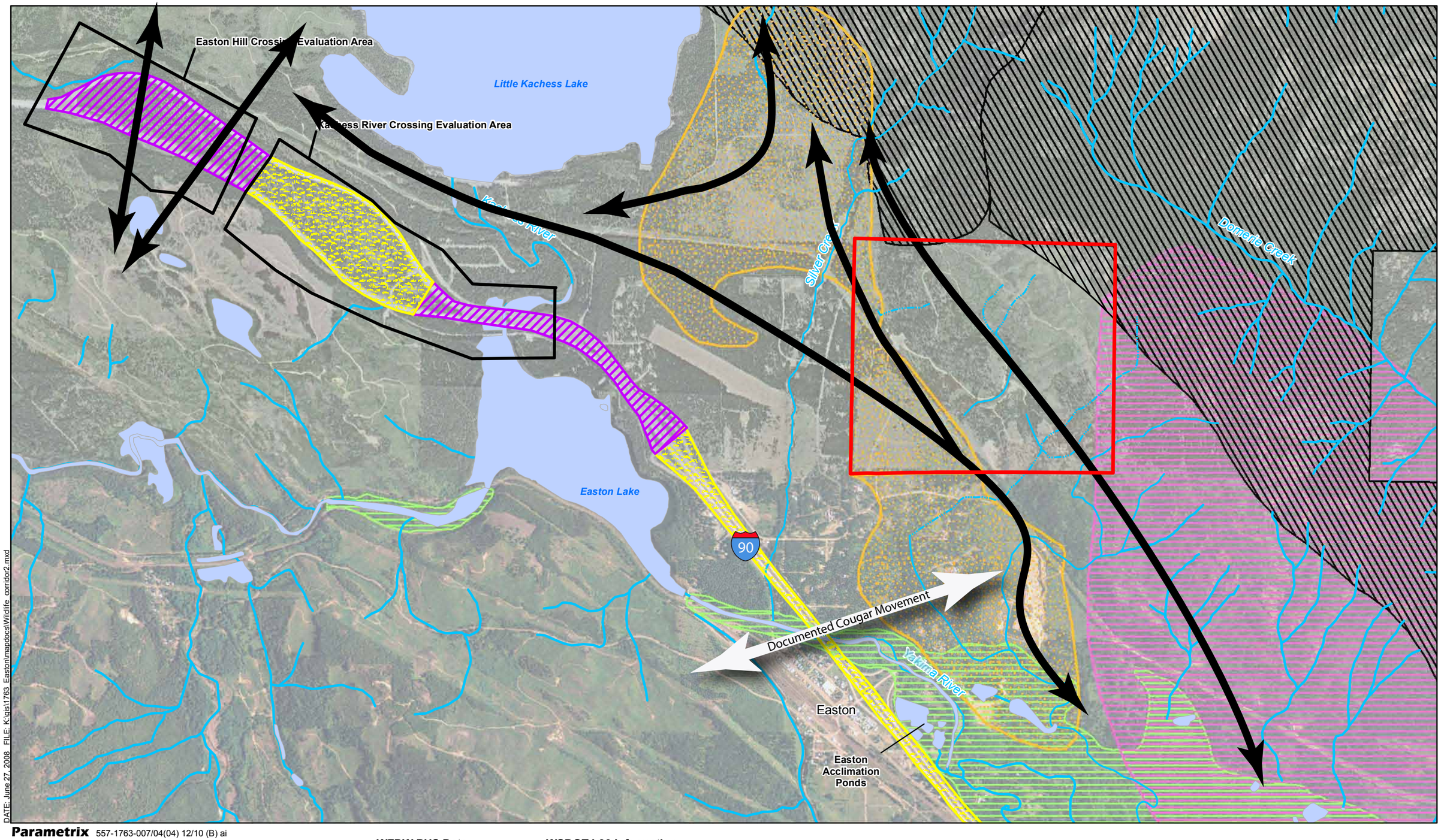
Raedeke Associates (1999) found that radio-telemetered elk (captured near Roslyn) generally made seasonal migrations along the north side of I-90 and along the Yakima River. The elk made substantial use of the river valley bottom immediately south of the Marian Meadows project area. In addition, the I-90 bridges over the Yakima River facilitate some elk passing between Kachess Lake and the south side of I-90. The existing I-90 bridge over the Kachess River near Exit 70 is a relatively poor corridor for wildlife movement because of the lack of cover. It is also subject to high levels of human disturbance from recreational use of Lake Easton. Singleton and Lehmkuhl (1999) reported that in the Yakima River Valley (primarily east of Easton Hill), human disturbance, development, and the presence of riparian cover serve to funnel animal movement.

Another indication that wildlife move through the project area is provided by data from studies of cougar (*Felis concolor*) movement. Maletzke et al. (2005) found that subadult cougars periodically cross I-90 south of the project area and regularly use habitats on and near the project site. Crossings of I-90 by bobcat, coyote, and black bear have shown some concentration west of the town of Easton (Singleton and Lehmkuhl 1999). They also found that five of six existing bridge underpasses are used by mule deer. A wide variety of small mammals have been documented moving across the I-90 corridor through the existing drainage culverts.

A corridor along the north side of the Yakima River that crosses the Marian Meadows project site is heavily used by a variety of wildlife, and particularly elk. This corridor is the only low-elevation wildlife movement corridor on the north side of the Yakima River in the project vicinity. It provides a connection between Wenatchee National Forest on the east side of Lake Kachess and the Cle Elum River approximately 7 miles to the south with a width that varies from one-quarter to three-quarters of a mile between the Yakima River and the steep slopes of Easton Ridge. Near the Cle Elum River, extensive areas of open space have been preserved as part of the Suncadia development to support wildlife habitat. Much of the corridor receives low levels of human disturbance because of the limited road access that crosses to the north side of the Yakima River. The corridor is largely free of development along its entire 7-mile length. There are currently nine residences within 500 feet of the corridor, all on 3- to 5-acre lots

and all within a mile of the Marian Meadows site. There is a large gravel quarry about one-half mile to the south near Exit 71. Elk not only pass through the site as they move between the Kachess Lake area and the Yakima River Valley. The flat western portion of the project site provides for easy unimpeded movement and provided limited areas of cover. There is informal survey evidence of elk bedding in the area in light snow cover. The upper slopes in the eastern portion of the site provides more extensive conifer forests and rocky slopes and allows for essentially unimpeded terrestrial wildlife movement but its use is more limited by snow accumulation. Based on the available data, a generalized depiction of big game ranges and movement corridors is presented in Figure 3-42.

Alternative corridors are available on the south side of the Yakima River, but they require crossing of I-90, the Yakima River, or both. The portion of the I-90 corridor immediately south of the Marian Meadows project site is not readily crossed by deer, elk, and other large mammals (Singleton and Lehmkuhl 1999). The high rate of road kill on I-90 nearby, west of the Kachess River, suggests that animals are currently funneled into that area, where they may be struck by vehicles while crossing the highway. Another factor that reduces the potential effectiveness of a travel corridor south of I-90 near the project site is the high level of residential development. WSDOT has identified a CEA for future improvements of terrestrial wildlife movement across the I-90 corridor at the Kachess River and Easton Hill, just west of the Kachess River.



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Scale in Feet

WFDW PHS Data

- Mountain Goat Habitat
- Elk Winter Range
- Upper Yakima Riparian Area

WSDOT I-90 Information

- Area with High Elk/Deer Roadkill
- Area with Moderate Elk/Deer Roadkill
- Crossing Evaluation Areas
- Project Site
- Area of Fall and Early Winter Elk Use
- Lake
- Intermittent Stream
- Perennial Stream

Figure 3-42
Marian Meadows
Wildlife Use and Corridors

3 What federal and state threatened, endangered, and candidate species, and species of concern occur in the project area?

The USFWS (2008) lists 10 fish, wildlife, and plant species that are endangered, threatened, or candidates for listing under the Endangered Species Act (ESA) (16 United States Code [USC] 1531 et seq.; 50 CFR 402) that occur in Kittitas County (Appendix A). None of these federally listed or candidate species have been documented in the project area. Several of these species may occur in suitable habitat on adjacent lands managed by the U.S. Forest Service. The following paragraphs describe the potential occurrence and habitat associations of threatened and endangered wildlife species that may occur in the project vicinity. Additional information about these species is available in Appendix A.

What is the Endangered Species Act?

The Endangered Species Act of 1973 provides for the conservation of species that are endangered or threatened throughout all or a significant portion of their range, and the conservation of the ecosystems on which they depend (NOAA 2008).

In addition to the 10 federally listed or candidate species, 39 other species that are state endangered, threatened, sensitive, and candidate species potentially occur in the project vicinity (Appendix A, Table A-3).

Bull Trout: The bull trout is listed as threatened under the ESA and is a candidate for listing as a state endangered, threatened, or sensitive species. Bull trout are found in the Yakima River, Kachess River, and Kachess Lake (Salmonscape 2008). The USFWS has designated the Yakima, Kachess, and Cle Elum rivers, as well as Keechelus, Kachess, and Cle Elum lakes as critical habitat for bull trout (USFWS 2002). No bull trout are known to enter Silver Creek or the unnamed stream that drains the eastern portion of the project site and enters the Yakima River 1.7 miles downstream in the vicinity of the Easton Ponds.

Gray Wolf: The gray wolf is listed as endangered under the ESA in Washington State and is on the state list of endangered species. Wolves occur in remote areas with low human disturbance and adequate amounts of prey. The species may be recolonizing the Cascade Mountains. A pack with pups was discovered in July 2008 in western Okanogan and northern Chelan counties and represents the first fully documented breeding by wolves in the state since the 1930s (WDFW 2008). It is possible that the gray wolf may occur in the project vicinity on an infrequent basis because packs can have territories of up to 350 square miles. The high level of human activity in the project vicinity would likely prevent wolves from using the site.

Grizzly Bear: The grizzly bear is listed as threatened under the ESA in Washington State and is on the state list of endangered species. Grizzly bears use a wide variety of habitats in areas with low levels of human disturbance. Suitable habitat occurs throughout the Cascade Mountains north of Snoqualmie Pass, but most sightings have been in the North Cascades and northeastern Washington. One observation occurred in 1994 approximately 4 miles north-northwest of the Marian Meadows property (WDFW PHS

June 20, 2008). However, the existing level of development and human disturbance in the area precludes regular use of the project site and surrounding areas.

Canada Lynx: The Canada lynx is listed as threatened under the ESA throughout the contiguous United States and is on the state list of threatened species. Lynx are primarily found in high-elevation forests of north central and northeast Washington, primarily in Okanogan, Chelan, Ferry, Stevens, and Pend Oreille counties (Stinson 2001). Lynx rely on a mosaic of dense, early successional forest (which provides foraging habitat) and older forests with large woody debris (which provide den sites). Based on the absence of these habitat elements, along with the low elevation and distance from known areas of lynx use, the Marian Meadows project area is not likely to support Canada lynx.

Fisher: The Pacific fisher is a candidate for listing under the ESA and is on the state list of endangered species. Fishers are associated with dense coniferous forest with large amounts of snags and logs. Between 1955 and 1999, there were three observations of fishers in counties bordering Kittitas County (Raedeke Associates 1999). With the existing level of development, past timber harvest, and human activity in the project vicinity, the Marian Meadows site does not likely provide suitable fisher habitat.

Marbled Murrelet: The marbled murrelet is listed as threatened under the ESA and is on the state list of threatened species. Marbled murrelets are seabirds that depend upon old-growth forests, or forests with an older tree component, for nesting habitat (Hamer and Nelson 1995; Ralph et al. 1995). The nearest observation of marbled murrelets during the breeding season occurred near Snoqualmie Pass, approximately 14 miles from the project area. There is no suitable nesting habitat on or near the Marian Meadows site.

Northern Spotted Owl: The northern spotted owl is listed as threatened under the ESA and is on the state list of endangered species. Spotted owls use structurally diverse, coniferous forests with dense canopy cover, large trees, snags, and logs. These conditions are typically found in old-growth forest, but spotted owls in the eastern Cascades have been observed using smaller trees and more open stands. The nearest known spotted owl activity site is approximately 2 miles northeast of the Marian Meadows site. The USFWS has designated critical habitat for spotted owls in Kittitas County but the project site is not within the mapped area.

What are Priority Species?

Priority species are those fish and wildlife species that require special efforts to ensure their survival because of their low numbers, sensitivity to habitat alteration, tendency to form vulnerable aggregations, or because they are of commercial, recreational, or tribal importance. The WDFW is responsible for priority habitats and species in Washington and provides information on their website: http://wdfw.wa.gov/hab/phspage.htm.

4 State Listed and Priority Habitats and Species

State-listed species are those native fish and wildlife species legally designated as endangered (WAC 232-12-014), threatened (WAC 232-12-011), or sensitive (WAC 232-12-011). State candidate species are those fish and wildlife species that will be reviewed by WDFW for possible listing as endangered, threatened, or sensitive. Collectively, these species along with all federally listed or candidate species are

state species of concern. The state species of concern listed in Appendix A have general distributions that overlap the project area.

Priority habitats are habitat types or elements with unique or significant value to a diverse assemblage of species. WDFW (2008) identified one priority habitat area near the Marian Meadows site. This is the Upper Yakima riparian area—an area of floodplains and wetland complexes along the Upper Yakima River approximately 0.5 mile south of the project site. WDFW (2008) reports that this area is used by beavers, wintering bald eagles, and big game.

5 What policies and standards apply to aquatic and terrestrial habitat?

The GMA directs cities and counties to designate critical areas (RCW 36.70A.170) and adopt development regulations that protect critical areas (RCW 36.70A.060). Critical areas include fish and wildlife habitat.

Kittitas County has adopted the following general goals, policies, and objectives:

Wetlands

Wetlands play a significant role in the reduction of water pollution, erosion, siltation, and flooding, and provide significant wildlife, fisheries, and plant habitats; their destruction or impairment may result in increased public and private costs or property losses.

GPO 2.54 Kittitas County should accept landowner claims that a defined wetland is artificial unless the determining regulatory agency deemed otherwise based on the I-V tiered wetland rating system outlined in this policy document.

Fish and Wildlife Habitat Conservation Areas

Habitat conservation areas contain habitat for migrating waterfowl, game and food fish, and species that are threatened or endangered, and provide for greater species diversity. These areas provide recreational resources and more stable ecosystems. Their disturbance could result in irreversible loss of important habitat and species diversity and therefore loss of economic resources. The intent is to maintain species in suitable habitats within their natural geographic distribution to prevent the creation of isolated sub-populations.

Habitat Conservation

GPO 2.86 Matching conservation moneys - When available, matching conservation moneys should be offered to all landowners on a first-come, first-serve basis for the purpose of maintaining and enhancing wildlife and its habitat in Kittitas County.

GPO 2.87 The Washington State Department of Fish and Wildlife should offer educational programs to the general public so that taxpayers and landowners may better understand the many benefits that wildlife provides.

GPO 2.88 Kittitas County expert technical help should be available to those wishing to develop land that contains, or potentially contains any of the various critical areas defined by these definitions.

GPO 2.89 Information and regulations should be understandable by citizens. (a) An inventory of available information shall be prepared and maintained which shows the location of Fish and Wildlife Habitat and Conservation Areas and this information shall be made available to the landowners at the Planning Department. (b) Planning staff shall prepare materials, which enable citizens to clearly understand the location of critical areas on and adjacent to their property.

Habitat of Local Importance

GPO 2.90 It shall be the policy that the Kittitas County Board of Commissioners shall carefully consider each nomination separately and only within the public hearing process.

GPO 2.91 The County shall encourage economically feasible incentives for the protection and enhancement of designated Habitats of Local Importance.

6 What effects on wildlife and fish would occur during construction?

Road construction and excavation for water and sewage infrastructure would occur during infrastructure construction. Equipment noise and human activity associated with these activities would likely result in the displacement of some animals from suitable habitat within and adjacent to the project site. Construction activities would be temporary; however, the extent to which productive habitat would persist would vary by alternative.

No streams occur on the western portion of the site, therefore, no effects on fish or aquatic resources are anticipated during the infrastructure construction. Given the flat nature of the western portion of the site and the generally high rates of infiltration, movement of sediment to Silver Creek would occur only if construction activities leave earth exposed to erosion during periods of very heavy rainfall, snowmelt, or rain-on-snow events. If construction activities take place during such periods, best management practices would be necessary to minimize the risk of increased sediment delivery.

7 What permanent effects on wildlife and fish would result from the proposal and alternatives?

Impacts Common to All Alternatives: Conversion of existing habitat to areas of human development would occur under all alternatives. Immediately following the rezone and preliminary plat, habitat conditions on almost all portions of the Marian Meadows site would be similar to current conditions. Except in areas that have been converted to road surface, existing vegetation would continue to provide habitat for wildlife species that are present in the area. Areas of standing or flowing water on the site would continue to provide habitat for amphibian species. No fish habitat has been documented on the

site. Changes in land cover conditions, however, may influence habitat conditions in fish-bearing streams nearby.

Over time, however, residential development and increased human presence would reduce the amount of suitable habitat for many species, as well as the quality of remaining habitat. Reduced habitat quality and quantity may lead to increased conflicts between humans and wildlife in the project area. For example, there may be elevated incidences of deer browsing on ornamental vegetation and gardens and predation by coyotes and other carnivores on domestic animals. Predation by carnivores on humans has not been a substantial issue in Western Kittitas County, although cougars attacking humans in California has been widely reported in the press.

As residential development occurs under any of the alternatives, land surface that currently supports forest and shrub vegetation would be converted to housing, roadways, and lawns or other ornamental plantings with reduced structural diversity. Use of the site would change from the current pattern of occasional daytime recreational use to one of residential use; human activity would become a permanent feature of the landscape instead of a temporary interruption.

Animals that currently use the Marian Meadows site would be displaced into suitable habitat in adjacent areas, resulting in potential conflicts with animals already in those locations. Small mammal populations would decrease due to habitat loss, pest control, and the predatory behavior of household pets. Birds and mammals that rely on small mammals as prey would in turn be displaced from the site. Many songbird species are highly mobile and would continue using portions of the site where suitable nesting or foraging habitat persists.

Under all alternatives, the presence of residences with associated clearing of vegetation and introduction of noise, light, and domestic animals would discourage elk and other sensitive species such as mule deer from using the site. The likely continued use of the site for off-road vehicle use would further curtail habitat use. White-tailed deer, which are less sensitive than mule deer or elk to human disturbance, may become a nuisance due to foraging patterns that utilize ornamental plantings and vegetable gardens. Mountain goats may respond to increased human presence by decreasing their use of habitat in the northeast corner of the site. No development, however, is proposed in areas with high levels of goat use under any of the alternatives. The extent to which elk would continue to use the site as a migration corridor for movement between the summer habitat to the north and winter range along the Yakima and Cle Elum rivers is dependent on the amount, proximity and character of human disturbance likely to associated with each of the alternatives. With residential development on the site, the BPA transmission line corridor through the site would likely be the main corridor for movement. Elk can tolerate some human disturbance during migration and may adjust to disturbance by moving quickly through the Marian Meadows property during periods with low levels of human use, such as at night or in the early morning. Most elk migration through the site occurs when snow has accumulated at high elevations but remains relatively sparse in the valley bottoms. Much of the migration period, therefore, may not coincide with the winter off-road vehicle season because snow cover at the Marian Meadows site may not

be sufficient for snowmobile use. The proposed residential use of the site, however, may curtail access to high-elevation habitats to the west until later in the season when migration corridors at higher elevations become open due to snow melt. The degradation of corridors for movement between available habitat areas may contribute to overall trends of elk population decline (Bernatowicz 2006). The disturbance from humans is likely to most severely impact calving cows during the northerly movement in the spring and affect young calves in the southerly movement in the fall. Solitary cows and calves also would be more vulnerable to harassment and predation from domestic animals.

If the use of the corridor on the north side of the Yakima River that passes through the Marian Meadows site is reduced substantially from existing patterns, there are not alternative low-elevation routes available on the north side of the Yakima River. Other routes on the north side of the river are more limited by steep terrain and more likely to be impeded by snow cover.

Elk and other large mammals can use alternative corridors on the south side of the Yakima River that require crossing of I-90 and the Yakima River. Under current conditions, I-90 is a major barrier to wildlife movement from the north to the south. The existing bridge that carries I-90 over the Kachess River is a relatively poor corridor for wildlife movement because of the lack of cover. It is also subject to high levels of human disturbance from recreational use of Lake Easton. West of the Kachess River, there is currently substantial road kill from animals crossing the highway. That likely would increase substantially and would be likely to affect calves most seriously. In the future, after WSDOT develops wildlife crossings at the Kachess River and Easton Hill CEAs,, animal movement would be facilitated, but some animals would likely continue to cross the highway at other locations, leading to increased mortality. The potential corridor along the south side of I-90 is less effective for wildlife movement because it is subject to higher levels of human disturbance from almost continuous existing residential development along its north side, which together with local roads and railroads, also blocks wildlife access to preferred riparian habitat along the river.

Impacts on aquatic habitat may occur from reduced canopy cover that may modify the amount and timing of spring snowmelt flow in the swale that passes through the center of the preliminary plat area. Peak runoff volumes may become greater, because more snow would fall to the ground instead of being intercepted by foliage. With fewer trees providing shade, snowmelt would occur more rapidly and would likely occur over a shorter time period. Compared to current conditions, briefer, heavier flows would be more likely to carry sediment from the Marian Meadows site and deliver it to nearby waterbodies. Excess sediment that reaches fish-bearing waters may interfere with the ability of fish to spawn, rest, or forage. The nearest fish-bearing stream, Silver Creek, is separated from the Marian Meadows site by more than 1,000 feet of flat ground, most of which has dense forest vegetation. Runoff from the project site is unlikely to enter Silver Creek. Similarly, the Yakima River is more than 3,000 feet from the project site; fish habitat conditions in the Yakima River are also unlikely to be affected by residential development at the project site. Water withdrawals for residential use may have long-term cumulative impacts on summer low flows in the Yakima River that may adversely affect a variety of aquatic species.

Alternative 1, the applicant's PUD proposal with 443 units, would result in residential development throughout the site, with attendant effects on wildlife species and habitat. The flat, western portion of the site would be divided into approximately 225 individual lots. The eastern portion of the site (except for the highest-elevation areas in the northeastern corner) would also be converted to residential use, although with larger lot sizes. Wetlands and stream corridors on the site would become isolated and fragmented and lose much of their habitat value. Wildlife would be affected as follows:

- The amount and quality of habitat used by wildlife for food, cover, and security no longer would be available on virtually the entire site, except at the far northwest corner where topography and land cover is not as conducive to habitat quality for most species except for mountain goats. In addition to direct displacement, habitat value throughout the site would also be reduced by increased levels of human activity, noise, and the presence of domestic animals.
- The intensity of residential use would substantially impair migration of large mammals such as elk and mule deer. Residences would create substantial sources of disturbance from noise, lights, and animals such as dogs. The corridor for elk movement between summer and winter ranges along the north side of Yakima River would be substantially impeded throughout the property. The relatively narrow 350-foot-wide BPA transmission line easement corridor would be bounded on the southwest side by 32 lots of about four-tenths of an acre in size and generally 150 feet deep. Lots of this size in the area are generally substantially cleared. It is unlikely that the dense vegetation that currently exists at the margins of the BPA easement would be retained. On the opposite side, the north 1,600 feet of the northeast side of the easement would be bounded by an additional 4 lots about 200 feet deep, which would further constrain the corridor and introduce residential disturbance on both sides. Residences would create substantial sources of disturbance from noise, lights, and animals such as dogs.
- The location of a mini-storage development along the east side of the BPA easement would place a driveway and 200 to 300 storage units in 15 or 16 units along the balance of the easement. This would eliminate the existing native vegetation buffer and expose animals to disturbance from vehicles, persons, security lights and noise in close proximity. The narrow width of the flat area between the BPA easement and the steep slopes to the east does not allow the potential for providing an effective vegetation buffer of 50 to 100 feet if the current mini-storage layout were relocated on the same site. The high level of human presence on the corridor that passes through the Marian Meadows site is likely to substantially reduce use of the entire 7.5-mile wildlife corridor on the north side of the Yakima River.
- The residential development on the upper eastern portion of the site would leave no open space corridor that would accommodate the movement of large animals such as elk. Movement of animals sensitive to human disturbance would be almost entirely blocked.
- The northeastern corner of the site would be retained as open space managed for forestry. Mountain goats would be expected to continue to use suitable habitat in this portion of the site,

although proximity impacts such as noise and light from residential development on the lower portions of the site may cause goats to avoid this habitat. This area has little potential for use by elk as a migration corridor because of its elevation and steep terrain.

Tenure scenarios would not make a substantial difference to the anticipated impacts, except that a large proportion of recreational users may reduce proximity impacts on weekdays or seasons when they are less likely to be present.

Alternative 2, full PUD density on the western portion of the site with up to 443 units, would reduce the total area subject to residential development to about half that of Alternative 1 but the area developed would be more intensive. Development would not occur in the steep eastern portion of the site. In the western portion of the site, residential development would be excluded from the Easton State Airport Safety Zone and the area of geological hazards associated with the alluvial fan and conveyance for debris flows. Because of the inclusion of multi-family housing, the total number of residents would be the same, but the area of greatest habitat modification and permanent human presence would be smaller. Mini-storage use is presumed on the eastern side of the BPA easement.

- The habitat used by wildlife for food, cover, and security would be effectively eliminated on the western portion of the site.
- The steep, eastern portion of the property that would be retained in resource use with forest practices would continue to be available for habitat. Forest practices occurring on a rotation of once every few decades would allow substantial wildlife use. Similar to current conditions, episodes of increased human presence and associated disturbance would be occasional, rather than the permanent presence that would occur with residential development. The steeper eastern portion of the site would continue to provide potential wildlife habitat for a variety of species. The upper steeper areas used by mountain goats would be disturbed less by clearing and proximity impacts from residential development. The steep terrain in that part of the site, however, makes it a less productive habitat area for species other than mountain goats.
- The migration corridor through the bench area would not be obstructed. Human disturbance for forest practices would occur on the cycle of one a decade or less and would have only temporary impacts on habitat, although the structure of vegetation would change and affect species use. Some disturbance could be expected from recreational activities, but at a much lower intensity than from residential use.
- The potential use of the BPA transmission line easement on the lower portion of the site as a migration corridor would be diminished similarly to Alternative 1. It would be bounded by the same configuration small lots on the southwest side and the same mini-storage use on the northeast side, resulting in similar proximity impacts. Part of the southeast portion of the corridor would be left in open space as part of the conveyance area for debris flow events, but the

presence of the mini-storage on the opposite side of the corridor would be a substantial source of disturbance that would result in a similar level of disturbance and a similar impediment to animal movement.

- Tenure scenarios would not make a substantial difference to the impact, except that a large proportion of recreational users may reduce proximity impacts on weekdays or seasons when they are less likely to be present.

Alternative 3A, No Action with Uniform 3-Acre Lots, with up to 147 lots would result in substantially less residential development than Alternative 1 or 2. The flat, western portion of the site would be divided into approximately 40 to 50 lots. This alternative presumes the mini-storage use would not be developed. Similar to Alternative 1, no portions of the site would be set aside as open space for forest production or to avoid the Easton State Airport Safety Zone or geological hazard areas. Most of the Marian Meadows site would be subject to habitat modification and human disturbance, but the intensity would be lower than under Alternative 1 or Alternative 2. The wetlands and stream corridors would have fewer lots in proximity and would be less isolated and fragmented compared to Alternative 1. Habitat value for species sensitive to human disturbance would be reduced compared to current conditions, but to a lesser extent than under Alternative 1 or Alternative 2.

- The intensity of human use along the BPA transmission line corridor and associated impacts on wildlife movement would be lower compared to Alternative 1 due to the presence of 17 lots on the southeast side of the corridor compared to the 32 in Alternative 1 The reduction in number of lots would reduce the amount of disturbance from visibility, noise, light, and domestic animals. In addition, the size and configuration of the lots would provide the potential to locate sources of disturbance farther away from the corridor. The depth of the lots along the BPA easement allows for the implementation of mitigation measures in the form of a permanent buffer of native vegetation at least 100 feet deep, which would screen structures and lights and lead to reduced proximity impacts.
- Lots on the east side of the BPA transmission line corridor would be accessed from the road at the upper end of the parcel, and therefore the potential for an unconstrained open space corridor for wildlife movement would extend east to the base of the slope and generally would be between 500 and 900 feet wide. (Mini-storage use is not presumed in this alternative.)
- The most constrained portion of the wildlife corridor in the northern portion of the site would have lots on both sides for about 1,600 feet, but would be bounded by fewer lots with sufficient lot depth to provide the potential for native vegetation buffers on both sides. The corridor would be more effective for animal movement if fencing were prohibited within and east of the BPA transmission line corridor to allow unrestricted north-south movement.
- Wildlife use of the potential migration corridor through the upper portion of the site would be impaired by subdivision into large lots because a continuous open space corridor would not be

provided. Species that are less sensitive to human disturbance, such as white-tailed deer, may become acclimatized to the human presence in the area, but elk and mule deer are likely to avoid the area. Tenure scenarios would not make a substantial difference to the impact, except that a large proportion of recreational users together with large lots may reduce proximity impacts on weekdays or seasons when they are less likely to be present. This alternative would have less impact on wildlife than Alternative 1, largely because some habitat value would be retained on large lots and because fewer lots would result in less proximity impacts.

Alternative 3B, No Action with 3-Acre Lots with Exclusions but with the mini-storage use on the northeast side of the BPA corridor, would result in substantially greater impacts to wildlife movement along the BPA transmission line corridor than Alternative 3A. Similar to Alternative 3A, effects related to the intensity of residential development would be lower than under Alternative 1 or Alternative 2. The location of a mini-storage development along the BPA easement, however, would be expected to cause disturbance and impede use of the transmission line corridor, with effects similar to those described for Alternative 1. Impacts on habitat and animal movement on the eastern portion of the site would be similar to those described for Alternative 3A.

Tenure scenarios would not make a substantial difference in anticipated impacts, except that a large proportion of recreational users together with large lots may reduce proximity impacts on weekdays or seasons when they are less likely to be present. This alternative would have less impact on wildlife than Alternative 1 or Alternative 2, largely because some habitat value would be retained on large lots and because fewer lots would result in less proximity impacts.

Alternative 3C, No Action with 3-Acre Lots Excluding the Eastern Portion of the Site, with about 33 lots 3 acres in size on only the flat, western portion of the site but without the mini-storage use on the northeast side of the BPA corridor, would result in substantially less impact to wildlife habitat than any of the other alternatives. As with Alternative 2, the steep, eastern portion of the property would be retained in resource use with forest practices occurring on a rotation of once every few decades. This area would continue to provide potential wildlife habitat for a variety of species, primarily mountain goats. Effects on wildlife movement along the BPA transmission line corridor and in the eastern and upper portions of the site would be similar to those described for Alternative 3A.

There would be no lots on the east side of the BPA transmission line corridor, so animals using the corridor would have unimpeded access to suitable habitat and potential movement corridors to the east and north. Four lots would span the corridor at its northern end. Migrating animals would be able to avoid these parcels by detouring through areas that would remain undeveloped to the east and north.

Tenure scenarios would not make a substantial difference in anticipated impacts, except that a large proportion of recreational users together with large lots may reduce proximity impacts on weekdays or seasons when they are less likely to be present. This alternative would have less impact on wildlife than

Alternative 1, largely because some habitat value would be retained on large lots and because fewer lots would result in less proximity impacts.

Alternative 3D, No Action with 5-Acre Lots in ASZs in most of the eastern portion and throughout the western portion of the site but without mini-storage use on the northeast side of the BPA corridor, would result in development-related impacts to wildlife habitat similar to those described for Alternative 3A and Alternative 3B. The larger lots and concomitant lower density of development would result in a lower degree of effects, compared to those two variants of the No-Action Alternative. Similar to Alternative 3A and Alternative 3C, there would be no effects related to the development of mini-storage along the BPA corridor.

Tenure scenarios would not make a substantial difference in anticipated impacts, except that a large proportion of recreational users together with large lots may reduce proximity impacts on weekdays or seasons when they are less likely to be present. This alternative would have less impact on wildlife than Alternative 1, largely because some habitat value would be retained on large lots and because fewer lots would result in less proximity impacts.

Alternative 4, PUD with Reduced Density on the Entire Site and about 147 lots, would result in the development of fewer residential lots than either Alternative 1 or 2. Mini-storage use would not be placed along the BPA corridor but could be relocated to ASZ 4. Similar to Alternative 2, no development would occur in the Easton State Airport Safety Zone or in geological hazard areas. Average lot sizes would be larger than under Alternative 1 or 2, resulting in lower human population density. In the long term, some habitat loss and species displacement would occur in the eastern portion of the site, but this would be limited to a smaller area than under Alternative 1 or 3. The wetland area on the upper portion of the site and the most sensitive stream corridors would be retained in open space, resulting in less habitat fragmentation in those areas. The steep terrain in the eastern part of the site, however, makes it a less productive habitat area and limits its effectiveness as a migration corridor.

Compared to Alternative 1, the BPA transmission line corridor on the lower portion of the site would function more effectively as a migration route because it would be:

- Bounded by fewer lots.
- A wider corridor would be provided within the alluvial fan and rockfall hazard areas in the south-central portion of the site that would be left as an open space area.
- The mini-storage use would not be located on the east side of the corridor.

All of these factors likely would reduce the proximity impacts from noise, light, and domestic animals. The potential for the BPA transmission line corridor to be used as an elk migration route would be much greater than under Alternative 1 or 2 and probably less than under Alternative 3. Habitat use on the upper, eastern portion of the site would be greater than under Alternatives 1 and 3 but less than under

Alternative 2. The habitat value of the western part of the site would be similar to Alternative 2, depending on the use of the open space areas. The upper portions of the eastern part of the site would remain undeveloped, but these areas have less value for wildlife habitat and wildlife movement.

Alternative 5, PUD with All Development Clustered on the Western Portion of the Site with about 113 lots, would result in the development of the second-fewest residential lots of all the alternatives. The amount of area in which development would occur would be similar to Alternative 2, but the density of development would be similar to Alternative 4. The eastern portion of the site would be retained as open space. Similar to current conditions, episodes of increased human presence and associated disturbance would be occasional, rather than the permanent presence that would occur with residential development. The steep terrain in the eastern part of the site, however, makes it a less productive habitat area and limits its effectiveness as a migration corridor. Habitat use in the upper, eastern portion of the site would likely be similar to that expected under Alternative 2.

The configuration of lots adjacent to the BPA transmission line corridor on the lower portion of the site would be the same as under Alternative 4. For the reasons identified above, therefore, the corridor would function somewhat more effectively as a migration route than under Alternative 1 or 2, and probably somewhat less effectively than under Alternative 3A, 3C, and 3D.

8 What are the likely cumulative impacts with development of nearby land at densities similar to the proposal?

Subdivision of parcels large enough to accommodate 3-acre lots (excluding the airport) could create an additional 130 lots for a total of about 330 lots in the area outside Marian Meadows. The majority of these new lots would be located south of Sparks Road where existing lots are larger, including several parcels 10 acres and larger.

If development reflecting this density of the PUD development were applied to the area as a whole, most of the existing parcels larger than 2 acres could be subdivided. Subdivision of eligible parcels (excluding the airport) into parcels 3-acres in size could create an additional 570 lots in the area for a total of about 700 future residences outside Marian Meadows. These lots would be spread throughout the area because many of the existing 3- to 5-acre lots could be further divided.

Under either of these cumulative impact scenarios, anticipated future development in the vicinity of the Marian Meadows site would contribute to further losses of wildlife habitat, potential degradation of fish habitat, and increased levels of human disturbance. Increased density of residential development in the upper Yakima River Valley floodplain would further constrain the movement of elk and other large mammals through the area, presenting barriers to movement between summer and winter habitat areas.

9 What measures could reduce the effects of the proposal and alternatives on aquatic species, and terrestrial wildlife species and habitat?

Measures that could be taken to reduce the impacts on aquatic and terrestrial wildlife species and their habitats are as follows:

1. Habitat values can be enhanced by vegetation management plans for the site that provide a range of forage types and habitat niches for a variety of species, rather than managing for a monoculture of marketable evergreen species.

2. Mitigation for animal movement, specifically movement of elk between summer forage areas at higher elevations to the west and winter concentration areas to the east, could be provided by:

    a) Providing wider corridors for movement through the site. The area extending from the BPA transmission line corridor to the foot of steep slopes east of the corridor may be considered a reasonably effective corridor if open space to the north and south is preserved. The retention of open space in the eastern portions of the site may contribute to animal movement, but the steep terrain in this area limits its effectiveness as a travel corridor.

    b) Limiting the number of residences adjacent to the migration corridor would reduce proximity impacts associated with noise, light, and disturbance by domestic animals.

    c) Preserving and enhancing buffers with 100 feet or more of dense native evergreen vegetation between development and the migration corridor would reduce the proximity impacts.

    d) Prohibiting off-road use of the migration corridor during times when elk are likely to be using the migration corridor would reduce the impacts of human disturbance.

    e) Prohibiting the construction of fences within and east of the BPA transmission line corridor.

3. If construction activities take place during periods of heavy rainfall or snowmelt, the potential for sediment delivery to off-site fish-bearing streams should be minimized through the implementation of best management practices, such as silt fencing.

4. An unrelated project that will affect habitat productivity in the vicinity is the WSDOT proposal to install several new bridges and culverts designed to reduce barriers to wildlife travel as part of the I-90-Snoqualmie Pass East widening project. When the first portion of the project (from Hyak to Keechelus Dam) is complete (projected for 2015), wildlife habitat on either side of I-90 will be reconnected, possibly creating new opportunities for travel between summer and winter habitat areas. When funding becomes available, WSDOT is expected to design and construct the remaining 10 project miles from Keechelus Dam to Easton, which will enhance wildlife movement in the vicinity of the Marian Meadows proposal.

4. REFERENCES

Adams, J. 1990. Paleoseismicity of the Cascadia subduction zone: Evidence from turbidities off the Oregon-Washington Margin. Tectonics 9,569-583.

Appleyard, Donald. 1963. The View from the Road. MIT Press. Cambridge, Massachusetts.

AWE. 2009. Alliance for Water Efficiency, Water Efficient Indoor Products and Systems - Mandatory Reqs and Voluntary Initiatives Available online at http://www.allianceforwaterefficiency.org/Water_Conservation_Programs_Library_Content_Listing.aspx

Bakun, W.H., Haugerud, R.A., Hopper, M.G., Ludwin, R.S. 2002. The December 1872 Washington State Earthquake: Bulletin of the Seismological Society of America. Vol. 92, No. 8, pp. 3239–3258, December 2002.

Barksdale, R. D., editor, 1991, The aggregate handbook: National Stone Association, 1 v.

Bernatowicz, J. 2006. Washington State Elk Herd Plan: Colockum Elk Herd. WDFW. Olympia, Washington.

BirdWeb. 2008. Available online at: http://birdweb.org/Birdweb/bird_details.aspx?id=239#wa_map. Accessed June 11, 2007.

BPA (Bonneville Power Administration). 2000. Supplement Analysis for Yakima Fisheries Project. DOE/EIS-0169-SA-03). Available online at: http://www.efw.bpa.gov/environmental_services/Document_Library/Yakima_Fisheries/SA_03Research.pdf

Caltran. 2002. California Airport Land Use Planning Handbook State of California Department of Transportation Division of Aeronautics January. Prepared by Shutt Moen Associates. Available online at: http://www.dot.ca.gov/hq/planning/aeronaut/documents/ALUPHComplete-7-02rev.pdf

Cheney, E.S. 1999. Geologic map of the Easton area, Kittitas County, Washington. Washington State Department of Natural Resources, Open File Report 99- 4, 11 p. scale 1:31,680.

Cheney, Eric S. Geologic map of the Easton area, Kittitas County, Washington. Scale 1:31,680. Washington Division of Geology and Earth Resources, Open file report no. 99-4, pub. 1999. OCLC #44534616. Olympia, Washington.

Coombs, H.A., Milne, W.G., Nuttli, O.W., Slemmons, O.W. 1976. Report of the Review Panel on the December 14, 1872 earthquake. December 1976.

CSPE (The Center for Public Safety Excellence, Inc.). 2008 (CPSE). Standards of Response Coverage. Available online at http://publicsafetyexcellence.org/BestPractices/tabid/60/Default.aspx

Dana, Gene. 2008. Kittitas County Sheriff, personal communication July 23, 2008.

Decker, D.J., and K.G. Purdy. 1988. Toward a Concept of Wildlife Acceptance Capacity in Wildlife Management. Wildlife Society Bulletin 16:53-57.

DOH (U.S. Department of Health). 2004. Small Water System Plan Template (DRAFT), Kittitas County Water District #3. Washington Department of Health. 377 pp.

DOH. 2007. Washington Department of Health, Recommended Standards and Guidance for Performance, Application, Design, and Operation & Maintenance Sand Lined Trench Systems July 2009 Available online at http://www.doh.wa.gov/ehp/ts/WW/WW-SandLined.pdf

Dvornich, K.M., McAllister, K.R. and Aubry, K.B. 1997. Amphibians and reptiles of Washington State: Location data and predicted distributions, Vol. 2. Washington State Gap Analysis - Final Report. Cassidy, K.M., Grue, C.E., Smith, M.R. and Dvornich, K.M., editors. Washington Cooperative Fish and Wildlife Research Unit, University of Washington. Seattle, Washington.

ENTRIX. 2004. Salmon, Steelhead and Bull Trout in Water Resources Areas 37, 38 and 39: An Interim Strategy for Stock Recovery and Project Prioritization. Prepared For: Yakima River Basin Salmon Recovery Board Lead Entity City of Selah.

ESEC (Energy Siting Evaluation Council). 2008. Sagebrush Power Partners, Kittitas Valley Wind Power Project. Available online at: http://www.efsec.wa.gov/kittitaswind.shtml

Firewise. 2009. Firewise Communities Wildland/Urban Interface Fire Hazards: A New Look at Understanding Hazard Assessment Methodologies Availale onlie at: http://www.firewise.org/resources/files/wham.pdf

Flink. 2001. Trails for the twenty-first century: planning, design, and management manual. Rails-to-Trails Conservancy.

Frankel, Art. 2007. The National Seismic Hazard Maps and Eastern Washington Seismic Hazard Assessment for Eastern Washington Hazards and Risks Workshop, Yakima, Washington. October 16, 2007. Available online at: http://www.emd.wa.gov/hazards/documents/ArtFrankel-NationalHazardsmap.ppt#390,1.

Freeze, R.A. and Cherry, J.A. 1979. Groundwater. Prentice-Hall, Inc. New Jersey. 604 pp.

Fripp, Mattuas and Ryan Wiser. 2006. Analyzing the Effects of Temporal Wind Patterns on the Value of Wind-Generated Electricity at Different Sites in California and the Northwest, Ernest Orlando Lawrence Berkeley National Laboratory Environmental Energy, Technologies Division. June. Available online at: http://eetd.lbl.gov/ea/EMP/reports/60152.pdf

Frizzell, V.A., Jr., Tabor, R.W., Booth, D. B., Ort, K. M., and Waitt, R. B., Jr. 1984. Preliminary geologic map of the Snoqualmie Pass 1:100,000 quadrangle, Washington. U.S. Geological Survey Open-File Report 84-693, 36 pp., 1 sheet, scale 1:100,000.

Gilbert, Joe 2008 Kittitas County Public Health Dartment, Environmental Health Specialist, personnal communication, June 6, 2008

Gilman, Celeste and Robert Gilman. 2007. Shared-Use Streets – An Application of "Shared Space" to an American Small Town. Third Urban Street Symposium June 24-27, 2007. Seattle, Washington.

Grassley, J., C. Grue, W. Major, III, and K. Ryding. 2002. Development of an Index to Bird Predation of Juvenile Salmonids within the Yakima River. Project No. 1995-06424, 39 pages. BPA Report DOE/BP-00004666-5.

Grassley, J., C. Grue, W. Major, III, and K. Ryding. 2002. Development of an Index to Bird Predation of Juvenile Salmonids within the Yakima River. Project No. 1995-06424, 39 pages. BPA Report DOE/BP-00004666-5.

Hamer, T. E. and S.K. Nelson. 1995. Characteristics of marbled murrelet nest trees and nesting stands. Pages 69-82 In: C.J. Ralph, G.L. Hunt, M. Raphael, and J.F. Piatt (Tech eds.). Ecology and conservation of the marbled murrelet. Gen. Tech. Rept. PSW-GTR- 152. Albany, California. Pacific Southwest Research Station, Forest Service, U.S. Department Of Agriculture. 420 pp.

Haring, D. 2001. Habitat limiting factors, Yakima River Watershed, Water Resource Inventory Areas 37-39, final report. Washington Conservation Commission. 364pp.

Harvard University, Working Paper W93-2.

Hopkins, Sean. 2008. Department of Ecology, Air Programs, Yakima Regional Office, personal communication and email, February 13, 2008.

IAFC (International Association of Fire Chiefs). 2008. Fire and Life Safety. Available online at: http://www.iafc.org/displaycommon.cfm?an=1&subarticlenbr=20#firelife

Johnson, D.H. and T.A. O'Neil (managing directors). 2001. Wildlife-habitat relationships in Oregon and Washington. Oregon State University Press, Corvallis. 736pp.

Johnson, Mike. 2008. "Kittitas County Garbage: nowhere to go but up, County trying to keep ahead of the solid waste load." Daily Record. Thursday, January 17, 2008. Available online at: http://www.kvnews.com/articles/2008/01/19/news/doc478fc42038718288047919.txt

Jones, M. A., Vaccaro, J. J., and Watkins, A. M. 2006. Hydrogeologic Framework of Sedimentary Deposits in Six Structural Basins, Yakima River Basin, Washington. U. S. Geological Survey, Scientific Investigations. Report 2006-5116.

KCEMS (Kittitas County Emergency Medical Services). 2006. , Operating Procedure. December 7, 2006. Available online at: http://kittitascountyems.org/COP%20files/COP2%20120706.pdf. Accessed on May 19, 2007.

KITTCOM. 2008. KITTCOM 911 Dispatch Center. Available online at: http://www.kittcom.org/. Accessed on May 14, 2007.

Kittitas County. 2009. Kittitas County Comprehensive Plan. Available online at: http://www.co.kittitas.wa.us/cds/compplan/2009/2009%20Kittitas%20County%20Comprehensive%20Plan.pdf

Kittitas County Health Department. 1998. Solid Waste Regulations. Available online at: http://www.co.kittitas.wa.us/health/SolidWasteRegulations.pdf

KCWCB (Kittitas County Water Conservancy Board). 2008. , Water Transfer Working Group Project Description, Suncadia, LLC, City of Roslyn transfer CleElum river to Domerie Creek. Document CS4-01724(B)CTCL. Available online at: http://www.ecy.wa.gov/programs/wr/ywtwg/images/pdfs/2008_01.pdf

Masnick, George S. and Nancy McArdle. 1993. Revised U.S. Household Projections: New Methods and New Assumptions, Joint Center for Housing Studies, Harvard University. Working Paper W93-2.

McKee. 2008, Craig McKee, Fire Chief, Kittitas County Fire District No. 3, personal communication May 19, 2008.

Meseck, Donald W. 2002. Kittitas County Profile, 2002 Labor Market and Economic Analysis Branch, Employment Security Department. Available online at: www.workforceexplorer.com/admin/uploadedPublications/443_kittitas.pdf -

Misch, P. 1966. Tectonic evolution of the northern Cascade of Washington State- a west-cordilleran case history, *in* Symposium on the tectonic history, mineral deposits of the western Cordillera in British Columbia and in neighboring parts of the USA. Canadian Institute of Mining and Metallurgy. Special Volume, v. 8, p.101-148.

Munroe, James, 2010, Washington DNR, Fire Protection Coordinator, SE Region, Personal Communication, December 28, 2010

NAR (National Association of Realtors). 2008. 2008 NAR Investment and Vacation Home Buyers Survey. Available online at: http://www.realtor.org/prodser.nsf/products/E186-55-09?OpenDocument.

NFCL (North Fork Community Library). 2007 North Fork Community Library, Area Information. Available online at: http://www.northforkcommunity.org/info.htm. Accessed May 19, 2007.

Dave Brown, Bob Marshall, Rex Ried, Todd James

Noson, Linda, Anthony Qamar, and Gerald W. Thorsen. 1988. Washington State Earthquake Hazards, Washington Division of Geology and Earth Resources. Information Circular 85 1988.

NRPA (National Park and Recreation Association). 1996. Parks, Recreation and Open Space and Greenway Guidelines. By J. Mertes and J. Hall. 180 pp. ISBN 0-9603540-1-8. Available online at: http://ipv.nrpa.org/public/Core/Orders/product.aspx?catid=28&prodid=1237.

NVUMR (National Visitor Use Monitoring Results). 2008. National Summary Report. U.S.Forest Service. Available online at: http://www.fs.fed.us/recreation/programs/nvum/nvum_national_summary_fy2007.pdf

Office of Fiscal Management (OFM). 2008. Washington State, Small Area Estimate Program (SAEP). Available online at: http://www.ofm.wa.gov/pop/smallarea/default.asp accessed June 24, 2008

Opler, P.A., H. Pavulaan, R.E. Stanford, M. Pogue, coordinators. 2006. Butterflies and Moths of North America. Bozeman, Montana. NBII Mountain Prairie Information Node. Available online at: http://www.butterfliesandmoths.org/. Accessed June 7, 2008.

Phillips III, John A. 2009. Stampede Pass, A Virtual Tour -- Auburn to Ellensburg. Available online at: www.employees.org/~davison/nprha/stampedemp.html. Accessed on January 17, 2008.

Phillips, G. E. and A. W. Alldredge. 2000. Reproductive success of elk following disturbance by humans during calving season. Journal of Wildlife Management 64:521–530. CrossRef, CSA

Plum Creek. 2008. Projections: New Methods and New Assumptions. Joint Center for Housing Studies, Plum Creek Timber Company, Recreation Programs. Available online at: http://www.plumcreek.com/downloads/recreation/Plum_Creek_Northern_Hunting_Program.pdf. Accessed June 17, 2008.

Powell, L. 2005. Mass Wasting Assessment, Landslide Hazard Inventory Project, Kachess Watershed, Kittitas County, Washington. Washington State Department of Natural Resources. 41 pp.

NRPA (National Recreation and Park Association). 1983. Recreation, Park and Open Space Standards and Guidelines, by Roger A. Lancaster, ed.

Raedeke Associates, Inc. 2006. Wetland, Stream, and Wildlife Assessment, Marian Meadows Planned Unit Development, Kittitas County, Washington. Consultant's report for Easton Ridge Land Company. December 2. 28 pp.

Raedeke Associates, Inc.. 1999. Plants and animals assessment, MountainStar Master Planned Resort. DEIS Draft Technical Report, Vol. III. Appendix E., Kittitas County, Washington.

Ralph, C.J., G.L. Hunt, Jr., M.G. Raphael, and J.F. Piatt (eds). 1995. Ecology and conservation of the marbled murrelet. General Technical Report PSW-GTR- 152. Albany, California. Pacific Southwest Research Station, Forest Service, U.S. Department of Agriculture. 420 pp.

Ramon B. Zabriskie, Ramon B. 2001. Family recreation: how can we make a difference? Research Update. Parks & Recreation. October. Available online at: http://findarticles.com/p/articles/mi_m1145/is_10_36/ai_80162120/?tag=content;col1

Rinella, J.F., McKenzie, S.W., and Fuhrer, G.J. 1992. Surface-water-quality assessment of the Yakima River Basin, Washington: Analysis of available water-quality data through 1985 water year. U.S. Geological Survey, Open File Report 91-453. 244 pp.

Rodrick, E. and R. Milner. 1991. Management recommendations for Washington's priority habitats and. species. Olympia, Washington. Washington Department of Wildlife.

Salmonscape. 2008. Salmonscape Website. Available online at: http://wdfw.wa.gov/mapping/salmonscape/index.html. Accessed June 7, 2008.

Scott, W.B. and E.J. Crossman. 1973. Freshwater fishes of Canada. Fisheries Resource Board of Canada. Bulletin. 14.

Seattle Audubon Society. 2008. Sound to Sage: Breeding Bird Atlas of Island, King, Kitsap, and Kittitas Counties, Washington. Available online at: http://www.soundtosage.org/soundtosage/. Accessed June 7, 2008.

Seattle Audubon Society. 2008b. BirdWeb. Available online at: http://www.birdweb.org/birdweb/. Accessed June 7, 2008.

SENTRY. 2008. Washington Department of Health, Division of Environmental Health, Office of Drinking Water. Available online at: http://www4.doh.wa.gov/SentryInternet/Intro.aspx

Shink, Andrew J. 2009. Mountain Goat Genetic Structure, Molecular Diversity, and Gene Flow in the Cascade Range, Washington. A Thesis Presented to The Faculty of Western Washington University In Partial Fulfillment of the Requirements for the Degree Master of Science. May.

Silver Ridge Ranch. 2008. Available online at: http://www.silverridgeranch.com/ and personal communication with Linda Laurant June 30, 2008.

Sime, Carolyn A. 1999. Domestic Dogs in Wildlife Habitats. A review for Montana, Montana Chapter of the Wildlife Society. September. Available online at: 1999 http://www.jasperenvironmental.org/downloads/dogs-wildlife-society.pdf

Singleton, P.H.k Lehmkuhl, J.F. 1999 Assessing wildlife habitat connectivity in the Intrestate-90 Snoqualmit Pass Corridor, Washington. In: Evink, G. L et al Proceedings of the Third International Conference on Wildlife Ecology and Transportation; 1999 September 13-16; Missoula, MT. FL-ER-73-99. Talahasee, FL: Florida Department of Transportation. 75-83

State Fire Marshall. 2008. Washington State Patrol, Office of the State Fire Marshall, National Fire Incident Reporting System (NFIRS). Available online at: http://www.wsp.wa.gov/fire/data/nfirs_status.htm

Stinson, D. W. 2001. Washington state recovery plan for the lynx. Washington Department of Fish and Wildlife, Olympia, Washington. 78 pp. + 5 maps.

Stinson, D.W., D.W. Hays, and M.A. Schroeder. 2004. Washington State Recovery Plan for the Greater Sage-Grouse. Washington Department of Fish and Wildlife, Wildlife Program. Olympia, Washington.

Storlie, J.T. 2006. Movements and habitat use of female Roosevelt elk in relation to human disturbance on the Hoko and Dickey Game Management Units, Washington. M.S. Thesis, Humboldt State University.

Tabor, R.W. and Haugerud, R. 1999. Geology of the North Cascades: A Mountain Mosaic. The Mountaineer Books. Seattle. 143 pp.

Tabor, R.W., Frizzell, V.A., Jr., Booth, D. B., and Waitt, R. B., Jr. 2000. Geologic map of the Snoqualmie Pass 1:100,000 quadrangle, Washington. U.S. Geological Survey Map I-2538, 57 pp., 1 sheet, scale 1:100,000.

Theis, C.V. 1963. Estimating the transmissivity of a water table aquifer from the specific capacity of a well. U.S. Geological Survey, Water Supply Paper 1536-I:332-36.

USDA (U.S. Department of Agriculture). 2008. Natural Resources Conservation Service, Soil Survey Web site. Available online at: http://websoilsurvey.nrcs.usda.gov/app/

USFWS (U.S. Fish and Wildlife Service). 2002. Endangered and Threatened Wildlife and Plants. Proposed Designation of Critical Habitat for the Klamath River and Columbia River Distinct Population Segments of Bull Trout. Federal Register Vol. 67: 71236-71438.

USFWS. 2008. Bull Trout Web site. Available online at: http://www.fws.gov/pacific/bulltrout/. Accessed June 7, 2008.

USFWS. 2008. Kittitas County Species List, updated May 14, 2008. Available online at: http://www.fws.gov/easternwashington/county%20species%20lists.htm, accessed June 4, 2008.

USFWS. 2008b. Endangered, Threatened, Proposed, and Candidate Species by County. Northern Idaho and Eastern Washington. Upper Columbia Fish and Wildlife Office. Available online at: http://www.fws.gov/easternwashington/county%20species%20lists.htm. Accessed June 12, 2008.

USFWS. 1995. Ute ladies' tresses (*Spiranthes diluvialis*) draft recovery plan. U.S. Fish and wildlife Service, Denver, Colorado. 46 pp.

USGS (U.S. Geological Survey). 2008a. Petersen M.D., Frankel, A.D., Harmsen, S.C., Mueller, C.S., Haller, K.M., Wheeler, R.L., Wesson, R.L., Zeng, Y., Boyd, O.S., Perkins, D.M., Luco, N., Field, E.H., Wills, C.J., and Rukstales, K.S. Documentation for the 2008 Update of the United States National Seismic Hazard Maps. U.S. Geological Survey, Open File Report 08-1128. Available online at: http://gldims.cr.usgs.gov/nshmp2008/viewer.htm

USGS. 2008b. U.S. Geological Survey Surface Water Data for the Nation. Available online at: http://waterdata.usgs.gov/nwis/sw

Vaccaro, J.J. 2007. A deep percolation model for estimating ground-water recharge: Documentation of modules for the modular modeling system of the U.S. Geological Survey. U.S. Geological Survey Scientific Investigations Report 2006-5318, 30 pp.

Vaccaro, J.J. 2007. Yakima River Basin Ground-Water Investigation--An update. Presentation by U.S. Geological Survey at Yakima River Basin public update, Yakima, Washington. February 28. 85 pp.

Vaccaro, J.J., and Maloy, K.J. 2005. Thermal profiling of long river reaches to characterize ground-water discharge and preferred salmonid habitat [abs.]. 5th Washington Hydrogeology Symposium, Tacoma, Washington, April 12-14, 2005. Program, pp. 66.

Vaccaro, J.J., and Maloy, K.J. 2006. A method to thermally profile long river reaches to identify potential areas of ground-water discharge and preferred salmonid habitat. U.S. Geological Survey Scientific Investigations Report 2006-5136. 16 pp.

Vaccaro, J.J., and Olsen, T.D. 2007. Estimates of ground-water recharge to the Yakima River Basin aquifer system, Washington, for predevelopment and current land-use and land-cover conditions. U.S. Geological Survey Scientific Investigations Report 2007-5007. 30 pp.

Vaccaro, J.J., Keys, M.E., Julich, R.J., and Welch, W.B. 2008. Thermal profiles for selected river reaches in the Yakima River basin, Washington. U.S. Geological Survey Data Series 342.

Vance, J.A., and Miller, R.B. 1981. The movement history of the Straight Creek Fault in Washington State: The last 100 million years (mid-Cretaceous to Holocene) of geology and mineral deposits in the Canadian Cordillera. Cordilleran Section Geological Society of Canada, Program and Abstracts for 1981 meeting, Vancouver. Pp. 39-41.

Washington NatureMapping Program. 2008. Available online at: http://depts.washington.edu/natmap/. Accessed June 7, 2008.

Washington NatureMapping Program. 2008. Washington and California Gap Analysis Bird Maps with Washington NatureMapping Program. 2008. Washington and California Gap Analysis Bird Maps with *NatureMapping* Observations. Available online at: http://depts.washington.edu/natmap/maps/#amp. Accessed June 11, 2008.

Washington State Department of Transportation (WSDOT). 2002. I-90 Hyak to Easton Widening Project, Draft Environmental Impact Statement, Air Quality Discipline Report. Available online at: http://www.wsdot.wa.gov/NR/rdonlyres/C7F960E6-CF55-4BBD-AFB8-AB7C50B126AA/0/I90DraftEIS_Sect4f.pdf

WDFW (Washington Department of Fish and Wildlife). 2002. Salmonid Stock Inventory (SASI) Mid-Columbia – Upper Yakima Spring Chinook. Available online at: http://wdfw.wa.gov/webmaps/salmonscape/sasi/full_stock_rpts/1747.pdf.

WDFW. 2004. Washington State Salmonid Stock Inventory: Bull Trout/Dolly Varden. 441pp.

WDFW. 2004. Living with wildlife: deer. Available online at: http://wdfw.wa.gov/living/deer.html. Accessed November 8, 2010.

WDFW. 2006. Washington State elk management plan: Colockum elk herd. Wildlife Program, Washington Department of Fish and Wildlife, Olympia. 58 pages.

WDFW. 2007. 2007 Game status and trend report. Wildlife Program, WDFW, Olympia, Washington.

WDFW. 2008. Available online at: http://wdfw.wa.gov/wlm/diversty/soc/gray_wolf/fact_sheet.htm. Accessed July 13, 2009.

WDFW. 2008. Bald Eagle Territory History Web site. Available online at: http://wdfw.wa.gov/wlm/diversty/soc/baldeagle/territory/. Accessed June 7, 2008.

WDFW. 2008. Priority Habitats and Species Web site. Available online at: http://wdfw.wa.gov/hab/phslist.htm. Accessed June 7, 2008.

WDFW. 2010. Washington State deer management plan: white-tailed deer. Draft, March 2010. Wildlife Program, Washington Department of Fish and Wildlife, Olympia. 102 pages.

WRCC (Western Regional Climate Center). 2001a. Climate of Washington, WRCC, Reno, Nevada. Available online at: http://www.wrcc.dri.edu/cgibin/cliMAIN.pl?wachee.htm

WRCC. 2008a. Cle Elum, Washington: Period of record monthly climate summary: 1944-2007. WRCC, Reno, Nevada. Available online at: http://www.wrcc.dri.edu/summary/Climsmwa.html

WRCC. 2008b. Lake Kachess, Washington: Period of record monthly climate summary: 1931-2007. WRCC, Reno, Nevada. Available online at: http://www.wrcc.dri.edu/summary/Climsmwa.html

WRCC. 2008c. Stampede Pass, Washington: Period of record monthly climate summary: 1931-2001. WRCC, Reno, Nevada. Available online at: http://www.wrcc.dri.edu/summary/Climsmwa.html

WRCC. 2008d. Climate Summary, Washington State WRCC, Reno, Nevada. Available online at: http://www.wrcc.dri.edu/narratives/WASHINGTON.htm

Weyerhaeuser. 2008. Recreational Access website. Available online at: http://www.weyerhaeuser.com/Businesses/RecreationalAccess. Accessed June 17, 2008.

Whyte, William H. 1980 The Social Life of Small Urban Spaces (The Conservation Foundation, 1980) Reissued in paperback by Project for Public Spaces, Inc. 2001

Witmer, G. W., et al. 1985. Deer and elk. Pages 231-258 in Management of wildlife and fish habitats in forests of western Oregon and Washington, Part 1. E. R. Brown, ed. Publication Number R6-F&WL192-1985. U.S. Forest Service. U.S. Government Printing Office, Washington, D.C.

WNF (Wenatchee National Forest Service). 2009a. Cle Elum Ranger District Trails. Available online at: http://www.fs.fed.us/r6/okawen/recreation/cle-elum/trails/

WNHP (Washington Natural Heritage Program). 2008. Washington Natural Heritage Program Field Guide to Selected Rare Plants. Available online at: http://www1.dnr.wa.gov/nhp/refdesk/fguide/htm/fgmain.htm. Accessed June 12, 2008.

WPPSS (Washington Public Power Supply System). 1977. Preliminary Safety Analysis Report. Washington Public Power Supply System Nuclear Projects Nos. 1 & 4, PSAR Amendment 23, Sections 2R-A & 2R-B. Accessed May 19, 2007.

WSP (Washington State Parks). 2008. Washington State Parks Snowmobile Sno-Parks Website. Available online at: http://www.parks.wa.gov/winter/parks/motorparks.asp?Park=204. Accessed June 17, 2008.

APPENDIX A

State-Listed Candidate, Sensitive, and Priority Species

APPENDIX A State-Listed Candidate, Sensitive, and Priority Species[6]

Table A-1. Washington-listed, candidate, sensitive, and priority species[6] that have distributions overlapping the project area.

Species	Federal/State Status	Habitat Requirements	Occurrence near Project Site
Silver-bordered fritillary (*Boloria selene*)	None/State Candidate	Wet meadows, bogs, marshes; Violets are host plants. Favorite nectar sources are composite flowers[7]	Not likely due to lack of suitable habitat
Kokanee (*Oncorhynchus nerka*)	Priority Species (criteria 3)	Deep, cool lakes and reservoirs; spawning occurs in tributaries in fine gravel located in clean riffles[2]	Occurs in Kachess Lake but project site streams do not provide suitable habitat
Larch Mountain salamander (*Plethodon larselli*)	Species of Concern/ Sensitive	Shady, moss-covered talus slopes, cave entrances and older closed canopy forests[1,3]	No PHS occurrences in project vicinity (WDFW PHS June 2008). Nearest known occurrence is near Snoqualmie Pass. Unlikely to occur due to lack of talus and older closed canopy forests.
Western Toad (*Bufo boreas*)	Species of Concern/ Candidate	Requires breeding ponds that retain surface water for at least several months during spring and summer; can use wide variety of riparian and upland habitats[3]	No PHS occurrences in project vicinity (WDFW PHS June2008). No breeding habitat present on project site. Adults and juveniles from nearby areas could use site later in year after breeding season.
Sharptail Snake (*Contia tenuis*)	Species of Concern/ Sensitive	Generally restricted to low elevations, in moist rotting logs or stable talus slopes, near streams or other moist habitats[3]	No PHS occurrences in project vicinity (WDFW PHS June2008). Known to occur approximately 6 miles east of the project (Raedeke Associates (1999). Could occur in project area, particularly on eastern portion near the streams
Great Blue Heron *(Ardea herodias*)	Priority Species (2)	Marshes, mud flats, and agricultural areas; nests in trees near large streams, rivers, lakes or wetlands	No PHS occurrences in project vicinity (WDFW PHS June2008). Nearest heron rookeries are located near Kachess River downstream of Kachess Dam. No suitable foraging habitat present in the project area.
Bald Eagle (*Haliaeetus leucocephalus*)	Species of Concern/ Threatened	Nests in large trees near lakes and rivers. Breeding areas, winter communal roosts, winter concentrations, and regularly used perch trees in breeding areas are Washington Priority Areas. Wintering eagles concentrate where food is abundant and human disturbance relatively low. During the day, bald eagles forage of fish, waterfowl, and mammal carrion.	There are two known bald eagle nesting territories in the upper Kittitas County (Cle Elum Lake and Cle Elum Exit)[4.] None of the nests are within 5 miles of the project site. Not likely to use project site due to lack of large trees and open water. Forages along Yakima River.

Species	Federal/State Status	Habitat Requirements	Occurrence near Project Site
Golden Eagle (*Aquila chrysaetos*)	None/ Candidate	Open dry forests with large trees or nesting cliffs. Forage on small mammals, carrion	No PHS occurrences in project vicinity (WDFW PHS June 2008). No suitable nesting habitat in project vicinity. Dry Creek Cliffs approximately 8 miles Northeast of the project may have suitable nesting habitat.
Merlin (*Falco columbarius*)	None/ Candidate	May rarely breed in suitable forests that mimic boreal conditions along the Cascade crest[5]	No PHS occurrences in project vicinity (WDFW PHS June 2008). Forests on project site are not suitable for breeding. Could occur during migration.[5]
Northern goshawk (*Accipiter gentilis*)	Species of Concern/	All forest above Ponderosa Pine are potential breeding habitats[5]. On the east side, all conifer forests provide habitat except early seral and open forests[8]	There are known northern goshawk nests in the general vicinity, including one approximately 6 miles east-southeast of the site (Raedeke Associates 1999). No suitable habitat on site due to low tree canopy cover. Potential habitat may exist on adjacent USFS lands. Occurs in region year-round.[5]
Peregrine Falcon (*Falco peregrinus*)	Species of Concern/ Sensitive	Nests on cliffs, usually near water. Forages on birds in wide variety of open habitats.[5]	No PHS occurrences in project vicinity (WDFW PHS June2008). Project site does not have nesting or foraging habitat. Nearest potential nesting cliffs are over 1 mile from site.
Flammulated owl (*Otus flammeolus*)	None/ Candidate	mature Ponderosa pine, Douglas fir, or mixed coniferous forests with a thick understory[5]	No PHS occurrences in project vicinity (WDFW PHS June 2008). Potential foraging habitat exists in the open conifer forest on the western portion of the site, but nesting is unlikely due to the young age of the stands.
Great Gray Owl (*Strix nebulosa*)	None/Monitor	Open conifer and deciduous forests.	No PHS occurrences in project vicinity (WDFW PHS June 2008). Older PHS record of individual in 1997 in the upper Silver Creek drainage approximately 4 miles from the site (Raedeke Associates 1999)

Species	Federal/State Status	Habitat Requirements	Occurrence near Project Site
Vaux's Swift (*Chaetura vauxi*)	None/ Candidate	Nesting habitat is forest, either coniferous or mixed, but primarily old growth with snags for nesting and roosting[5]	No PHS occurrences in project vicinity (WDFW PHS June 2008). Swifts were observed approximately 6 miles east of the project site (Raedeke Associates 1999). Suitable roosting habitat in the open conifer forest on western portion of site. Adjacent USFS land likely provides suitable nesting habitat.
Pileated woodpecker (*Dryocopus pileatus*)	None/ Candidate	Any forest type (broadleaved, coniferous, or mixed) with trees large enough for roosting and nesting, In eastern Cascades trees are normally greater than 28 inches dbh.[5, 10] Forage in stands that are at least 40 years of age (Raedeke Associates (1999)	No PHS occurrences in project vicinity (WDFW PHS June 2008). Suitable foraging and roosting habitat in the open conifer forest on western portion of site. Adjacent USFS land and some residential areas likely provide suitable nesting habitat.
Black-backed Woodpecker (*Picoides arcticus*)	None/ Candidate	Mature or old-growth conifer forests, especially forests of spruce, larch, fir, pine, and hemlock.[5] Nest in tall, small diameter recently dead trees or stumps and mature and old-growth trees.	No PHS occurrences in project vicinity (WDFW PHS June 2008). Due to logging history, there is no suitable habitat on the project site. Suitable habitat on nearby USFS land.
Townsend's Big-eared Bat (*Corynorhinus townsendii*)	Species of Concern/ Candidate	Caves and old buildings	No PHS occurrences in project vicinity (WDFW PHS June 2008). No suitable habitat on the project site.
Wolverine (*Gulo gulo*)	Species of Concern/ Candidate	Montane forests	No PHS occurrences in project vicinity (WDFW PHS June 2008). Unlikely to occur in project vicinity due to existing human development in area
Palouse Milk-vetch (*Astragalus arrectus*)	None/Threatened	Grassy hillsides, sagebrush flats, river bluffs, and open ponderosa pine/Douglas fir forests in grassy or shrub dominated openings growing on all aspects in soil ranging from rocky and dry to moist and rich. Associated species include oceanspray, snowberry, bitterbrush, Douglas's brodiaea, balsamroot, and lupine. Elevation: 1000 to 4000 feet.	Potential habitat occurs on project site
Bristly Sedge (*Carex comosa*)	None/Sensitive	Marshes, lake shores, and wet meadows. Elevation ranges from 50 to 2000 feet.	No suitable habitat on project site
Few-flowered Sedge (*Carex pauciflora*)	None/Sensitive	Marshes, lake shores, and wet meadows. Elevation ranges from 50 to 2000 feet.	No suitable habitat on project site
Thompson's Chaenactis (*Chaenactis thompsonii*)	None/Sensitive	Dry rocky slopes and ridges at elevations ranging from about 4900-8000 ft (1500-2150 m) in serpentine soils.	Project site is not suitable habitat

Species	Federal/State Status	Habitat Requirements	Occurrence near Project Site
Bristle-flowered Collomia (*Collomia macrocalyx*)	None/Sensitive	Dry open habitats, east of the Cascade Mountains. In Washington, the species has been found on talus, rock outcrops and lithosols.	Potential habitat occurs on project site
Clustered Lady's-slipper (Cypripedium fasciculatum)	Species of Concern/Sensitive	Mid- to late seral Douglas fir or ponderosa pine overstories with a closed herbaceous layer and variable shrub layer, mostly on northern aspects. 1200 feet to more than 5000 feet	Potential habitat occurs on project site
Wenatchee Larkspur (*Delphinium viridescens*)	Species of Concern/ Threatened	From 1800 to 4200 feet, in moist meadows, moist microsites in open coniferous forests, springs, seeps and riparian areas.	Potential habitat occurs on project site
Swamp Gentian (*Gentiana douglasiana*)	None/Sensitive	Wet to moist meadows. In Washington it has been found from 20 to 3050 feet	No suitable habitat on project site
Longsepal Globemallow (*Iliamna longisepala*)	None/Sensitive	Can be found along gravelly streamsides in the open shrub-steppe and open ponderosa pine and Douglas fir forests. The species also occurs on open hillsides in microsites not immediately adjacent to a stream channel	Potential habitat occurs on project site
Howell's Rush (*Juncus howellii*)	None/Threatened	Moist areas in the mountains.	Potential habitat occurs on project site
Hoover's Desert-parsley (*Lomatium tuberosum*)	Species of Concern/Sensitive	Loose talus most typically on east to north facing slopes within the big sagebrush/bluebunch wheatgrass vegetation zone. The species is also known from drainage channels of open ridgetops and talus on south to southwest facing slopes in the western portion of its distribution. Elevation: 600-2300 feet.	Potential habitat occurs on project site
Nuttall's Sandwort (*Minuartia nuttallii* ssp. *fragilis*)	None/Threatened	Open, gravelly benches or limestone talus from open sagebrush hills to alpine slopes at an elevation of 5413 to 7874 ft.	Project site is not suitable habitat
Branching Montia (*Montia diffusa*)	None/Sensitive	Moist forests in the lowland and lower montane zones. It is occasionally located in xeric soil or disturbed sites. Associate species include Douglas fir, ocean-spray and miner's lettuce	Potential habitat occurs on project site
Coyote Tobacco (*Nicotiana attenuata*)	None/Sensitive	Dry, sandy bottom lands, dry rocky washes, and in other dry open places. 400 to 10,000 feet.	Potential habitat occurs on project site
Adder's-tongue (*Ophioglossum pusillum*)	None/Threatened	Pastures, old fields, roadside ditches, and flood plain woods in seasonally wet, rather acid soil. Elevations from 40 to 2300 feet.	Potential habitat occurs on project site
Fuzzytongue Penstemon (*Penstemon eriantherus* var. *whitedii*)	None/Sensitive	West facing slopes of small canyons, and in dry and rocky habitats in the foothills from 525 to 3835 feet (160-1160 meters) elevation. It has been observed in antelope bitterbrush/Indian ricegrass, purple sage/wheatgrass and rabbitbrush/bluebunch wheatgrass plant communities	No suitable habitat on project site

Species	Federal/State Status	Habitat Requirements	Occurrence near Project Site
Sticky Goldenweed (*Pyrrocoma hirta* var. *sonchifolia*)	None/Sensitive	Meadows and open or sparsely wooded slopes in the foothills and at moderate elevations. Known from about 5 locations in WA.	Potential habitat occurs on project site
Wenatchee Mountain Checker-mallow (*Sidalcea oregana* var. *calva*)	Endangered/ Endangered	Most abundant in moist meadows that have surface water or saturated upper soil profiles into early summer. Also found in somewhat open coniferous stands dominated by Douglas fir and/or Ponderosa pine and along the edge of shrub and hardwood thickets.	Potential habitat occurs on project site
Seely's Silene (*Silene seelyi*)	Species of Concern/Sensitive	Shaded crevices in ultramafic to basaltic cliffs and rock outcrops, and occasionally among boulders in talus. Occurs from 1500 to 6300 feet in elevation	Potential habitat occurs on project site
Western Ladies-tresses (*Spiranthes porrifolia*)	None/Sensitive	Wet meadows, along streams, in bogs, and on seepage slopes. Elevation 60-6800 feet.	Potential habitat occurs on project site
Bristly Sedge (*Carex comosa)*	None/Sensitive	Marshes, lake shores, and wet meadows. Elevation ranges from 50 to 2000 feet.	No suitable habitat on project site

[1] Natureserve (2008), [2] Scott and Crossman (1973), [3] Dvornich et al. (1997), [4] WDFW (2008), [5] Seattle Audubon Society (2008b), [6]. WDFW Species of Concern website (http://wdfw.wa.gov/wlm/diversty/soc/soc.htm, accessed June 7, 2008), [7] Opler (2006), [8] Washington NatureMapping Program (2008), [9] WNHP (2008), [10] Rodrick and Milner (1991)

APPENDIX B

Comments Received in the Draft Environmental Impact Statement

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Appendix B contains written comments received on the Draft Environmental Impact Statement issued February 2010.

All comments received are reproduced in Appendix B with a comment number in the margin that corresponds to the comment summary and response in Appendix C.

Comments were received from the following:

- Kittitas County Department of Public Works, dated April 2, 2010
- Washington Department of Ecology, dated April 2, 2010
- Washington Department of Ecology, dated March 31, 2010
- City of Roslyn, dated April 2, 2010
- Washington Department of Fish and Wildlife, dated April 2, 2010
- Michael Long, dated April 2, 2010
- Petition requesting additional Alternative, dated March 22, 2010
- Kittitas County Fire District No. 3, dated March 29, 2010
- John R. Jenson, dated March 22, 2010
- Marge Brandsrud, dated March 31, 2020
- David and Terri Lombardy, dated April 1, 2010
- Department of Energy, dated April 1, 2010
- Tom Campbell, dated April 1, 2010
- Joe Peck, dated April 2, 2010
- John Carlson, dated March 31, 2010
- Silver Creek Road Maintenance Association, dated March 26, 2010
- Jim and Melanie Hiskey, dated March 29, 2010
- Barbara Graham Howe, dated March 18, 2010
- Washington State Dept. of Transportation Aviation Division, dated April 23, 2010

KITTITAS COUNTY
DEPARTMENT OF PUBLIC WORKS

Kirk Holmes, Director

MEMORANDUM

TO: Dan Valoff, CDS
FROM: Christina Wollman, Planner II
DATE: April 2, 2010
SUBJECT: Marian Meadows PUD
EIS Comments

Public Works has reviewed the Marian Meadows Draft EIS and has the following comments:

1. Road Names and Locations: Throughout the EIS, in maps and descriptions, roads are either mislabeled or misnamed. Please see the attached Figure 3-10, edited by Public Works. Although none of these errors affects the integrity of the EIS, it should be noted that WSDOT has jurisdiction of the I-90 overpass, from the eastbound ramps to the intersection with Sparks Road. Public Works will work closely with WSDOT to develop the appropriate mitigation for the Sparks Road intersection. WSDOT may require additional mitigation for the on/off ramp intersections. Additionally, Country Drive is called Country Road on many pages, including 3-63, 3-64, 3-65, and 3-78. C

2. ATVs Use of Sparks Road; Page 3-51: This section states ATVs "often use Sparks Road to access other areas." It should be noted that travel by ATV on any public road is illegal, except for travel by snowmobile on specific County Roads. The Kittitas County Sheriff's Office enforces this regulation and if caught is punishable with an infraction of up to $124. 3.2.a

3. West Sparks Road: 2020 Peak Hour volumes show only 20 trips. There are currently almost 70 lots that access from West Sparks Road, and ADT for the past few years has averaged around 400. Based on ADT and future growth, 20 peak hour trips appears to be low. 3.2.b

4. LOS Delay; Table 3-13: The delay times for the 226-Lot subdivision plus existing rural zoning is not shown. Additionally, the bottom half of the table appears to be for Cumulative 2020 with PUD density, but it is not clearly labeled. As noted in the first comment, the main project access is not W Sparks Access. 3.2.c

5. Maintenance; Page 3-77: It should be noted that at intersections 1, 2 and a portion of 3, maintenance and upkeep is performed by WSDOT. 3.2.d

6. DNR Land; Page 3-89: I am unable to locate any DNR owned property surrounding the Easton airport or within the general vicinity of Easton. The previous paragraph states the DNR land was sold. 3.2.e

411 North Ruby Street, Suite 1
Ellensburg, WA 98926

TEL (509) 962-7523
FAX (509) 962-7663

7. Trail Standards; Page 3-98: This section states Kittitas County has standards that require trail systems within new developments. Please provide a reference to this requirement. 3.2.f

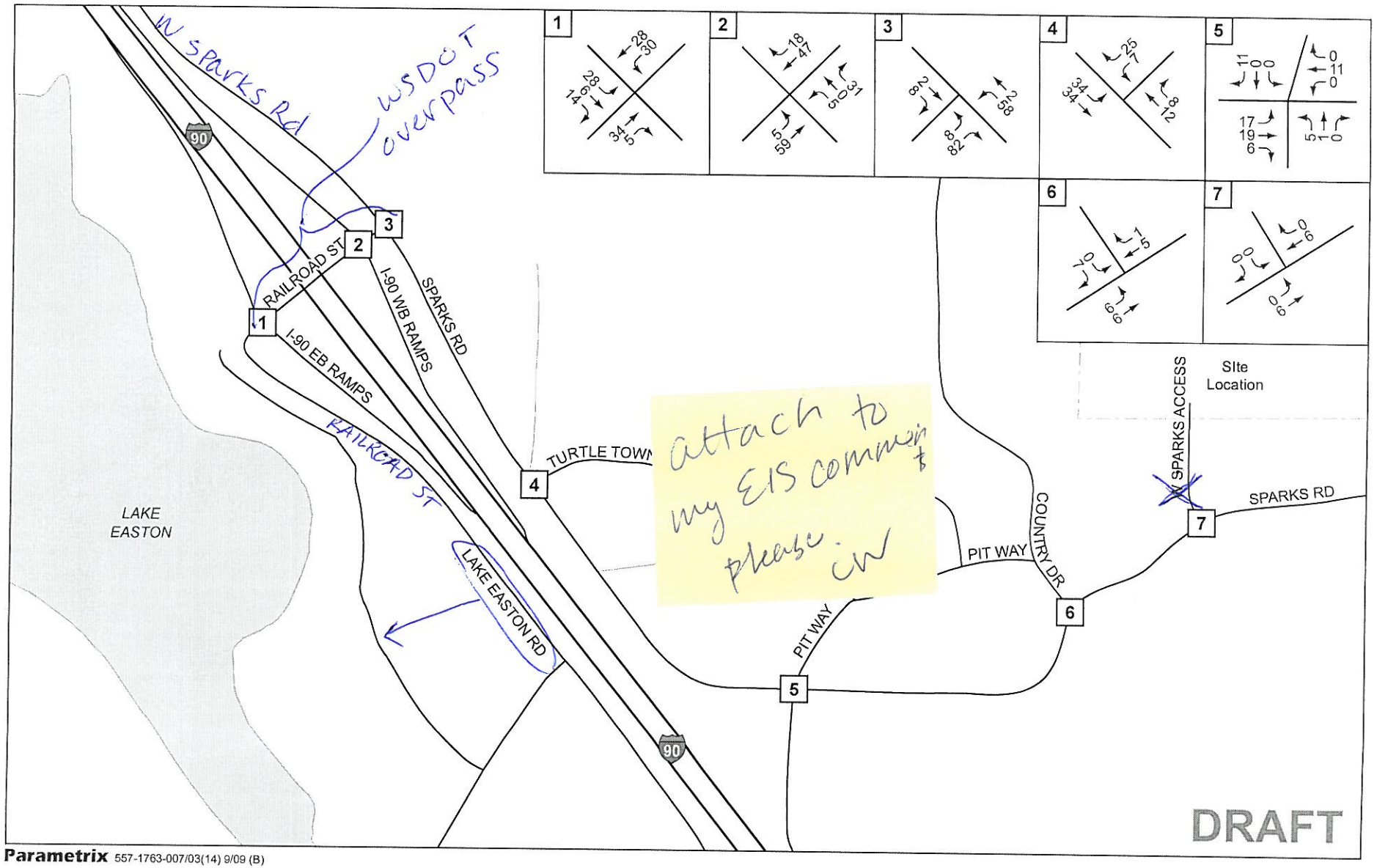
8. Hospital Districts; Figure 3-22: Hospital District 1 is incorrectly labeled in the legend as "3". C

9. Stormwater Management; Page 3-167, 3-168: The Kittitas County Stormwater Code is located in 12.06, not 12.70. The Stormwater Manual for Eastern Washington has not been adopted in code. However, Public Works requires all stormwater plans, facilities and services to comply with the Eastern Washington manual. Stormwater may not be conveyed in County Road ditches. 3.5.j

Please feel free to contact me if you have questions on any of the comments.

205 West 5th, Rm 108
Ellensburg, WA 98926

TEL (509) 962-7523
FAX (509) 962-7663



Parametrix 557-1763-007/03(14) 9/09 (B)

N

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SCALE IN FEET

Site Location

Figure 3-10
Marian Meadows
2020 No-Build PM Peak Hour
Traffic Volumes

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
15 W Yakima Ave, Ste 200 • Yakima, WA 98902-3452 • (509) 575-2490

April 2, 2010

Mr. Kirk Holmes
Kittitas County Community
Development Services
411 N. Ruby Street, Suite 2
Ellensburg, WA 98962

Dear Mr. Holmes:

Thank you for the opportunity to comment on the Draft Environmental Impact Statement for the Marian Meadows planned unit development and subdivision, proposed by Easton Ridge Land Company [RZ-06-00035/P-06-31]. We have reviewed the documents and have the following additional comments.

Shorelands/Environmental Assistance

Licenses, Permits and Approvals Fact Sheet

If there are impacts to wetlands, seeps or springs which require a 404 federal permit authorization from the US Army Corps of Engineers, then a 401 water quality certification from Ecology would be required. 1.1.a

Impacts to wetlands and other water features that are not under federal jurisdiction are still regulated by Washington State water quality laws. If wetland impacts are not appropriately mitigated in compliance with state law, then Ecology has the authority to require wetland mitigation under the authority of 90.48RCW and WAC 173-201A. 1.1.b

If any "associated" wetlands are directly impacted which are located in the 100-year floodplain of a shoreline of the state, then a shoreline permit will likely be required. 1.1.c

Wetland impacts

A wetland delineation report should be provided as part of the EIS documents / project review. The wetland delineation report should show the location of all wetlands, seeps and springs on a topographic map with a contour interval of 1 to 2 feet if possible. The wetland delineation report should include information about how site wetland reconnaissance was accomplished. Were all areas of the site surveyed on foot by qualified wetland scientists or were just specific areas of the site targeted (such as walking all drainages and other areas based on aerial photography review?) National Wetland Inventory (NWI) maps are only 60 percent accurate in forested environments, primarily because of canopy coverage of the ground surface. In addition, smaller wetlands would not show up because of the level of resolution. 3.14.a

Project maps should show existing site wetlands and other water features in greater detail. The location of all site wetlands, seeps and springs and their required buffers should be superimposed on a site map which also shows each proposed development alternative lot design. Doing this would help the reviewer B

determine the extent of both direct and indirect impacts on site wetlands for each alternative. Also, the category or type of each wetland on site should be described in the wetland report.

Wetland mitigation measures

Limiting the planting of non-native vegetation adjacent to wetlands and their buffers and combining that action with aggressive control of noxious weeds and non-native plants would help reduce impacts from construction and build-out. Mandatory participation in a homeowner's association would help assure that wetland information is provided to lot owners. 3.14.b

Another way to reduce permanent impacts to wetland wildlife function is to provide appropriately sized corridors (depending on type of wildlife use) to other wetlands and streams on site. These corridors should be placed in designated open space areas. B

Since hydroperiod changes to wetlands are likely to occur with the development of any of the alternatives, it would be ideal to begin to monitor current wetland hydrologic regime as soon as possible to obtain "background condition". The applicant should begin monitoring as soon as possible. B

If individual septic systems will be located on the property, the applicant should consider the use of artificial wetlands in conjunction with stormwater swales to help reduce nitrogen and other pollutants that could be generated on site. B

Use of a Wetland mitigation bank for this project is not an option because there are no pending or approved mitigation banks for this service area. However, advanced wetland mitigation would be an option, pending approval of a plan submitted by the applicant and approved by the jurisdictional agencies. Ecology would be happy to discuss this option with the applicant. A

If you have any questions concerning the Shorelands/Environmental Assistance comments, please contact Catherine Reed at (509) 575-2616.

Sincerely,

Gwen Clear by Julie Lippman

Gwen Clear
Environmental Review Coordinator
Central Regional Office
(509) 575-2012

206-1

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
15 W Yakima Ave, Ste 200 • Yakima, WA 98902-3452 • (509) 575-2490

RECEIVED
APR 01 2010
KITTITAS COUNTY
CDS

March 31, 2010

Mr. Kirk Holmes
Kittitas County Community
Development Services
411 N. Ruby Street, Suite 2
Ellensburg, WA 98962

Dear Mr. Holmes:

Thank you for the opportunity to comment on the Draft Environmental Impact Statement for the Marian Meadows planned Unit development and subdivision, proposed by Easton Ridge Land Company [RZ-06-00035/P-06-31]. We have reviewed the documents and have the following comments.

Water Quality

Project Greater-Than 1 Acre with Potential to Discharge Off-Site

An NPDES Construction Stormwater General Permit from the Washington State Department of Ecology is required if there is a potential for stormwater discharge from a construction site with more than one acre of disturbed ground. This permit requires that the SEPA checklist fully disclose anticipated activities including building, road construction and utility placements. Obtaining a permit is a minimum of a 38 day process and may take up to 60 days if the original SEPA does not disclose all proposed activities. 1.1.d

The permit requires that Stormwater Pollution Prevention Plan (Erosion Sediment Control Plan) is prepared and implemented for all permitted construction sites. These control measures must be able to prevent soil from being carried into surface water (this includes storm drains) by stormwater runoff. Permit coverage and erosion control measures must be in place prior to any clearing, grading or construction.

More information on the stormwater program may be found on Ecology's stormwater website at: http://www.ecy.wa.gov/programs/wq/stormwater/construction/ . Please submit an application or contact Lynda Jamison at the Dept. of Ecology, (509) 575-2434, with questions about this permit.

Erosion control measures must be in place prior to any clearing, grading, or construction. These control measures must be effective to prevent soil from being carried into surface water by storm water runoff. Sand, silt, and soil will damage aquatic habitat and are considered pollutants.

Any discharge of sediment-laden runoff or other pollutants to waters of the state is in violation of Chapter 90.48, Water Pollution Control, and WAC 173-201A, Water Quality Standards for Surface Waters of the State of Washington, and is subject to enforcement action.

Best management practices must be used to prevent any sediment, oil, gas or other pollutants from entering surface or ground water.

Air Quality

DUST

There is a need to carefully plan for and constantly monitor dust prevention and control activities throughout all phases of the project. Ecology suggests the proponents develop a Fugitive Dust Control Plan (FDCP) for the entire project area from start to finish, for the life of the project and beyond. The FDCP should be comprehensive and include measures for idle areas as well as active areas. Plans should be reviewed by all project managers who will be expected to implement them, and the resources to implement the plans should be required and secured. The FDCP should include, at a minimum, the following components. E 3.8.b

- Identification of project-related fugitive dust sources, assignment of dust control methods to each, and identification of who will be responsible for carrying out the measures during various phases of the project.
- A commitment to secure and train personnel to implement the FDCP, and clear assignment of responsibility for compliance during all phases of the project.
- A commitment and the ability to cease activity during windy conditions when best efforts are insufficient to control the dust.
- A clear explanation of how the dust control measures will effectuate compliance with applicable provisions of WAC 173-400-040.

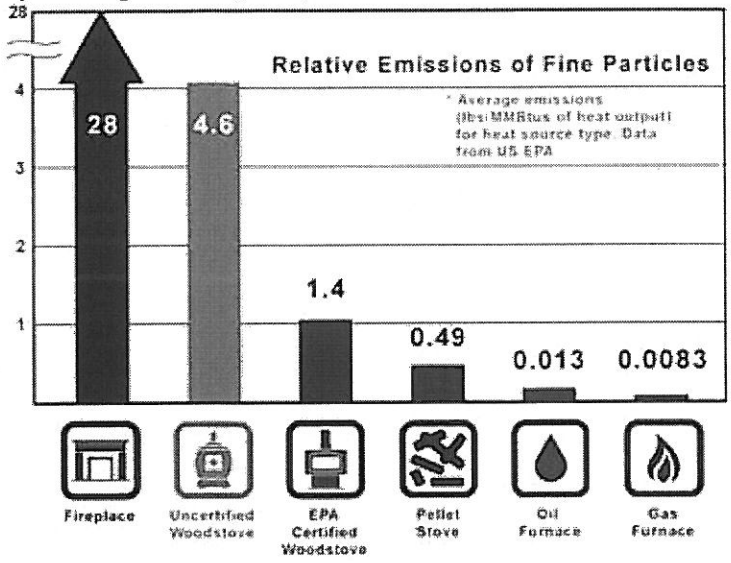
OUTDOOR BURNING

Ecology would like to encourage a smoke free project. This would include grinding of all land clearing debris instead of burning the material. Please contact Ecology's Air Quality Program for help with this. If outdoor burning is to occur, burn permits will need to be obtained from the Ecology Air Quality Program. Consider chipping the debris and using it on-site. Only natural A, E 1.1.e

unprocessed vegetation can be burned in an outdoor fire in Washington State. Burning all other material is prohibited – this includes construction debris.

HOME HEATING

Home heating impacts should addressed in the air quality portion of this DEIS. With the large size of this proposal, the installation and use of wood burning devices for home heating could have significant air quality impacts as well as negative human health impacts for residents. Wood burning devices emit many thousands of times as much harmful fine particle pollution as gas appliances for equivalent heat output as illustrated by the attached graphic. If wood burning devices will be used, they must be certified to Washington State standards and these devices may be curtailed during days with poor air quality. 3.8.d



The documented health effects of fine particle pollution include asthma, cancer, and other serious medical conditions.

In this region more that 40% of wintertime fine particle pollution comes from woodstoves and fireplaces, and the climate is particularly susceptible to stagnant air condition which exacerbate the build up and effects of fine particle pollution. As a result, reducing wood smoke pollution is a high priority.

Consider bringing natural gas to the site early in the development phase. Consider using propane if natural gas is not available. Consider a SEPA mitigation requirement that prohibits the installation of wood burning devices. If wood burning devices will not be allowed within the development, the project proponent should put forth enforceable measures such as ordinances and covenants to ensure that effective restrictions remain in place for the life of the project. 3.8.e

If you have any questions regarding the Air Quality comments, please contact Jared Mathey with the Air Quality Program (509) 454-7845.

Water Resources

Proposal No. RZ 06-00035/P 06-31, requires water rights. Water availability is essential for development. Ecology believes water availability should be addressed by the county and the project proponent in the submitted environmental documentation.

Using multiple scenarios, the projected water demand for Alternatives 1 – 5 is estimated from 55.05 acre-feet per year to 283.65 acre-feet per year. According to the Draft Environmental Impact Statement (DEIS) for the Marian Meadows proposal there are three different options for servicing this development with water.

1) **Easton Water District No. 3:**
According to our records, Easton Water District (District) currently has two water rights (CG3-21660C@1 and CG4-GWC282-D). Together these rights authorize up to 145 gpm and 137.2 acre-feet per year. A 2004 self assessment notes that the District used 38.6 acre-feet per year. The DEIS notes that the District used about 71 acre-feet in 2008. As stated in the DEIS, "The system currently serves 188 customers in the original town of Easton…". While the DEIS states "…storage is the principal factor that limits the existing system capacity to 542 connections", ultimately the District's use is limited to 145 gpm and 137.2 acre-feet per year. Thus, the District does not have adequate water rights to serve the 188 customers and the proposed project. A

Additionally, the Marian Meadows project is not within the service area of the Easton Water District No. 3. The District may expand their service area through a water right change or through an approval from the Washington State Department of Health consistent with RCW 90.03.386. 1.1.f

In summary, Easton Water District No. 3 does not have sufficient water rights to provide service to the Marian Meadows under any Alternatives or scenarios. A

2) **Public water systems provided by private companies or associations:**
The water purveyor is responsible for ensuring that the proposed use(s) are within the limitations of its water rights. If the proposal's actions are different than the existing water right (source, purpose, the place of use, or period of use), then it is subject to approval from the Department of Ecology pursuant to Sections 90.03.380 RCW and 1.1.f E

90.44.100 RCW. While the DEIS notes several nearby private water systems, it is unclear which if any may serve the proposed development.
Furthermore, the 2003 Municipal Water Law (MWL) was recently challenged in King County Superior Court. In a decision on June 11, 2008, the King County Superior Court declared three sections of the law unconstitutional. Ecology has since appealed this decision and the case should be heard during the Court's winter 2009-2010 term. The court found the defining terms "municipal water supplier" and "municipal water supply purposes," and the section of the statuette providing that certificates for municipal water rights issued based on system capacity are in "good standing". 3.5.b

Prior to the King County Superior Court decision, water rights certificates issued prior to September 9, 2003 for municipal water supply purposes based on system capacity ("pumps and pipes") were in "good standing" under the MWL. At this time, the "good standing" status of water rights held by both public municipal water suppliers and private water suppliers is in question and is currently pending before the state Supreme Court.

The decision from the appeal could affect this proposal. At this time, in light of this decision, Ecology is providing options for either public or private entities with water rights not completely put to beneficial use (documented by a so called "pumps and pipes" certificate). However, a key component of pursuing an option is to demonstrate diligence in developing the inchoate portion of this water right. Please refer to the attached guidance document, "2003 Municipal Water Law Interim Guidance and Interpretive and Policy Statement".

3) Private Wells:

In Washington State, prospective water users must obtain authorization from the Department of Ecology before diverting surface water or withdrawing ground water, with one exception. Ground water withdrawals of up to 5,000 gallons per day used for single or group domestic supply, industrial purposes, stock watering or for the irrigation of up to one-half acre of lawn and garden are exempt from the permitting process. E 3.13.a

On March 28, 2002 the Washington State Supreme Court ruled that the RCW 90.44.050 permit exemption does not apply where a developer of a residential subdivision proposes multiple wells to serve each lot in the development because in combination, the withdrawal will exceed the exemption criteria.

Marian Meadow is one large project proposing to develop up to 449 units that will clearly exceed one groundwater exemption as described above. Therefore, the groundwater exemption does not apply to this project and the proponent will be responsible for securing valid water rights for water use associated with this project.

If you have any questions concerning the Water Resources comments, please contact Breean Zimmerman at (509) 454-7647.

Sincerely,

Gwen Clear by Johnnie Lyn

Gwen Clear
Environmental Review Coordinator
Central Regional Office
(509) 575-2012

206

CITYOF ROSLYN

National Historic District and Preserve America Community

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APR 0 2 2010
KITTITAS COUNTY
CDS

Mr. Dan Valoff
Kittitas County Department of Community Services
411 N. Ruby Street, Suite 2
Ellensburg, WA 98962

April 2, 2010

Dear Mr. Valoff:

On behalf of the Roslyn City Council, I am writing to express our concerns with the adequacy of the draft environmental impact statement (DEIS) prepared for the Marian Meadows PUD proposal east of Easton. There appear to be several significant adverse environmental impacts associated with the proposed rezone and planned unit development that have not been adequately addressed and we are requesting that the DEIS be rewritten before it is issued in final form.

While we are pleased to see that an environmental impact statement is being required for this proposed action, we are concerned that the scoping process was completed two and a half years ago and that there was no recent opportunity to review and comment on the need to update the environmental documents that have been prepared. It would have been helpful if the original scoping documents were included with the DEIS so we could compare what was originally required with what was actually produced. We are also extremely disappointed to note that once again, despite our repeated written requests, that the City did not receive any notification from the County about the opportunity to review and comment on the DEIS. We only became aware that the DEIS had been circulated after the date of the public hearing when a private citizen brought it to our attention. Given the magnitude of the adverse impacts that the proposed project presents, we definitely could have benefitted from the full comment period to review the document and wish we had the opportunity to attend the public hearing.

In general terms we are also pleased to note that the document identifies several significant adverse environmental effects associated with the proposed action. However, given the time that has elapsed since the application was submitted over three and a half years ago, it is very difficult to discern when reading the DEIS whether the information provided and the referenced analysis is dated or not and whether it accurately analyzes the current conditions. If the document is to have value as a decision-making tool, then it must contain up-to-date information and the analysis must be complete. At a minimum, the document should be revised so that the dates of information on which conclusions are reached are clearly identified. More importantly, the document should be revised to incorporate more up-to-date information and analysis. For example, important documents on which the DEIS was based, such as the wetland study and the traffic analysis, both of which were prepared in 2006. Another example would be the County's recent adoption of amendments to its Comprehensive Plan to designate Easton as a Limited Area of More Intensive Rural Development (LAMIRD) and to establish boundaries in the immediate vicinity of the project where higher intensity development should and should not

3.1.a

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occur. There is no reference to this action in the DEIS and to our knowledge, no reference to the proposed development in the documents that supported the Comprehensive Plan amendment. This is particularly important since the proposed project is located outside of the Easton LAMIRD and is contrary to the requirements of the Washington State Growth Management Act and the findings of fact on which action on the LAMIRD was taken.

In general terms, we are also concerned that the DEIS does not adequately analyze the consequences of many of the potential adverse impacts that were identified , nor does it identify appropriate mitigating measures, and it does not clearly identify probable significant adverse effects that cannot be reasonably mitigated as required by state law. For instance, the document notes that the Project Sponsor has executed a Development Agreement with the Easton Water District to provide water service to the proposed Planned Unit Development but then acknowledges that the District does not have enough water to serve the development. Unfortunately, the document does not adequately analyze the consequences of inadequate water supply, the effects on downstream property owners with senior water rights, the difficulties associated with transferring water rights, nor does it identify mitigating measures that can reasonably be accomplished to address this mater. If there is not adequate water to serve the proposed PUD, then the DEIS document should clearly state this and clearly identify the consequences of inadequate water service.

In addition to our general concerns about the adequacy of the DEIS, we have a number of specific concerns that must be addressed before a final EIS that satisfies the requirements of state law can be issued, including but not limited to:

1. In Chapter 1, page 1 the insert entitled "What is an Environmental Impact Statement?" fails to acknowledge that an EIS can also be used to deny a proposal. C

2. Starting with Figure 1-2 the DEIS consistently fails to identify the boundaries of the Easton LAMIRD and the location of the proposed project outside of the LAMIRD. 3.1.a

    a. The maps in the document should also be revised to show the watershed for the City of Roslyn and the Roslyn city limits. C

3. Starting on page 1-11 there is a summary listing of permits and approvals that are required. There is no mention of the pending water rights application submitted by the Easton Water District over twenty years ago or any additional actions that may be required to secure adequate water to serve the proposed development. Also, in this section:

    a. Transportation concurrency is not mentioned;

    b. No reference is made to the required environmental review of future phases of the project; C E

    c. The requirements and significance of a Environmentally Critical Area Modification Approval should be explained; and E

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d. There is no mention of aviation easements, notices to title, or other measures that may be required in conjunction with the proposal to locate residential structures in airport safety zones. 3.2.k

4. Chapter 1, Project Summary does not include a summary of mitigating measures and significant adverse impacts that cannot be mitigated in accordance with the provisions of WAC 197-11-440 (4). C

    a. This Chapter should also be revised to include major conclusions and significant areas of controversy and any remaining uncertainties and issued to be resolved.

5. On page 2-1 the discussion of what is proposed by the Applicant refers to a "pro-forma" subdivision layout in the easterly portion of the site. The significance and consequences of this statement are not clear and the discussion should be elaborated. It should also be made clear throughout the document what if anything beyond Phase 1 was analyzed and what additional environmental review will be required for future phases. The document notes for instance that the lot arrangement on the easterly portion of the site is provided for illustrative purposes only and is only one potential lot arrangement. This begs the question, what are the other potential lot arrangements, and when will they be disclosed and fully analyzed? 2.2.b

6. The No Action Alternative described on page 2-5 is based on an assumption that Easton Water District No. 3 would provide water to the project. The project site is outside of the service area boundaries of the Easton Water District and the District does not have adequate water to serve properties within the district and the proposed development. This is not a reasonable assessment of what would happen if the proposed development did not occur. Nor is it reasonable to include development within an airport safety zone or in a geological hazard area. In order to be a meaningful decision-making tool, the No Action Alternative should be redefined and the corresponding analysis revised accordingly. 2.2.f 2.2.g

    a. Have the environmental impacts of extending water service outside of the boundaries of the Water District been analyzed? If so, when did this occur?

7. On page 2-7 and elsewhere in the document is reference to tenure scenarios speculating on the characteristics of future residents in the PUD if approved. While this information is interesting, it is not relevant. Since the Project Sponsor cannot control the frequency or duration of the use of residential lots once they are created all of the analysis must be based on the full use or worse case scenario. This is especially true in the case of water service, since water use cannot be limited and commitments that exceed water rights cannot be made. 2.2.h

    a. The importance of making this revision is reinforced by the example of Kendall Washington cited on page 3-24. A

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8. On page 2-7 the project schedule and phasing is discussed. This section is out of date and must be updated. It is also states that 45 lots would be placed on the market in each year over a five year period, but there is nothing in the application materials to corroborate this. Once final plat approval is obtained there is nothing that would limit the marketing and sale of lots. This section should be updated and the corresponding analysis updated. C

9. Figure 2-1 and subsequent figures show development in airport safety zones in violation of WSDOT Guidelines and development in debris flow hazard areas. It should be clearly stated in the document if County Development Regulations permit this and if so, the environmental impacts associated with these actions should be clearly identified and appropriate mitigation required. A

10. Starting on page 3-2 and throughout the document there is no reference to the proximity of the site to the City of Roslyn Watershed. C

11. Starting on page 3-5 there is reference to the Kittitas County Comprehensive Plan designation of the site as Rural. As previously mentioned, there is no reference to the Comprehensive Plan designation of Easton as a Limited Area of More Intensive Rural Development. The DEIS also notes that the site is zoned R-3 and Forest and Range Land and that the purpose of R-3 zoning is to provide areas where residential development may occur on a low-density basis. The document fails to address however how the high densities of development that are proposed fit with this rural designation or meets the requirements of the Washington State Growth Management Act (GMA). 3.1.a

    a. Figure 3-3 highlights the substantial number of vacant lots in the vicinity of the project, yet there is no discussion of the basis for the density bonus request or the environmental impacts of approving such a request without supporting evidence. E

    b. No distinctions are made in the document between the density of development permitted within the Easton LAMIRD and the density of development proposed for outside of the LAMIRD. 3.1.a

    c. There are numerous references throughout the documents to development activities on .25, .5, and .75 acre lots as well as high density multi-family development. The DEIS should be revised to include further analysis of the environmental consequences of permitting these urban densities in a designated rural area and the cumulative effects county-wide of the precedent of allowing urban levels of development in designated rural areas contrary to the provisions of the County Comprehensive Plan and the requirements of the GMA. 3.1.d E

    d. There is no analysis in the DEIS of how the population projected for the proposed PUD correlates with the growth forecasts and population allocations on which the County Comprehensive Plan is based. It would also be appropriate 3.1.f

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to analyze the projected growth against the growth that is projected for the Easton LAMIRD.

e. There is no analysis in the DEIS of how the capital facilities required to serve the proposed action correlates with the Capital Facilities Plan that the County is required to prepare in accordance with the provisions of the Growth Management Act. C

f. On page 3-18 there is a discussion of the definition of rural with the context of the GMA, yet there is no discussion of how the proposed project complies with the County's obligation to protect the rural character of the community. There are numerous statements throughout the document that are contrary to the definition of rural character that is provided, but these inconsistencies are not adequately addressed in the document. For instance, on page 1-23 is the statement "Regardless of the alternative, development in the area would represent a significant change in the visual character of Easton Ridge", and on page 3-28 " The size of the proposed lots and associated clearing would result in elements of the built environment such as buildings and ornamental landscaping being the dominant features". However the DEIS properly identifies rural character as patterns of land use and development "in which open space, the natural landscape, and vegetation predominate over the built environment". The document does not address the consequences of this apparent GMA violation. Or as previously noted, the proposed development is predicated on the extension of water service outside of the water district's service area boundaries, yet the criteria notes that rural development does not typically require the extension of urban governmental services. Once again, the consequences of this apparent GMA violation are not adequately addressed in the DEIS. E E

g. There is an insert on page 3-18 that summarizes the results of a public meeting held in Easton in March 2005. The document does not clearly identify whether the proposed development is consistent with the expressed desires. A

h. It is noted on page 3-25 that factors related to proximity of work do not favor Easton as a location and that most employment opportunities are over 40 miles away in Ellensburg or on the other side of Snoqualmie Pass in the Seattle area. On page 3-29 the document notes that "Residents of Marian Meadows would be unlikely to derive significant support from traditional rural resource-based economies, and would likely be predominantly commuters to urban areas. However, the document fails to document how the development of a new bedroom community in a designated rural area fails to foster traditional rural lifestyles, rural based economies, and opportunities to both live and work in rural areas or how it promotes sprawl or the environmental impacts associated with failing to protect the rural character of the community. 3.1.c

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i. On page 3-28 there is an insert that notes that the proposed development would more than triple the current number of existing parcels in the vicinity and more than triple the number of existing residences. The document fails to explain how this is in keeping with protecting the rural character of the area and does not adequately address the cumulative impact of the proposed action. 3.1.c

j. The document also notes on page 3-28 that the proposed development "**represents a substantial change in density and open space in the vicinity** (emphasis added), particularly the lots directly adjacent to the site, which are generally greater than 3 acres. The majority of the property in the vicinity consists of lots larger than 3 acres. Of the privately owned property in the vicinity of outside of Marian Meadows about 75 percent is in parcels larger than 3 acres". The environmental consequences of introducing a much higher density into this designated rural area should be addressed as well as the GMA compliance issues that the action raises. In addition, the significant number of vacant lots, the high vacancy rates, and the basis for the requested density bonuses should also be assessed. 3.1.c

12. The DEIS makes frequent references to the magnitude of the proposed development. For instance, on page 3-97 the document states that Marian Meadows is the equivalent of adding a new small town in the County. The document notes on page 3-43 that the cumulative FTE population would increase by 2,630 residents which is 140% larger than the City of Cle Elum a designated Urban Growth Area and would be equivalent to adding to a designated rural area of the county a city comparable in size to the cities of Moxee or Warden. On page 3-34 it is noted that the population could increase by 2,350 full time residents or the addition of a city the size of Leavenworth or Westport. The DEIS does not adequately address the cumulative environmental effects of such an action nor does it address how this action preserves the rural character of the County, or how this action is consistent with the County's obligation to implement the Growth Management Act. The document frequently makes reference to the precedent that the approval of the proposed action would set if approved (for example see the bottom of page 3-37), yet it does not analyze this impact of this precedent. This is particularly important as the Project Sponsor has submitted similar development proposals in other parts of the county that also do not comply with the provisions of the Growth Management Act or the County Comprehensive Plan. 3.1.c 3.1.d

13. On page 3-44 the discussion of measures to reduce the effects of the proposal and alternatives on land use is woefully inadequate and should be substantially expanded, with a particular emphasis on the importance of complying with the provisions of the GMA and given the significant number of adverse impacts that cannot be mitigated, of denying the application. E

14. On page 3-44 passing reference is made to the potential need for new commercial development that would arise as a result of this proposed new urban development outside of the designated LAMIRD. How this need will be met is not addressed in the DEIS and it definitely should be. This is particularly important as the Project Sponsor has 3.1.h

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used in other instances the previous approval of PUD's as an argument for the County to approve new commercial development outside of designated Urban Growth Areas contrary to the GMA and the County Comprehensive Plan.

15. On page 3-55 it is noted that a background growth rate of 1.43 percent was used to forecast future traffic volumes. It appears that this may be a rate that was used in 2006 and it is not clear whether this is an appropriate growth rate that is consistent with more recent environmental analysis conducted by the County. 3.2.g

    a. It is very difficult to understand the date of the data used in the traffic analysis and the baseline year used for the analysis. This section should be updated to use up to date information and to make it clear to the reader the age of the information that was used. 3.2.h

16. On page 3-62 the document indicates that the responsibility for road maintenance would generally be the same as they are today. On page 3-74 the document notes that there will be a nine-fold increase in traffic volumes on County roads. The document fails to address how much road maintenance costs will increase, how the County would pay for the increased maintenance costs especially since the factors that influence cost the most, use and weather are outside of the control of the County, or the environmental consequences of the homeowners association failing to adequately maintain the roads on site. In addition, the impact of the increased maintenance costs on the county budget should also be assessed. 3.2.h

17. The document identifies several mitigating measures that can be taken to address traffic impacts and increased maintenance costs attributable to the proposed project. The document fails to address the Project Sponsor's responsibility to pay for the mitigating measures required, such a new roundabout, new turn lanes, new stop signs, and merging lanes. D

18. The discussion of the impacts associated with the proximity of the proposed development to the Easton State Airport is confusing and misleading. All aviation safety zones should be clearly identified and the impacts clearly assessed. The incompatibility of residential development with airports is well known both in terms of safety risk and noise conflicts. The WSDOT Aviation Risk Land Use Guidelines do not recommend residential development in zones 1,2,3,4, or 6 and only at a density of 1 dwelling unit to 5 acres in Zone 5. The proposed development creates new lots in these zones in clear violation of these guidelines. The consequences associated with the increased potential for animal strikes and additional visual hazards identified in the document were not adequately addressed nor were adequate mitigating measures fully addressed. More attention should be given to the importance of avoidance of adverse impacts by not allowing development in any safety zone as well as the through the denial of the proposed action. A

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a. The document should also include documentation of previous airplane accidents in the area, the hazards associated with flying in the area, and the critical role that the airport plays in fighting forest fires.

19. It is extremely important to note that the transportation analysis fails to clearly document the location of new roads that would be required to serve the PUD and the environmental impacts associated with constructing these roads to county standards on such steep slopes in known landslide hazard areas. The document also fails to assess the environmental impacts associated with the continued use of the existing logging roads on the site. Given the steep grades on the eastern portion of the site it is not clear whether roads can even be built to county standards and whether they can provide year round access or not. The public service implications of this should also be addressed. 3.2.g

20. Starting on page 3-89 is a discussion of the impacts of the proposed project on parks and recreation facilities and services and on page 3-97 we note there is another reference to the magnitude of the proposed project, "**The size of the Marian Meadows development is equivalent to the population of a small town...**"(emphasis added). On page 3-99 the DEIS states that "The major effect of the project on adjacent public lands owned by the Forest Service and DNR is likely to be continued long-term chronic enforcement problems. Because of the difficulty of enforcing restrictions on highly mobile uses such as ORV and snowmobiles, in the absence of a designated trail system continued use of informal trails would likely result in impacts of erosion and disturbance of wildlife". In as much as the City of Roslyn watershed is surrounded by these lands, this section should be rewritten to also assess the impacts of inadequate onsite recreation opportunities and the potential impacts associated with unrestricted and unauthorized recreational activities in the City watershed. This assessment should include not only the additional enforcement costs to be incurred by the City of Roslyn, but also the costs of additional water treatment and the development of new water supplies. The mitigating measures should also be rewritten to more clearly identify the responsibility of the Project Sponsor to provide adequate opportunities for recreation onsite and to limit access to unauthorized areas. The costs of continuing long-term chronic enforcement problems should not be passed on to the general public or other public agencies. A 3.3.a D

21. Starting on page 3-104 there is a discussion of the impact of the proposed development on public schools including "either a substantial expansion of the existing school would be needed, including the acquisition of a substantial amount of land, or one or more new school sites and new school buildings would be required". Unfortunately the document did not identify any measures to reduce this impact. Additional consideration should be given to measures that would require the Project Sponsor to mitigate the impact that the proposed development is causing and to more fully assess the impact on the current level of service if this does not occur. 3.4.a D

22. The proximity of the site to the City of Roslyn's watershed is of critical concern to the City. The document fails to acknowledge or assess the potential impacts of wildfires on the Roslyn watershed which is located over the ridge from the site of the project. The 3.4.b

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history of wildfires on the site should be discussed and the potential environmental impacts associated with a wildfire in the City's watershed should be addressed. 3.4.a

a. On page 3-119 please review for accuracy the stated capacity of the equipment owned by Kittitas Fire District Number 3. In addition, the capabilities of the Fire District's equipment should be assessed, including an assessment as to whether the equipment will be able to travel on the steep slopes on the site, whether all weather access is possible, and whether the equipment has the capacity to ford Silver Creek as suggested in the document. C

b. On page 3-123 it is stated that the County Comprehensive Plan requires that when the use of a forested lands is changed, the party doing the changing is responsible for providing fire providing a fire-resistant buffer around the property. The document should be revised to include a determination of whether an adequate buffer can be established to protect the City watershed from disastrous impacts and if so included as a mitigating measure. Especially in light of the comment on page 3-127 that **"All of the factors for creating extreme hazard conditions are present in the Easton area, especially on the slopes surrounding the valley. Adding to the risk is the near constant wind from the west that quickly dries forests after snowmelt"** and on page 3-128 **"The proposed lot size and separation of buildings will add to the risk of fire spreading to adjacent buildings as compared to rural large development"** and on page 3-129 **"The steep easterly portion of the site provides an area of extreme wildfire hazard due to the location on a slope and the potential for wildfires to move more quickly up hill, heating fuels as it moves uphill and reinforcing the speed and heat as it moves"** and on page 3-132 **"Built in fire suppression system are of limited effectiveness in reducing risk of wildfire"** (emphasis added). If the City watershed cannot be adequately protected, then it should be clearly stated and discussion added regarding the need to deny the proposed project on that basis. E 3.4.f A

c. The document states on page 3-127 that the addition of 443 new homes will increase the potential sources of residential fires by 30 percent. The document should be revised to address the additional increases associated with the cumulative impacts of the project as well as documentation of the frequency of fires historically in this area. An assessment of the potential damages and costs of a wildfire in the area should also be assessed. The mitigating measures should be revised to more clearly identify actions that can be taken to reduce the risk of fire spreading to adjacent lands 3.4.f

d. The document indicates that it may be advantageous to establish a second station on the north side of I-90. The impacts of this action have not been assessed nor has the appropriateness of extending an urban service into a designated rural area. The need for new equipment was also discussed but the document fails to clearly identify that the Project Sponsor should be fully D

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responsible for any new facilities, equipment, staff, and training that may be required by the proposed action.

e. The DEIS also notes on page 3-128 that Sparks Road provides the only public access to the site and if access along Sparks Road is blocked there is no access to the site. The document also notes that if the bridge over Silver Creek is blocked that there would be no access to the site and that the upper easterly portion of the site could be rendered impassable for days by a snow storm. Reference is made to alternative access routes including fording Silver Creek by emergency vehicles or unauthorized crossings of private property. The DEIS must be revised to include an assessment of the consequences of not meeting the requirements of the International Fire Code, viable alternative forms of access must be identified, and the mitigating measures must include measures that can be realistically achieved to provide alternative access. E

f. The document also notes on page 3-138 that "The volunteer fire department is less assured of the ability to add personnel because it relies on volunteers. The challenge of getting enough volunteers would be increased with the greater proportion of residents commuting outside of the area or being seasonal residences". The impacts of this should be more thoroughly assessed and mitigating measures identified. C

23. On page 3-135 the assumptions made regarding the number of new residents requiring police service should be reconciled with the assumptions in other sections. In addition, the document should clearly identify the number of new law enforcement officers that will be required to serve to proposed development and clearly indicate that it is the responsibility of the Project Sponsor not the general public to pay for the increased costs. In addition, the effects of the decline of the level of service that was identified on the bottom of page 1-136 should also be more thoroughly assessed. 3.4.k

24. On page 3-138 the document notes that the "additional development in the area could result in demands equivalent to an additional small town with additional needs for response also based on population characteristics". The environmental impacts associated with creating a demand for yet another urban service in a designated rural area should be assessed and mitigating measures identified. 3.4.l

    a. On page 3-141 the document suggests that it would be the responsibility of all property owners to mitigate the impacts on the local fire and hospital district attributable to the proposed action. This section should be revised to more clearly identify the measures required of the Project Sponsor to mitigate these impacts and not pass them on to others that do not benefit from the proposed action. E

25. On page 3-142 the document should be revised to more clearly indicate that it is the responsibility of the Project Sponsor to mitigate the identified impacts on postal service. E

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26. Starting on page 3-144 the section regarding water service is of critical importance and is woefully inadequate. The document should be revised and substantially rewritten and at a minimum should address the following:

    a. The priority dates and certificates for the three wells owned by the Easton Water District should be attached to the document and analyzed to verify to confirm what water rights the District has and the extent to which they are junior to other downstream rights. B 3.5.a

    b. The discussion of the number of users served by the Water District, the ERU requirements, and the number of new users that may be permitted is of confusing and must be rewritten. 3.5.d

    c. Since the Project Sponsor cannot restrict the frequency or duration of the use of new lots that are created, and the Water District cannot commit to provide water that it does not have the rights to, the entire section should be analyzed based on an assumption of full-time use. 3.5.d

    d. On page 3-151 and on several other pages, the document makes reference to the potential approval of a water rights application submitted by the Water District over 20 years ago. Documentation should be provided as to why this is considered a viable alternative. More importantly, the document should assess the consequences of this application is not approved or remains in pending status. 3.5.e

    e. There are several references to a Development Agreement that was executed between the Easton Water District and the Easton Ridge Land Company in 2004. No analysis is provided as to whether this is a legally binding and sound agreement or whether the measures included in the agreement will result in adequate service to Marian Meadows without a reduction in service to the rest of the District. There is also no indication that an environmental review of the extension of urban services to a designated rural area has been conducted or whether this action is GMA compliant. 3.5.f E

    f. The document should be revised to address whether the SEPA/NEPA review that was conducted for the Easton Water District in conjunction with the federally funded water system improvements included an analysis of the impacts of providing water service outside of the boundaries of the District's water service areas. E 3.5.g

    g. The document should be revised to address whether the Comprehensive Water System Plan for the Easton Water District has been formally amended to include the provision of water outside of its water service area boundaries. The document should also address whether this amendment has received all required local and state approvals and whether the County Comprehensive Plan E

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and Capital facilities Plan has been amended to include this amendment to the water service area boundary.

h. It is extremely important to note, that on page 3-152 and on other pages, the document indicates that the Easton Water District does not have adequate water rights to fully serve Marian Meadows, and that the more water it provides to this user outside of its water service area, the less water there will be for others within its boundaries. **In other words, if the Easton Water District provides water service to Marian Meadows which is outside of its service area and the Easton LAMIRD, then it would have no water available to serve any future development within its service area and within the Easton LAMIRD.** This is a critical consideration, as the Findings of Fact that were approved for the Easton LAMIRD in late 2009 states that the Easton Water District has adequate water to serve the future development within the LAMIRD and no mention was made of this proposed project or the possibility of extending water service outside of the water service area for the Water District. Unless the County intends to rescind the action approving the Easton LAMIRD, this section of the DEIS must be rewritten to analyze how an adequate supply of water to serve all development activities associated with the Marian Meadows PUD can be secured from a source other than the Easton Water District and the impacts of this action on other property owners. A 3.5.h

i. The document notes that the development of individual wells could be an alternative source of water and on the bottom of page 3-152 that one of the disadvantages of this alternative is that individual well water supplies do not provide a source of water for hydrants and fire flow. The document should be revised to address the environmental consequences of inadequate water supply to provide fire service to the proposed project. The document should also be revised to include an analysis of the consequences of the current moratorium on exempt wells and the challenges associated with the transfer of water rights. 3.5.c

j. There are several references in the document that suggest a high degree of interconnectivity between ground water and the flows in fish bearing rivers in the vicinity of the project (see page 3-247). As a result, the environmental effect of the concentration of individual wells in general and on fish habitat in particular should be more fully analyzed. 3.15.f

k. The discussion of mitigating measures focuses on measures that can be taken to help reduce water demand. This misses the point of the preceding analysis, that an adequate source of water supply to serve the proposed development has not been identified and that the number of lots must be reduced or the proposed development must be denied. A

27. Starting on page 3-156 is a discussion of the sewage disposal requirements and impacts associated with the proposed establishment of a new small town in a designated rural area. The application suggests that a small sewage treatment plant will be installed to

serve the proposed new development and that the effluent will be applied to the ground. This section should be revised to address the consequences of extending yet another urban service into a designated rural area. In addition, the document should be revised to identify the sites where the discharge will occur and assess the environmental consequences of doing so. This is particularly important in light of the highly pervious soil conditions in some areas, the winter weather conditions, and the highly unstable slopes in the project area. 3.5.l

a. On page 3-163 and on other pages, the document identifies the high cost of operating a sewage treatment facility and calls into question the viability of such an approach. Also on page 3-166 the risk of failure of operating a complex system by a homeowners association is referenced. As a result, much more analysis should be conducted of the consequences of concentrating individual septic services in the project area. 3.5.n

b. The mitigating measure identified on page 3-166 do not clearly identify measures that can be required of the Project Sponsor to ensure that adequate sewage treatment service is provided. D

28. Starting on page 3-167 the document assesses the impact on storm water facilities and notes that the County has adopted the Storm Water Manual for Eastern Washington prepared by the Department of Ecology. The document indicates that this manual does not assess the potential for hazards such as debris flows and as a result, this section of the DEIS should be reviewed to make sure that it adequately assesses the environmental consequences of the proposed action and that the mitigating measures fully protects the public safety. This is particularly important in light of the frequent occurrence of rain-on-snow events in the project area and the reference on page 1-22 to the catastrophic effect that future debris flow and runoff could have on residents in the development and off site. D 3.5.p

    a. The document refers to the typical 2- and 10-year storm event, but no mention is made of 25 year storm events. This section should be reviewed to make sure that DOE requirements have been accurately interpreted and assessed. D

    b. At least a preliminary engineering analysis should be conducted to confirm that the requirements of the Storm Water Manual for Eastern Washington can be met on site and that all potential impacts can be mitigated. B

29. On page 3-174 it is noted that the existing electrical substation is near capacity and needs to be replaced. The fair share contribution that should be required of the Project Sponsor for this improvement should be addressed in the mitigating measures as well as the ability of the substation to serve future growth planned for the LAMIRD. D

30. The mitigating measures identified on page 3-185 to address impacts on visual quality, light, and glare should be revised to also include such measures as the reduction of the number of lots that should be permitted or the denial of the proposed action. 3.6.a

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a. This section should also be rewritten to more clearly assess the effectiveness of existing County regulations governing lighting and more specific mitigation measures that can be imposed on the Project Sponsor to ensure that "dark skies" are maintained. 3.6.b

31. The document includes a limited analysis of the land slide hazards in the project area. No geotechnical analysis of specific improvements was conducted which is a significant omission, particularly in conjunction with the need to construct new roads in areas with a moderate to high potential for rock fall and areas highly susceptible to landslide and erosion hazards. The document notes on page 3-232 that not enough is known about the steeper easterly portion of the site to accurately assess risk. Given the realistic potential for serious adverse consequences and the potential opportunity to avoid them, further analysis should be conducted now, and not deferred until after action has been taken on the proposed project. In addition the maps should be revised to more clearly identify hazard areas, no build areas, and required setbacks. 3.11.a

32. It appears that there are several jurisdictional wetlands on the site, but the document fails to adequately identify their location and the impacts of the proposed project on them. The discussion of mitigating measures makes a passing reference to avoidance of adverse impacts, but this section should be expanded to include an assessment of required buffers, the identification of no build areas, and specific actions that can be taken to mitigate projected impacts and all maps should be revised accordingly. 3.14.a 3.14.b

33. Starting on page 3-271 is an assessment of the proposed project on fish and wildlife, including a passing reference to the substantial public investment to improve wildlife corridors in the project area. The document should be revised to more clearly assess the impact of the proposed project on these wildlife corridors. In addition, the document does not make reference to the study that is currently being conducted on cougars in the vicinity of the project. The mitigating measures should be revised to more clearly identify actions that can be taken by the Project Sponsor to mitigate the adverse impacts that the proposed project will have on wildlife in the project area. 3.15.e

34. Chapter 3 Environmental Consequences should be revised to include a summary of existing plans and regulations applicable to the proposal and how the proposal is consistent and inconsistent with them in accordance with the provisions of WAC 197-11-440 (6). E

a. In addition, the document should include maps that clearly identify all environmentally sensitive or critical areas, required buffers and setbacks, and no build areas, and the adequacy of existing County regulations to protect these areas. E

35. The document should also be revised to more clearly identify and assess the financial impacts of the project on taxpayers within the County and on the County budget. 3.4. m

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In addition to our concerns about the adequacy of the DEIS document, we have several other concerns that may have a bearing on the adequacy of the environmental review. In particular, a letter from the applicant to the former County Director of Development Services, Darryl Piercy, and dated January 24, 2007 raises several concerns:

1. The letter states that "any instances where future development or site work (such as erecting a water tank) is likely to impact slopes will be addressed by best management practices identified in the Construction Stormwater Permit that the applicant will obtain from the Washington Department of Ecology". Given the presence of hazardous slopes, land slide hazard areas, and hazardous debris flows, these impacts should be fully identified now and fully assessed in the DEIS and all maps revised accordingly. 3.11.a

2. The letter refers to a Forest Practices Act permit that has been issued for the site. This permit should be included as an appendix to the DEIS and reference should be made to all SEPA mitigations that have already been required on the site. E

3. The letter notes that two small quarries on the site are not a part of the proposed plat and will need to be addressed as the development of the property progresses. The DEIS should address whether these facilities have been designated as mineral lands and the compatibility of the proposed development with their ongoing operation. Current onsite activities cannot simply be excluded from the proposed development in order to avoid an analysis of them. The permits issued for these facilities should be included in the DEIS and an analysis of the conditions of approval should be incorporated into several sections of analysis. 3.11.c

A review of the SEPA checklist prepared by the Applicant also raises a number of concerns that may have a bearing on the adequacy of the DEIS, including:

1. The checklist indicates that there are no known indications or history of unstable soils in the immediate vicinity which is not substantiated by the DEIS and calls into question the veracity of other information provided by the Applicant. 3.11.a

2. The checklist refers to approximately 137, 000 cubic yards of earthen material that will be excavated for grading, cutting, and filling of roads. This is not addressed in the DEIS. The checklist also refers to the importing of 37,000 cubic yards of material that may be imported for road surfacing, this was not addressed in the DEIS. The checklist also references 150, 000 tons of rip rap and gravel to be produced at the on-site rock quarry for use on site. The DEIS does not address the need for rip rap or the environmental consequences of this activity, nor does it address the specific impacts associated with the production or use of this material. 3.11.b

3. The checklist states that some clearing will occur within 200 feet of one or more intermittent streams. The impacts of this action have not been assessed nor were the impacts associated with the referenced new stream crossings that may occur in conjunction with the proposed new development. 3.12.b

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4. The checklist indicates that water processed by the onsite sewage system is expected to be discharged for on-site irrigation and stream flow augmentation to a Type 5 stream located on the PUD property but not within the long plat boundaries. This site(s) has not been identified not analyzed in the DEIS. 3.5. l

5. The checklist states that the domestic sewage treatment will be provided by a reclaimed water facility operated as a private utility. As previously noted the viability of this is seriously questioned in the DEIS. Also, the checklist states that 60,000-80,000 gallons of effluent a day will be accommodated. The DEIS must be reviewed to make sure that it adequately assesses the environmental consequences of the operations of a facility of this magnitude, the location of discharge especially given the winter weather conditions, and the handling of any bio-solids that may be produced. 3.5. l

6. The checklist states that home construction will encourage Built Green concepts and Energy Star certified products as much as possible. How this will be determined has not been assessed.

7. The checklist states that the Kittitas County Water District Number 3 has a well house on the southwest corner of the site. The DEIS should be reviewed to determine if potential impacts on this well have been adequately assessed and whether adequate wellhead protection measures have been adequately identified. This is particularly important in light of the plans to use water from the onsite sewage treatment plant for onsite irrigation, and the risks that were identified in the DEIS of the effluent from the onsite treatment plant failing to meet health standards. 3.5. k

8. The checklist states that no part of the site has been designated as an environmentally sensitive area. Other application documents and/or the DEIS however reference landslide hazard areas, steep slopes, and jurisdictional wetlands and the checklist references 85% slopes on the site. The DEIS should be reviewed to ensure that all environmentally sensitive areas on or near the site have been identified, the potential impacts assessed, and appropriate mitigating measures identified.

9. The checklist fails to identify that the project will occur in the immediate vicinity of a state-owned airport.

All factors considered request that the DEIS be withdrawn and substantially rewritten and then re-circulated for review and comment. In doing so, greater emphasis should be placed on the identification and evaluation of additional mitigation measures and in noting that the adverse impacts that cannot be mitigated can simply be avoided by not approving the proposed action.

In closing, we look forward to your assistance in making sure that the record is clear and unambiguous regarding this totally unacceptable and unwarranted proposal. It is contrary to the provisions of the County Comprehensive Plan, the provisions of the Washington State Growth Management Act, the Washington State Environmental Policy Act, and sound planning principles, and we encourage the County to utilize your substantive SEPA authority to deny the proposed action. In addition, we once again respectfully request that the City be made a party of record for not only this development

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proposal but all other development proposals received by the County for the Northern portion of Kittitas County.

Sincerely yours,

CITY OF ROSLYN

Jeri Francisco Porter

Jeri Francisco Porter
Mayor

Cc: Kittitas County Commissioners
Roslyn City Council
George Martinez
Kenyon Disend PLLC
Roslyn Planning and Historic Preservation Commission
Adam Gravely
Gregg Dohrn
City of Cle Elum
Town of South Cle Elum
WSDOT
Washington State Department of Commerce
Futurewise
Suncadia
Eastern Washington Growth Management Hearing Board
North Kittitas County Tribune

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Dan Valoff

From: Dan Valoff
Sent: Friday, April 02, 2010 10:49 AM
To: 'Teske, Mark S (DFW)'
Subject: RE: Request for comment deadline extension Marion Meadows

Thanks Mark, your request for an time extension is granted.

Dan Valoff
Staff Planner

Kittitas County Community Development Services
411 N Ruby Street Suite 2
Ellensburg, WA 98926
dan.valoff@co.kittitas.wa.us
P: 509.962.7637
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All e-mail sent to this address will be received by the Kittitas County e-mail system and may be subject to Public Disclosure under Chapter 42.56 RCW and is subject to archiving and review by someone other than the recipient.

From: Teske, Mark S (DFW) [mailto:Mark.Teske@dfw.wa.gov]
Sent: Friday, April 02, 2010 10:47 AM
To: Dan Valoff
Subject: Request for comment deadline extension Marion Meadows

Per our phone earlier conversation, WDFW requests an extension of the Marion Meadows DEIS comment deadline. We believe that by the 8th of April, we will be able to have the information we need to comment. Thank you.

Mark Teske

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KITTITAS COUNTY
CDS

State of Washington
Department of Fish and Wildlife
South Central Region – Ellensburg District Office, 201 North Pearl, Ellensburg, WA 98926
Phone: (509) 962-3421, Fax (509) 925-4702

April 2, 2010

Mr. Kirk Holmes
Kittitas County
Community Development Services
411 N. Ruby Street, Suite 2
Ellensburg, WA 98962

Marion Meadows Draft Environmental Impact Statement (DEIS)

Thank you for the opportunity to comment on the Draft Environmental Impact Statement (DEIS) for the Marion Meadows Planed Unit Development (PUD) and subdivision. We have reviewed the documents and have the following comments at this time.

Zone/ Plat Terrain

The number of proposed lots appears excessive when the topography and terrain are taken into consideration. Some of the terrain is quite steep. Applying parcels or a parcel grid formula uniformly across the property independent of terrain appears blind to site constraints. Ground that is steep should not be treated the same as gentle terrain for the purpose of placing lots. 2.2. c.

Mountain Goats

The mountain goat habitat that is mapped under represents the goat use of the area. The impact of this urban density development on mountain goats is a concern at this location. 3.15. a
The dense development that is proposed will eliminate hundreds of acres of habitat. The development also has the potential to significantly reduce or eliminate access to important winter elevations that mountain goats use during harsh winter conditions. 3.15. b
Disturbance associated with construction, snow management and or removal as well as the general disturbance that comes with high density (urban) development are concerns. 3.15. c
Motorized recreation within and accessing surrounding lands is a concern. High density development along the Interstate 90 corridor forecloses on options that allow for movement across the valley. 3.15. d
These issues are insufficiently addressed in the DEIS.

Connectivity Across Interstate 90

This proposal has the strong potential to negatively impact the substantial investment that Washington State Department of Transportation (WSDOT) is making in the I 90 corridor to make it permeable to animal movements. Subsequent phases of the Interstate 90 widening project will require costly measures to remediate the impacts associated with this proposal. This issue is inadequately addressed in the DEIS. 3.15. e

Silver Creek and Water

Silver Creek located just west of the proposed development is a fish bearing stream. We are concerned with groundwater impacts from hundreds of parcels serviced by septic systems. The quantity of wastewater from septic systems going into the ground, much of it up gradient of Silver Creek, is a significant concern. This is insufficiently addressed in the DEIS. The municipal wastewater treatment system discussed in the DEIS appears unrealistic financially. The well moratorium currently precludes exempt well from servicing the development. We would be concerned with individual wells and their impact on flows in Silver Creek. The quantity of water available does not appear sufficient to support the dense development that is proposed. 3.15. f A A

Upper Parcels

It is strongly recommended that the (6) six existing upper parcels be extinguished in order to remove the disturbance and habitat loss that developing these parcels would represent. The integrity of the habitat above and below these parcels would be compromised. In alternative 5 where the development is directed below the transmission lines, the development of these parcels conflicts with and degrades the effectiveness of the open space. A

Alluvial Fans/ Debris Flow Hazards

Alluvial fans are dynamic features that should rightly be treated as geologic hazards as well as stream features. Placing lots that will ultimately develop into houses or that are in the path of these features should be avoided. Trying to train these features and then placing infrastructure in these areas instills a false sense of security that ultimately damages habitat as well as property. How these area will be managed is insufficiently addressed in the DEIS. A

Houses in a Forested Setting

Houses in forested settings are an issue when fires start. The limited firefighting resources are invariably directed to protect homes and property. The number of resources available to control the spread of the forest fire is reduced and fires that may have been controlled at an earlier stage grow and consume more forest and habitat. This issue is inadequately addressed in the DEIS. A 3.15. g

Conclusion and Recommendations

All of the alternatives are deleterious to fish and/or wildlife resources. Many acres of wildlife habitat will disappear under houses and pavement. Additionally, the level of disturbance that comes with urban development renders and area inhospitable for many wildlife species seasonally or year round. The cultural carrying capacity of the area changes as well. Large wild animals in housing developments cause people to contact authorities to remedy what they see as a problem. This impacts WDFW since we have to respond to issues that are entirely foreseeable. Pets conflict with wildlife. Their food can attract wildlife and they chase or kill wildlife. Pets themselves are chased and killed. Fencing interrupts movement corridors, makes habitat inaccessible and can force moving animals to locations where conflicts arise. Covenants should be placed on the parcels that informs prospective owners of these issues associated with this location. A A

The alternative that appears least harmful is alternative 5. The proposed parcels and development in alternative 5 located upslope of the transmission line should be excluded to allow for access to and movement across the property. The six existing parcels should be deleted during this process and the entire area above the transmission line should become dedicated protected open space. Fencing that blocks animal movement should be avoided. Travel corridors should be established through the development that facilitate animal movement and keep the area permeable. A

Thank you for the opportunity to comment on this proposal. If you have any questions regarding these comments, please feel free to contact me. I can be reached at (509) 962-3421.

Sincerely,

Mark S. Teske

Mark S. Teske
WDFW Habitat Program

cc: Perry Harvester, WDFW Region 3 Program Manager

April 2, 2010

Mr. Dan Valoff

Kittitas County Department of Community Services

411 N. Ruby Street, Suite 2

Ellensburg, WA 98962

Dear Dan:

I would like to take this time to thank you for the opportunity for comment on the Marian Meadows DEIS for the Easton Area. As a concerned resident and tax payer of Kittitas County, I appreciate this opportunity. I recognize the current struggle in our county regarding economic development, but this proposal is neither sustainable nor beneficial for the residents of the County or potential residents of Marian Meadows. After reading the Marian Meadows DEIS I have found serious issues with potential environmental hazards identified in this document. There needs to be more outlined and defined mitigation measures to adequately address these potentialities.

As a former Wildland Firefighter, I see fire as the most serious hazard for the proposed development, its residents, Firefighters, surrounding forest resources and communities as extreme fire behavior is mentioned in this document. There are no mitigating factors surrounding major safety concerns about access and entrapment. One way in one way out is completely unacceptable for safety of our public and public service employees. Asking a Firefighter to risk their lives for a home is unacceptable, especially when it is deemed a extreme hazard before it is even built. Additionally it is unacceptable to allow people to build a home thinking that they are adequately protected from the risks of wildfire. A

As a resident of Roslyn I would also like to point out the inherent risks to our watershed. In the DEIS there was no mention of our forested watershed that is directly adjacent to the steepest and most hazardous easterly portion of this proposed development. While it is mentioned that avoiding developing this area would decrease the hazard to private property and human life, it does not reduce the risk of wildfire to the surrounding forest resources. A fire in the City of Roslyn's watershed would be no less than catastrophic to the citizens of Roslyn. Our water would no longer be potable and usable as a municipal source for decades after a fire. The costs to established residents of the county in the event of this type of incident would be more than the City of Roslyn could bear. The potential risks of wildfire in the City of Roslyn's watershed need to be adequately addressed and mitigated. 3.12. a

Water is a big issue in Kittitas County as you well know. The water rights of Easton Water District #3 are vague as mentioned in the DEIS and needs to be clearly identified. It is stated that the rights of the Easton Water District is inadequate to meet the needs of the proposed Marian Meadows Development, regardless of the fact that it is not included in the Easton LAMRID. With all the issues concerning water in the Yakima basin it is important for Kittitas County to begin to set a president to begin to uphold the rights of senior water rights holders. To do this you must make developers prove that they are not impairing senior water rights holders due to further withdrawals from either ground or surface sources. They must purchase and transfer senior rights like everyone else. There is no mention in the DEIS of proposing such an action. A D

Additionally, as a citizen of this county, I would like to see development start to pay for itself. The impacts to public services are addressed, but no mitigation measures are mentioned. We need to hold developers responsible for extending urban services to designated rural areas. It is stated in the DEIS for Marian Meadows that there will be a negative net impact to the county regarding providing public services for this new development. This is an unacceptable alternative for our county and should be addressed before moving forward with approval of this proposal. I feel that impacts from past developments to public services are passed on to current residents. Development needs to pay for itself. This is the way towards more sustainable economic environment for our county in the future. A

There are a great many more reasons why the Marian Meadows DEIS needs further review and mitigation measures to move forward towards the development phase. I just pointed out some of the major issues that need to be addressed to meet with the concerns I feel as a citizen of this county and resident of the City of Roslyn. Our county needs to recognize the State GMA laws, Eastern Washington Storm Water Guidelines and others just to name a few, when it comes to development in our county. We are wasting our valuable resources by allowing this kind of development and putting our future at risk when we do. Thank you for this opportunity to express my concerns. A

Mitchell Long

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banjomitch@gmail.com

March 22, 2010

RECEIVED
APR 02 2010
Kittitas County
CDS

Kittitas County Community Development Services
411 N Ruby St, Suite 2
Ellensburg, WA 98926

RE: Draft E.I.S. – Marion Meadows

To Whom It May Concern,

We the undersigned **PROPERTY OWNERS, CITIZENS** and **RESIDENTS** of Upper Kittitas County request that **Alternative 3 or 5 of the Draft E.I.S. for Marion Meadows P.U.D. be revised** or that a
6th Alternative is developed.

We feel that the 5 alternatives presented in the Draft E.I.S. do NOT go far enough to protect the rural character of the Easton area as defined by the *Growth Management Act*.

We request a revised alternative 3 or 5 or a 6th alternative that protects the Easton State Emergency Airport as defined by WASDOT Aviation, will provide and protect the migration corridor for wild life, protect quality and quantity of clean water, avoid a large concentration of septic systems and avoid development of steep slopes in areas identified as extreme wildfire hazards. This alternative will not put unreasonable demand on the current level of service provided by Fire District #3 or the Easton School District.

2.2. a

We request an alternative that will protect the 3 acre zoning and not set a precedent for down zoning rural Upper Kittitas County into urban density.

Respectfully submitted,

See signatures attached – 6 pages

March 22, 2010

Kittitas County Community Development Services
411 N. Ruby St, Suite 2
Ellensburg, WA. 98926

Easton Ridge LLC
Draft E.I.S. – Marion Meadows

The undersigned request that Alternative 3 or 5 of the Draft E.I.S. for Marion Meadows P.U.D. be revised or that a 6th Alternative be developed.

Name (Print)	Address	Signature
Vince Ennes	4031 Sparks RD, EASTON	
Hollie Stone	3692 SPARKS RD EASTON	
Sam Stone	3692 Sparks RD Easton	
Carol Dene Klar	3694 Sparks Rd Easton	
Grant Denckla	3694 Sparks Rd Easton	
KEN EVERAERT	3314 SPARKS RD EASTON	
Anne Everaert	3314 Sparks Rd Easton	
SHARON FRIES	3320 SPARKS Rd. EASTON	
PATRICK FRIES	3320 SPARKS RD. EASTON	
ROBERT BONNER	3310 SPARKS RD EASTON	
Linda Bonner	3310 Sparks Rd Easton	
STEVEN M. JENSEN	330 CABIN CR. Rd. EASTON	
TIM RYALS	3780 SPARKS Rd EASTON	
John Jensen	3910 East Spark Rd Easton	
[illegible]	[illegible]	
[illegible]	4211 Sparks Rd Easton WA	
KENT SHOOP	4391 E. Sparks Rd EASTON WA	
CATHY SHOOP	" " " Easton WA	
Melanie Hiskey	4211 Sparks Rd Easton Wa	

March 22, 2010

Kittitas County Community Development Services
411 N. Ruby St, Suite 2
Ellensburg, WA. 98926

Easton Ridge LLC
Draft E.I.S. – Marion Meadows

The undersigned request that Alternative 3 or 5 of the Draft E.I.S. for Marion Meadows P.U.D. be revised or that a 6th Alternative be developed.

Name (Print)	Address	Signature
LEE FRAZIER	P.O. BOX 1 EASTON WA 98925	
David D. Brandsrud	P.O. 638 Easton WA 98925	
Marjorie Brandsrud	PO Box 638 Easton WA 98925	M Brandsrud
Jennifer Ervin	750 Talmadge Rd. Cle Elum, WA.	
Monte Kram	PO 559 EASTON 98925	
Scott Vincenti	PO Box 617 EASTON 98925	
Betty Vincenti	PO Box 617 EASTON 98925	
Chris Cargni	P.O. box 586 Easton 98925	Chris Cargni
TONY FITZGERALD	P.O. BOX 45 EASTON 98925	
Brad Niebuhr	P.O. BOX 511 Easton 98925	
Amanda fitzgerald	PO Box 45 Easton 98925	Amanda Fitzgerald
Michelle Schroeder	P.O Box 643 Easton 98925	Michelle Schroeder
Rae G. Floyd-Bullen	P.O. Box 464 Easton 98925	RAE A. FLOYD-BULLEN
Tami Fitzgerald	POB 556 EASTON, WA. 98925	Tami L. Fitzgerald
Linda Lundgreen	691 Upper Peoh Rd Cle Elum WA 98922	Linda Lundgreen
LINDA COWIN	PO BOX 474 EASTON WA 98925	Linda Cowin
John Engstrom	PO Box 172 EASTON WA 98925	
Colleen Clark	po Box 172 Easton. wa 98925.	
Claudia Guilford	362 Heron Drive Cle Elum, WA 98922	

19

March 22, 2010

The undersigned request that Alternative 3 or 5 of the Draft E.I.S. for Marion Meadows P.U.D. be revised or that a 6th Alternative be developed.

Name (Print)	Address	Signature
Brian Todd	771 C.St. N.W. Ephrata, WA	Brian Todd
Melissa Parker	P.O. Box 502 Easton WA	Melissa Parker
William R Ruff WILLIAM R LUFF	P.O. Box 476 EASTON WA	William R Ruff
Jennifer Jensen	PO BOX 435 Easton WA	Jennifer Jensen
Patrick Dehuff	PO Box 529 Easton, WA	Patrick Dehuff
Tim Schmidt	5610 Nanum Rd Ellensburg	T Schmidt
Maurya Broadsword	691 Bighorn Way (PO Box 787) Cle Elum,	Maurya Broadsword
David F Lombardy	3631 E. Sparks Rd. Easton WA	David F Lombardy
Terri Lombardy	3631 E. Sparks RD EASTON, WA	TERRI Lombardy
MYRNA JENSEN	3910 E Sparks Rd Easton	Myrna Jensen
Marilyn Fudge	P.O. Box 653 Easton WA	Marilyn Fudge
Delores Tate	PO Box 141 EASTON WA	Delores Tate
DAVID J TATE	PO Box 141 Easton WA	
	PO Box 714 Cle Elum	
Keith Wersland	5931 Upper Peoh Pt. Rd Cle Elum	Keith L. Wersland
Mark Soderstrom	209 Cleveland St. Cle Elum WA	
Greg Wallace	~~Rd 508~~ 201 Cle Elum WA	
Anna Dodge	PO Box 446 Cle Elum Wa	
Duane Howie	P.O Box 1018 So Cle Elum	
Dave Ray	P.O. Box 154 Easton Wa	
Paul Mooney	P.O. Box 597 EASTON WA	Paul Mooney

21

March 22, 2010

The undersigned request that Alternative 3 or 5 of the Draft E.I.S. for Marion Meadows P.U.D. be revised or that a 6th Alternative be developed.

Name (Print)	Address	Signature
KARIN SHRIVER MOONEY	P.O. Box 597	Karin Shriver Mooney
VELMA LOUISE FRANSDAHL	P.O Box 179	Velma L Fransdahl
DON FRANSDAHL	P.O. Box 179	
Larry Yates	P.O Box 482	
DAVE CASSIDA	Po 427	
Alvin Gilbert	P.O. Box 126	
Joseph Prosser	81 Norton Rd	
Gina T Prosser	81 Norton Rd	Gina T Prosser
Dorothy Miller	4131 Sparks Rd.	Dorothy Miller
Barbara Gordon	P.O. Box 603	Barbara Gordon
KENNY GRUBE	PO BOX 538	
ROBERT K. ROGERS	PO BOX 538	Robert K. Rogers
Doug Williams	PO Box 862	
Barb Lowrey	PO Box 705	Barb Lowrey
Jeff Lowrey	PO Box 705	
Von Cooper	P.O Box 432	Von Cooper
Brigid Cooper	Box 432	Brigid Cooper
Teresa M. Meehan	PO BOX 3	Teresa M. Meehan
Terrance J. Hill	Po Box 530	Terrance J. Hill
Becky Christensen	P.O Box 693	

20

March 22, 2010

Kittitas County Community Development Services
411 N. Ruby St, Suite 2
Ellensburg, WA. 98926

Easton Ridge LLC
Draft E.I.S. – Marion Meadows

The undersigned request that Alternative 3 or 5 of the Draft E.I.S. for Marion Meadows P.U.D. be revised or that a 6th Alternative be developed.

Name (Print)	Address	Signature
JOHN M. CARLSON	P.O. BOX 632 EASTON WA 98925	John M. Carlson
SHARON F. CARLSON	PO BOX 632 EASTON, WA 98925	Sharon F Carlson
DAVID M. HALL	250 Tjossem Ellensburg, WA 98926	David M. Hall
Ben J. Thomas	4271 Kachess Lake Rd, 98925	
Judi A White	PO Box 582 EASTON - WA - 98925	
Rachael Schlebe	130 old Cedars Rd Cle Elum 98922	
Terry Schlebe	130 old Cedars Rd Cle Elum 98922	
WAYNE FRISK	360 Pit Way EASTON	Wayne Frisk 98925
Debbie Frisk	360 Pit Way Easton	98925
TOM PENTIN	305 PIT WAY EASTON	98925
CARRIE PENTIN	305 PIT WAY EASTON	98925
Connie McKee	140 PIT WAY EASTON	Connie McKee
LARRY McKEE	140 PIT WAY EASTON	Larry McKee
Mike Sweet	1860 RAILROAD ST EASTON	Mike Sweet
Johnny Cunningham	PO BOX 592 EASTON WA 98925	
Marjorie Cunningham	PO Box 592, Easton WA 98925	
CHESTER D. LAURENT	PO BOX 654 EASTON WA 98925	(Bud)
Lawrence Graham	Po. Box 115 EASTON WA. 98925	
Bernice L. Graham	P.O. Box 115 EASTON, WA. 98925	

19

March 22, 2010

The undersigned request that Alternative 3 or 5 of the Draft E.I.S. for Marion Meadows P.U.D. be revised or that a 6th Alternative be developed.

Name (Print)	Address	Signature
PAUL LOTHES	202 HAWTHORN LN	
JACK PRICE	PO BOX 32 EASTON WA. 98925	Jack Price
Robert Gann	550 Ermine Loop	Robert Gann
JOHN LIDRAL	PO BOX 589 EASTON WA	
Tom Fuhrer	PO Box 731 Easton	Tom Fuhrer
GRAHAM MOORE	PO BOX 542 EASTON	
CHARLES F BARLOW	PO BOX 55 EASTON	
GEORGE BOWLS	P.O. Box 105 ZIP→98943 SO. CLE ELUM	George Bowls
MERLYN R. SCHMELZER	P.O. BOX 427 98943 SO. CLE ELUM	Merlyn R Schmelzer
M. E. Dorgan JR	PO BOX 733 Easton	M E Dorgan JR.
Susan E. McKee	PO Box 161 Easton	Susan E. McKee
Kelita R Rogers	P.O. Box 144 Easton	Kelita R Rogers
S. Kaya McLaren	1341 Sunlight Dr. Cle Elum	Kaya McLaren
Steve Eims	P.O. Box 801 Easton	Stephen Eims

Kittitas County Fire District #3
P.O. Box 52 • Easton, WA 98925

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APR 02 2010
Kittitas County
CDS

March 29, 2010

Kittitas Country Community Development Services
411 N. Ruby St., Suite 2
Ellensburg, WA 98926

RE: Draft E.I.S. – Marian Meadows

To Whom It May Concern,

Please accept our comments regarding **3.4.2 Public Services - Fire Protection**. Some corrections need to be made –

B

1. P. 3-119 **Our 2004 HME pumpers capacity is 1250 gpm <u>not</u> 3200 gpm**

2. P. 3-119 **We currently have 6 volunteers who are certified EMT, 4 First Responders and 7 fire fighters** B

3. P. 3-128 **There is <u>no access</u> through Easton State Airport to Silver Creek Road.**
   - Access would be possible via West Sparks Road to FSR 4818 and then East on the BPA power line which is extremely rough and primitive and then onto a 2 track trail that would have to be widened and trees removed in order to access Silver Creek Road. Currently there is a locked gate in this location and there is no winter access. Access via this route would be extremely slow. 3.4. h 3.4. L

4. P. 3-128 **<u>No access is available</u> for our equipment by fording Silver Creek either <u>in low or high</u> <u>flow conditions</u>.**

5. P. 3-131 **We agree whole heartedly that development on the steep easterly portion should be avoided due to the potential risk for wildfires.**
   - Residents and fire fighters would be at extreme risk as any fire on the steep slope would move very rapidly uphill due to the updraft. A

Respectfully submitted,

Steven M. Jensen, Chairman
Board of Commissioners
Kittitas County Fire District #3

March 22, 2010

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APR 02 2010
Kittitas County
CDS

Kittitas County Community Development Services
411 N Ruby St, Suite 2
Ellensburg, WA 98926

RE: Draft E.I.S. – Marian Meadows

To Whom It May Concern,

Please accept my comments on the Draft E.I.S. for Marian Meadows P.U.D.

First I would like to thank Kittitas County Community Development Services for listening to our concerns and requiring the EIS on this project.

Second I commend Parametrix on the thoroughness of the document they produced in addressing our concerns and the additional information they have assembled. I think the document clearly identifies the cumulative impacts of urban development proposed for a rural community and addresses the mitigation requirements well.

I do however disagree with the statement on **Air Quality** regarding **wood stoves**. There are many windless days, especially in the winter, and a high density development with a high density of wood stoves would certainly affect air quality. Easton does NOT experience wind like the rest of the county. 3.8.a

I also do not think the **Misc. Tenure Scenarios** can be considered, as recreational residences most generally become full time residents. Sun Island, Elk Meadows and Easton Village are prime examples. 2.2. h

Rural zoning is suppose to protect rural lands from Urban Growth including lot sizes that result in intensive use of land that is NOT compatible with rural character and that require urban levels of service. A

Rural lands are meant to conserve fish and wildlife habitat and **avoid** intense urban development that fragment wildlife habitat.

Rural lands MUST include densities that protect water quality by avoiding a concentration of septic systems.

I believe the 5 alternatives presented in the Draft E.I.S. do NOT go far enough to protect the rural character as defined by the Growth Management Act.

I propose either modifying Alternative # 3 or # 5 or making a 6th Alternative that protects the airport safety zones per WSDOT Aviation and that leaves a clearly defined wildlife corridor with NO development in the N.W. corner where the elk move from the Lake Kachess area through Silver Creek and down the power line. 2.2. a

The remainder of the site should be developed at 3 acres minimum with NO development in the steep portion of the property. It is an extreme wildfire hazard area. The scar from the last fire that ran up the ridge is still quite visible. Residents and fire fighters should not be placed in harm's way.

Developing 3 acre minimum lots will go a long way towards mitigating the concerns that have been identified in the Draft E.I.S.

Easton Water District 3 will have enough water to provide for Marian Meadows and will have water remaining for other developments in the District. I believe the 100,000 gallon water storage tank should still be included in this option. A

Developing at this density would have minimal impact on the school, emergency services, air quality, wildlife movement, quality and quantity of water and protect wells adjacent to the development and rural quality of life of current and future residents of the area.

I believe it would also attract more full time residents that will become PTSA members, school board members, volunteer firefighters and who will contribute to the community of Easton. Anyone who is a full time resident here knows we already over recreated at times as it is. A

Marian Meadows is bordered on 1 side by 5 acre lots and on 1 side by 3 acre lots. If ½ or 1/3 acre lots are approved for this development I assume my property rights will allow my neighbors and myself to subdivide our lots as well.

Allowing that to happen sets a precedent for the development of Easton Ridge from Easton to Bullfrog and **must not be allowed.** A

The rural character of Easton, quality of life issues, wildlife habitat and movement corridors, health and safety issues of current and future residents including EMS provider and volunteer firefighters and wildland fire fighters should NOT be compromised to allow maximum profits for one developer. A

Respectfully submitted,



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RECEIVED
APR 02 2010
Kittitas County
CDS

March 31, 2010

Kittitas County Community Development Services
411 N Ruby Street Suite 2
Ellensburg, WA 98962

Marian Meadows Draft Environmental Impact Statement Comments:

My comments on the Marian Meadows PUD and Subdivision DEIS are as follows.

Although there is a great deal of very good information contained in the DEIS, there is information that is incorrect and information that must be added or further studied.

There are several mapping errors. There is a road shown crossing lots four and five of Easton Acres. Figure 3-22 illustrates this clearly. That road no longer exists. Several maps also indicate Hawthorne Lane extending well past Thistle Down. Again this is not true. Please make corrections to maps included in this document. B

The water district boundary is incorrect. This must be corrected in order to have an accurate understanding of the water districts obligations and service area. Please contact the water district for up to date correct information and include that information in this document. 3.5. j

Additional information is needed to assess possible future water use. The water districts resources must not be over allocated. As the school is a major user in the water district, calculations of water rights, availability and quantity related to expansion of the school must be included for each alternative and cumulative impact. Consideration must also be given to parcels already platted within the water district but not currently serviced by the water district. There will be negative impacts to owners of those parcels. If the applicants development or alternatives go forward and water availability is diminished to the point water is not available to these property owners from the water district their properties would become virtually worthless. Water district regulations prohibit individual well drilling with in its boundaries further complicating property owners ability to develop their property. Infill of currently vacant parcels must be prioritized for water service. Information regarding water does not include enough discussion on well head protection zones. Further information regarding these zones along with the effects of each sewer disposal method and the inter- relationship of water quality and sewer disposal specifically addressing this projects geology must be provided to assess impacts and protect public and private water service of the Easton area. 3.5. f 3.5. k

None of the maps or information includes the recently approved Conditional Use Permit granted to the applicant for the 40 Acres excluded from the PUD request. I understand that this approval took place only a short time before the publication of this document but it is pertinent information. There are references in this document to possible use of the BPA easement as a wildlife corridor as well as a trail area. The Conditional Use Permit approved will allow a 250 to 300 unit mini warehouse to be built on the 40 acres excluded from this proposal in the area of the BPA easement at the foot of the steep hillside running parallel to that easement. Natural vegetation on the southwest side of the BPA power lines is designated in the CUP to serve as the aesthetic screening required for the CUP. Development of all proposed alternatives for the PUD would allow development of this area for residential use there by eliminating the aesthetic screen required for the CUP. Ingress and egress to the mini warehouse facility is designated in the CUP to be through the Marian Meadows PUD and across the BPA easement at two places. The CUP will adversely affect the proposed use of the BPA easement for wildlife, trail use and required aesthetic screening. By allowing extensive human activity in the area wildlife will avoid the area there by further degrading habitat and migration opportunities. The proposed ingress and egress roads to the mini warehouse will create safety issues for users of the suggested trail. The easement and trail would cross at 90 degree angles requiring users of the access road and trail to cross paths. A trail passing by a 250 to 300 unit warehouse would not reflect the rural quality of life expected in a rural setting. A trail in this area would feel and look more like a commercial or industrial urban trail similar to ones developed in King County urban areas.

3.1. i

A

References to the CUP should be added and considered as a changed circumstance and newly available information. *The majority of the BPA easement has been excluded from this application and should not be considered for beneficial uses related to this application. I ask that all references related to beneficial uses be deleted from this document and impacts of the CUP be included as a consideration in this document.* Maps must also be revised to reflect this new information. Statements on page 2-3 and again on page 2-6 of this document indicate a possible wildlife corridor in the area of the BPA easement. Again I will restate that a CUP has been approved for a 250-300 unit mini warehouse in that area, which will degrade if not eliminate use as a wildlife corridor. Additional statements relating to the BPA easement on page 2-6 discuss the use of the easement as a shared drain field for on-site-sewer systems on the upper portion of the proposed development. This use would eliminate the BPA easement use as an informal motorized vehicle trail and a wildlife corridor. Such uses would compact the soil in the drain field and there by render it inoperative. Impacts related to this changed circumstance must be considered as it relates to all alternatives as well as the cumulative impacts discussed in this document. Traffic, light and glare from security lighting, wildlife habitat and migration corridors, additional impervious surfaces and surface water run off, additional water and sewer requirements and rural character are only a part of the impacts this change in circumstance will affect as it relates to the applicants proposed PUD and alternatives. During the comment period for the CUP I requested that the CUP be included in this document and was ignored. DOE also made reference to the inclusion of the CUP in this document and was also ignored. There has been a substantial change

3.1. i

3.5. i

in the development plans for the 40 acres excluded from the proposed PUD. Because the CUP is totally surrounded by the proposed PUD, inter related impacts of the CUP must be taken into consideration in this document.

This document does not address the impacts of access to the Easton area. Ingress and egress to the Easton Area is limited to travel on Interstate 90. In the event of an emergency, earthquake, flood, heavy snow, avalanche, rock slide or other disaster Easton is easily isolated. Historically the winter months have demonstrated this risk on a regular basis. Not only are the residents of Easton often isolated there are times the traveling public is unable to travel to a more appropriate location. During such times the roads in the Easton area are blocked by travelers who have no option to go elsewhere. During these types of events the health safety and welfare of the traveling public as well as residents of the Easton community is threatened. Movement in the community for emergency vehicles, schools and residents comes to a stand still. The addition of several hundred or even several thousand residents, as illustrated in this document, would serve to intensify such situations. I believe that with increased population as described in this document the County will find it necessary to develop an alternate means of ingress and egress to the Easton area to preserve the health safety and welfare of the community. This is an impact associated with the applicant's proposal, the alternatives and cumulative impacts. This must be addressed and evaluated. 3.2. i

The development of the applicant's proposed PUD and the proposed alternatives would have extremely adverse effects on the rural character of the Easton vicinity. Rural character is describe by RCW 36.70A.030, the Upper County Vision Plan the Eastern Washington Growth Hearings Board and the Counties own GPOs, as quoted on pages 3-18 through 3-22 of this document, all describe something other than what is being proposed by the applicant and the alternatives. The precedent that would be set by development other than the R3 zone would certainly lead to more urbanization of the area. The rural character of the area must be retained for numerous reasons. Open space natural landscape and vegetation must predominate over the built environment. The compatible use of land for wildlife habitat and migration corridors in the area must be preserved. The incompatible use of lands adjacent to resource lands will be furthered by the applicant's proposal and cumulative impacts. Recreational opportunities would severely impacted by the urbanization of the area. The installation of a sewer treatment facility would establish an urban service in a rural area. Water quality would be impacted by increased water use, the risk of sewer treatment facility failure and increased surface water runoff into Silver Creek .The use septic systems could very well be an adverse effect on the water supply in the area due to the high rate of infiltration in to the soil in the area and the proximity of wells. Allowing intense urban type development to be hidden or screened from view of the traveling public is not preserving the rural character of the area it is merely hiding the urban development from the public at large. Residents and visitors to the area would be exposed to and affected by the urbanization of the area. Residents and visitors value the current rural character of the area as it is and want it preserved as outlined and required by state and local regulations. The cumulative impacts discussed in this document would certainly require substantial need for urban services which would essentially destroy the rural character of the area. Development of A

land at urban or even suburban intensities is not part of any definition of rural character and must be avoided.

The tenure illustrations while interesting should not be used to determine any of the impacts. Tenure is fluid and can and will change with the economy, the real estate market, employment opportunities and many other conditions. Even in the small rural area of Easton there are examples of dramatic changes in tenure. Easton Village was developed in the 1970's as a recreational community. Easton Village is now occupied by mostly full time residents. The same is true of the Sun Island and Elk Meadows communities where full time residency has become the norm. Basing any decision making upon any expected tenure scenario other than 100% full time residents would be irresponsible. Tenure as it relates to any of the impacts discussed in this document must be considered to be 100 % full time. If any other scenario is the basis for decision making the opportunity for mitigation of all possible impacts would be lost. The citizens of the County would in the end be responsible for future impacts as tenure changes. 2.2. h

It is assumed the final EIS will be an integral part of any future development of possible additional phases of the proposed PUD or any alternative to the PUD. What assurances will be in place to see that conditions recognized in the final EIS document will be applied to future development of these parcels? E

Alternate 2 also does not indicate the location of the proposed sewer treatment facility. 2.2. e

A description of three roads stubbed to the east to provide access to the remainder of the site is stated on page 2-4. I do not see this statement reflected on the maps. C

A statement on page 2-2 indicates that lot sizes for Alternate 1 would be less than 0.5 acre. And a statement on page 2-4 indicates that lot sizes for Alternate 1 would allow for individual on-site-sewer disposal systems. Kittitas County Code 13.04.070 requires a minimum lots size of .05 acre for on-site-sewer disposal. The two statements appear to conflict. Corrections must be made to this document to clarify how lots smaller than .05 acre would be allowed on-site-sewer or corrected to state that Alternate 1 would not allow on-site sewer disposal per KCC 13.04.070. 3.5.n

The discussion of on-site-sewer disposal does not include enough information regarding infiltration as it relates to the well head protection zones established by the Department of Health. I believe further information must be developed to better understand the geology and aquifer relationship of the project vicinity. I believe additional study is necessary to determine possible impacts for the proposal, the alternatives and cumulative impacts. 3.5.k

Page 2-6 states that the use of Alternative 5 higher public service costs could be avoided by limiting development to lower elevations. Public services included in this discussion included road maintenance and snow removal. Road maintenance and snow removal related to development of the upper portions of the proposal would not be public costs as the proposal indicates the road system would be private. References to these public services must be deleted from the discussion on this page. C

Statements on page 2-7 regarding schedule and phasing clearly demonstrate the impact of this development on the growth rate of the Easton School District. 225 units are proposed to be on the market in the next 5 years. When that is compared to the 43 units built in the past 10 years it represents an 80% increase in the rate of available housing units within the School district. That rate of growth for a small school district could potentially be devastating if impacts are not taken seriously and mitigated for properly. A

On page 3-46 the stated speed limit for Railroad street is 25 mph. The speed limit on railroad street east bound from exit 70 off of Interstate 90 is 35 mph to the bridge crossing the Yakima River. The speed limit east of the bridge becomes 25 mph and a few blocks east of that a school zone 20 mph limit is imposed. Please correct and clarify this information. C

The discussions regarding traffic safety on page 3-53 and collisions on page 3-64 do not address the issue of winter ingress and egress to and from established private driveways. During winter months snow removal often restricts site distance greatly at residential driveways along Sparks Road. Additional motor vehicle and snowmobile traffic on Sparks Road will create a dangerous situation when visibility is greatly restricted. This is especially true of driveways in the vicinity of Country Drive where Sparks Road has two sharp curves and there are driveways with limited sight distance a short distance from the curves. Photos on pages 9 and 10 demonstrate this hazard. Additional consideration must be given regarding this hazard. 3.2. j

Collision mitigations proposed for pedestrian, bicycle and other off road use indicate the need for urban types of accommodation such as sidewalks and developed trail systems. The mitigations proposed do not preserve the rural character of the area. The placement of improvements would serve to urbanize road side views and characteristics. Side walks and urban pathways are not a part of the rural character currently enjoyed by residents of the Easton area and are generally associated with urban development. A

The Airport Safety Zone information provided clearly states that by Kittitas County Zoning Code 17.58.05 only Alternative 3 can be developed. If WSDOT Aviation recommendations are applied there can be no development on the lower portion of the area. RCW 36.70.547 and RCW 36.70A.510 as stated, requires cities and counties to protect airports from incompatible development. The WSDOT Aviation Airport Land Use Compatibility Program offers valuable information and insight into risks and liabilities associated with incompatible development in each Airport Safety Zone. A quote from the liability section of the program states, "The program typically states, when evidence warrants it, that is the opinion of the Washington State Department of Transportation Aviation Division that a proposed incompatible development would be in direct conflict with RCW 36.70A.510 and development adjacent to the airport would clearly be an incompatible land use." I believe this statement is true for the proposed and alternate proposals for this property. *Because Kittitas County is aware of the risks of allowing incompatible development in Airport Safety Zones the County would be held responsible for any damage or injury caused by aircraft in those zones. The County* A A

would be engaging in excessive risk taking and negligent decision making. The County would be making a discretionary decision to allow such development in spite of regulations, recommendations, statistics and historical data, there by allowing tort claims against the County. The WSDOT Aviation Airport Land Use Compatibility Program, which I am including a copy of, clearly states this fact and quotes court decisions that affirm this liability.

Additional runoff from the proposed development, alternatives and possible cumulative impacts will increase the risk and occurrence of flooding in the area has not been addressed adequately. Rain on snow events are of particular concern. Such events have in the recent past caused flooding of residences along Silver Creek. Frozen ground in the winter months does not allow natural infiltration and dispersal of rain water or melting snow. Additional run off will certainly be created by the increase in impervious surfaces related to this proposal or alternatives. Additional information regarding current storm water provisions outside of the proposed PUD must be developed. The statement on page 3-168 that the ditch conveyance system along Sparks Road conveys water run off to Silver creek is incorrect. Ditch systems along Sparks Road do not currently extend to Silver Creek. Additional storm water run off created by this proposal could have devastating impacts to residents and property owners along Sparks Road. The storm water system along Sparks Road will require improvement to avoid damage to the roadway and private property. Such improvements would be representative of urban levels of government service in a rural area. As stated on page 3-157 "Rural government services do not include storm or sanitary sewers".

3.5. p

3.5. q

A

Discussion regarding the possible use of reclaimed water for irrigation does not include details about how such water would be disposed of during winter months when the ground is frozen and irrigation is not taking place. There is also no information regarding the proposed stream augmentation initially proposed by the applicant. Issues such as where is the stream located, what are possible down stream impacts and risks are not included in this document. Additional details regarding use and disposal of reclaimed water must be included.

3.5. l

3.5. m

Statements on page 3-181 should be clarified to reflect the fact that Easton State Airport lighting is low intensity and the airport is not structured for night time use.

C

On page 3-185 there is a statement regarding the establishment of roadway lighting standards. Roadway lighting discussions should also be related to the discussion of rural character. Roadway lighting is considered an urban feature. Roadway lighting will have a substantial negative effect on the rural character of Easton and must be included in that discussion.

C

A

The statement on page 3-199 stating the closest residence to the southeast is about 100 feet from the project boundary is incomplete. There are residences to the west of the project boundary much closer. Information should be included relating to the distance of all residential development bordering the project boundary. Information regarding the project boundary and its relationship to the Wenatchee National Forest and the Roslyn

C

Water Shed must also be expanded. There are regulations in place that will effect the proposal and alternatives relating to development bordering the National Forest. The proximity to the Roslyn Water Shed is very important to the municipal water source of that city.

Fire and wild fire risks and consequences are of utmost concern to the residents of Easton. The evaluation in this document is for the most part very good. However there are a couple of areas which require further information. Currently the parcel upon which the applicant has proposed a PUD would have fire services provided by wildland fire fighting crews. Wildland fire fighting professionals are highly skilled and have tremendous resources at their disposal. They have man power, heavy equipment, aircraft and advanced technology at their finger tips. When structures are erected the fire fighting responsibility falls to the Easton Fire Department. With a few corrections regarding access and equipment this document describes the capabilities of the local services available for fire fighting. The ability to provide fire fighting services will be diminished substantially due to staffing and equipment levels. It is abundantly clear that residential development of this property will increase the risk of fire and wild fire substantially while reducing the ability to fight and control fires. The addition of information regarding the proximity of the Roslyn water shed must be included in this document. Any fire that goes up the slope before it is extinguished will cause irreparable harm to the Roslyn water shed which directly abuts the property at the top of the steep slope. The Roslyn water shed is of critical importance to the citizens of Roslyn and Kittitas County. An evaluation of impacts to the water shed must be included in this document.

A

3.4. b

Air quality evaluations are fatally flawed in this document. Easton is surrounded by high ridges and is in very close proximity to several bodies of water. The Ridges protect Easton from constant winds and create ideal conditions for inversions. Weather data from Ellensburg, Thorp and Stampede Pass do not in any way reflect the weather that occurs in Easton. The implication that the wind blows more in Easton than Ellensburg or Thorp is absurd. Air quality information in this document must be restated and evaluated to reflect actual conditions in the Easton area. Also of note the wind actually blows more often and stronger on the south side of I-90 than it does on the north side of I-90. Easton is truly a micro climate and does experience often long term (more than a week at times) inversions especially in the winter months.

3.8. a

Wildlife information is not complete. Among the birds occurring on and near the sight are pileated and other woodpeckers. Doves grouse and quail have also been observed on the site. Hawks, ravens, crows and blue jays also frequent the site. There have been wild turkeys observed with in 500 feet of the site.

B

I would like to restate that elk and to a lesser degree deer are frequently seen moving to and from the site. They are less often seen during winter months, but are visible most other times of the year. Around July 4th groups of cows with the current year's calves and usually several yearlings are regular visitors to the residential areas surrounding the site. These groups move through the residential areas to and from the site frequently.

B

Most resident respect their presence and try not to disturb their movement. The animals are most sensitive to traffic on Sparks Road. I have observed that while vehicles are moving at a regular pace they tend to ignore the vehicles. When vehicles stop the elk immediately leave the area for a more protected area. We have actually had elk on our property when returning home and have found that if we use the remote garage door opener, drive into the garage and close the door before exiting the vehicle, the elk are only minimally disturbed and return to foraging almost immediately. Additional traffic high density and perhaps insensitive residents will certainly strain the energetic demands placed on the animals and disturb one of the few migration corridors available to them. A

This concludes my comments at this time. I urge Kittitas County to use the utmost care and due diligence in its review and decision making regarding this proposal, the alternatives and associated cumulative impacts. A

Respectfully,

Marge Brandsrud

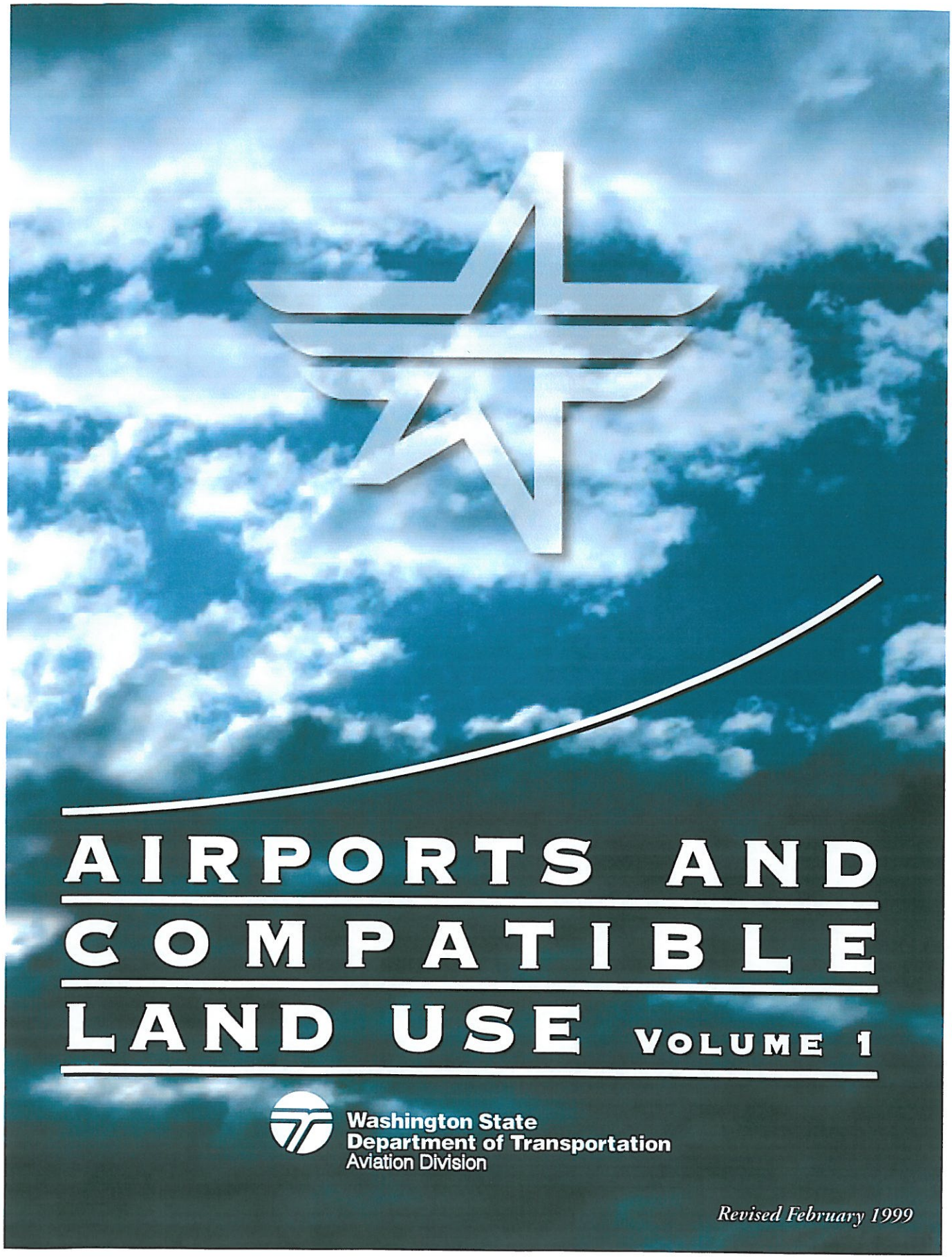
Marge Brandsrud



Winter view of Sparks Road facing west. Location is just east of Country Drive which is in the back ground of this photo. There is one drive way on the left of the photo.



Winter view of Sparks Road facing east. Location is just east of Country Drive. Although not distinguishable there are five drive ways in this photo.


AIRPORTS AND
COMPATIBLE
LAND USE VOLUME 1
Washington State
Department of Transportation
Aviation Division
Revised February 1999



AIRPORTS AND COMPATIBLE LAND USE

Volume One

An Introduction and Overview for Decision-Makers

Washington State Department of Transportation
Aviation Division
King County International Aiport
8900 East Marginal Way South
Seattle, WA 98108

The balance of this report has not been reproduced. It is available on the WSDOT Aviation Division Website at: http://www.wsdot.wa.gov/NR/rdonlyres/5983B7EF-5061-48FF-8829-1359F783CD10/0/AirportsLandUse.pdf

AIRPORT LAND USE COMPATIBILITY PROGRAM

Program Update

WSDOT Aviation assists local jurisdictions, airports, and other interests protect public use airports from incompatible development by providing technical assistance and resources to support local decision-making. The Airport Land Use Compatibility Program is continually being updated to reflect new research and planning methods to assist local jurisdictions. This paper provides additional information on the program and tools that have been effective for in developing strong comprehensive plan policies and development regulations.

Background

In 1996, the Washington State Legislature amended the Washington State Growth Management Act to require cities and counties to protect airports from incompatible development. The legislature was concerned that land use development trends were negatively impacting airport operations from incompatible uses and development. Senate Bill 6422 was codified to RCW 35.63.250, 35A.63.270, 36.70.547, and 36.70A.510. Provisions within this section apply to GMA and non-GMA jurisdictions (town, city and county) within the state of Washington.

Land Use Laws Affecting Airports

Four primary state land use laws affect development on and around airports:

RCW 14.07 and 14.08 Municipal Airports Act

The act adopted in 1941 and 1945 provides for the acquisition and sponsorship of airports by Washington cities, towns, counties, port districts, and airport districts. There are 140 public use airports within Washington State, which are owned and operated by the following:

- Cities 31%
- Counties 7%
- Port Districts 22%
- WSDOT operated 11%
- Joint City/County 5%

In addition, 22% are privately owned and opened for public use.

RCW 14.12 Airport Zoning

This section was adopted in 1945 and establishes definitions, criteria, and allows local jurisdictions to adopt zoning controls to protect critical airspace from buildings, structures or other airspace obstructions. The law provides direction and guidance to cities and counties on airport hazards.

RCW 36.70A Growth Management Act

The Growth Management Act was adopted in 1990. The Act identifies requirements and processes under which counties and cities are required to act. Within the Act there are several important sections related to airports.

RCW 36.70A.070 outlines mandatory elements within a comprehensive plan, which includes maps, descriptive text covering objectives, principles, and standards, and that the comprehensive plan must also be internally consistent with all elements. This section also requires that an inventory of air, water and ground transportation facilities and services be included. As well, new or amended elements of the Act must be adopted concurrent with scheduled update provided in RCW 36.70A.130.

RCW 36.70A.130 requires that each comprehensive plan and development regulations shall be subject to continuing review and evaluation by the county or city that adopted them. A county or city shall take legislative action to review and, if needed, revise its comprehensive plan and regulations to comply with this section. Legislative action means the adoption of a resolution or ordinance following notice and a public hearing indicating at a minimum, a finding that a review and evaluation has occurred and identifying the revisions made, or that a revision was not needed and the reasons thereof. Additionally, any amendment of or revision to development regulations shall be consistent with the comprehensive plan.

Airports are also recognized under RCW 36.70A.200 by the state as essential public facilities (EPF). All counties and cities planning under GMA RCW 36.70A.040 are required to protect public use airports as essential public facilities. Jurisdictions are required to develop a siting process for locating EPF and should not prohibit the siting, expansion, or continuation of EPF within their comprehensive plan or development regulations. Nor can jurisdictions develop strategies or develop provisions within their comprehensive plan or development regulation that would render the siting of an EPF impossible, impractical, or incapable of being accomplished, however, it is not inappropriate for a jurisdiction to require applicable conditions or mitigation measures.

RCW 36.70.547, 36.70A.510, 35A.63.270, and 35.60.250 General Aviation Airports

These sections were adopted in 1996 and requires all cities and counties (also applies to city or counties not planning under GMA) to protect public use airports from the siting of incompatible development, whether publicly owned or privately owned public use airports through its comprehensive plan and development regulations. The plans may only be adopted following formal consultation with airport owners and manager, private airport operators, general aviation pilots, ports, and the WSDOT Aviation Division. The law requires that comprehensive plans and regulations be filed with WSDOT Aviation and that each jurisdiction may obtain technical assistance from the WSDOT to develop plans consistent with State Law.

Role of the Federal Aviation Administration (FAA)

The FAA is responsible for the administration of aircraft, aircraft operations, safety and noise. Federal law preempts local regulations in the area of aircraft safety, navigable airspace, flight operations and noise control, which are defined as:

- Airport operations relates to issues in the air and on the ground, including takeoff, flight patterns, air traffic corridors, volume of air traffic, altitudes of air traffic, flight schedules, types, sizes, and purpose of aircraft and related issues.
- Safety relates to issues in the air and on the ground, including the placement of runways, taxiways, air navigation facilities, airport design, runway protection areas, and related issues.
- Noise relates to abatement of aircraft noise and emissions, in the air, during takeoffs and landings, and on the ground, including regulations on aircraft design and size, types of aircraft permitted at an airport, curfews on flight operations and other related issues. "Nor can zoning interfere with the rights of airport sponsors authorized by state law".

The preemption doctrine does not affect the local government's ability to use its police powers, particularly land use controls, to anticipate, abate, mitigate and otherwise respond to other land use concerns provided they are reasonable permitting and mitigation requirements, which includes incompatible land uses.

Implementation

Since 1996, many jurisdictions proceeded with the amendment of comprehensive plans and development regulations consistent with the requirement under the law. In 1998, WSDOT Aviation prepared a program overview for local jurisdictions that provides general guidance on how to protect airports from incompatible development. WSDOT Aviation recommends that jurisdictions consider three primary areas: height hazards (uses that may affect critical airspace), noise (over-flight and noise 65 dbl or greater), and safety (historical aircraft accident locations, wildlife hazards and hazardous/explosive materials). Additionally, it is recommended that jurisdictions review airport master plans, airport layout plans, other airport documents, aircraft/pilot characteristics and airport operations.

Local Jurisdiction Responsibilities

Under state law local jurisdictions are required to discourage incompatible development adjacent to public use general aviation airports through adoption of comprehensive plan policies and development regulations. Local jurisdictions must at least have examined and duly considered the materials contained within the guidelines, research and technical information, airport master plans and other supporting documentation when developing or amending comprehensive plans and development regulations. It is recognized that many strategies are available to local jurisdictions when planning for and developing comprehensive plan policies and regulations and can vary from airport to airport and region to region. Jurisdiction should document "show their work" on how

they arrived at their decision and should demonstrate reasons how they will discourage incompatible development adjacent to airports.

WSDOT Aviation encourages ports, special districts, airport sponsors, aviation interests and local jurisdictions to form partnerships and to cooperatively work together to discourage incompatible development. Local jurisdiction, aviation interests and agencies should become familiar with the land use compatibility guidelines, special studies, airport master plan or airport layout plan, FAA airport operations, number and type of based aircraft, historical accident locations, noise issues, height hazards or obstructions, aircraft flight patterns, aircraft and pilot characteristics, and other relevant information. WSDOT Aviation recommends the use of proven, empirical data to develop their land use policies and regulations and therefore the goal of the WSDOT Airport Land Use Compatibility Program is to provide the best available information to cities and countries to allow for informed decision making.

Resource Materials

Resource materials and documents are available on our web site at www.wsdot.wa.gov/aviation/planning. Some of these resources include:

A. Resource Documents and other sources:

- The Growth Management Act 101
- WSDOT Aviation Airports and Compatible Use Guidelines
- City of Yakima, Briefing Paper - Land Use Compatibility and Local Decision Making Process.
- California (Caltran) Airport Land Use Planning Handbook
- Land Use Compatibility and Airports, A Guide for Effective Land Use Planning, FAA Airports Division Southern Region
- Height Hazards
- Aircraft Noise

B. Land Use Planning Tools

- Example Scope of Work
- Example Comprehensive Plan Goals and Policies
- Example Disclosure Notice
- Frequently Asked Questions
- Reference Materials from the FAA, Defense Department, other states, universities, etc..
- Index of Airport Master Plans (City/County, Airport Name, Subject, Year)
- List of Airports by County and MPO/RTPO Regions
- Model Land Use Compatibility Studies

Land Use Compatibility RCW 36.70.547 / 36.70A.510

General aviation airports -- Siting of incompatible uses.

Every county, city, and town in which there is located a general aviation airport that is operated for the benefit of the general public, whether publicly owned or privately owned public use, shall, through its comprehensive plan and development regulations, discourage the siting of incompatible uses adjacent to such general aviation airport. Such plans and regulations may only be adopted or amended after formal consultation with: Airport owners and managers, private airport operators, general aviation pilots, ports, and the aviation division of the department of transportation. All proposed and adopted plans and regulations shall be filed with the aviation division of the department of transportation within a reasonable time after release for public consideration and comment. Each county, city, and town may obtain technical assistance from the aviation division of the department of transportation to develop plans and regulations consistent with this section.

Any additions or amendments to comprehensive plans or development regulations required by this section may be adopted during the normal course of land-use proceedings.

This section applies to every county, city, and town, whether operating under chapter 35.63, 35A.63, 36.70, [or] 36.70A RCW, or under a charter.

Re: Marion Meadows

Property on two sides are at least R-3 & R-5. Why would you support smaller lots or high density housing in a rural setting. A

My wife and I purchased our house 6 ½ years ago planning for our retirement. We love our 3 ½ acres. You see if we wanted to live in condos we would have purchased in downtown Renton or Seattle. We settled here for quality of life and open land. A

The environmental impacts to the neighborhood and wildlife would be horrendous. I watched with amazement the almost nightly migration of 19 elk last night, this is about half the normal herd, not to mention the birds, deer, bobcats, cougar and occasional bear and mountain goats. A

Why would you consider ruining the quality of life all the people that reside here. We have already seen the land use attempt for 200-300 mini storage units. Commercial in a residential area is totally unacceptable. A

We believe R-5 and possibly R-3 suit this area and is a much better fit for all concerned and I believe we could live with this option. A

The concern I have with any of this is Fire & Emergency Service (Volunteer Fire Department) not adequate, and the amount of smoke from woodstoves and outdoor fires for this many units. Septic systems are adverse to aquafer, or a waste treatment system for multiple houses with an open treatment and sediment pond (smell). A

Too much access traffic on Sparks Road, water runoff from steep slopes and erosion. There is also a proposal for 200-300- mini storage which pose another concern about fire. Two snowmobiles and jet skis per unit X 200 or 300 X 8 gallons of gas each, plus extra gas onsite is a huge recipe for disaster. More traffic, snow removal, noise and this not a commercial area. A

My wife and I feel R 5 is the perfect fit for the area if all the questions above are answered satisfactorily. A

Thanks for listening

David & Terri Lombardy

3631 East Sparks Road

Easton, WA 98925

David F. Lombardy 4-1-10

Terri Lombardy 4/1/10

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Kittitas County
CDS

Department of Energy

Bonneville Power Administration
Ellensburg Maintenance District
14001 Wilson Creek Road
Ellensburg, WA 98926

April 1, 2010

In reply refer to: TERR/Schultz
RZ-06-00035 Marian Meadows Rezone and Plat P096-31

LINE: Rocky Reach – Maple Valley No. 1
ADNO: 6466
LOCATION: Between 72/3 and 73/2

Dan Valoff
Kittitas Community Development Services (via e-mail)
411 N. Ruby Street, Suite 2
Ellensburg, WA 98926

Subject: Notice of Availability: Draft Environmental Impact Statement for
RZ-06-00035 Marian Meadows Rezone and Plat P096-31

Dear Mr. Valoff:

The Bonneville Power Administration (BPA) has reviewed the information in the Draft Environmental Impact Statement for the proposed Planned Unit Development and the relationship of the 520-acre development property to the BPA's 150-foot-wide, 345 kV, Rocky Reach-Maple Valley No. 1 transmission line easement.

BPA does not have any objection to the planned development as long as BPA's transmission line easement remains accessible and free of incompatible uses. However, we do request that the following statement be forwarded to the property owner(s) to help ensure public safety and reliable operation of BPA's facilities. A

> Portions of Section 1, Township 20 North, Range 13 East, W.M., are encumbered by an easement for high-voltage transmission lines owned by the Bonneville Power Administration (BPA). BPA has acquired rights that limit the landowner's use of these areas. BPA has the right of ingress and egress, the right to keep the easement free and clear of all brush, timber, structures, and fire hazards, and rights associated with access roads within the easement area. **All activities planned within BPA easements need to be reviewed by BPA prior to their occurrence**. Do not build, dig, install utilities, plant, or burn within the easement area. For further questions or concerns regarding any proposed uses of the easement, you may contact BPA Real Estate Field Services at the address listed above or by calling (877) 417-9454.

Your cooperation in this matter is greatly appreciated. By working together with our agency, your effort will help to minimize later disputes or unnecessary costs associated with the required removal or modification of incompatible or non-permitted activities placed within BPA's easements. If you have any

questions regarding this request or need additional information, please feel free to contact me at (509) 925-2088 or toll-free at (877) 417-9454.

Sincerely,

Lila Black

Lila Black
Field Realty Specialist

Dan Valoff

From: MarianDEIS email for public comments [MarianDEIS@co.kittitas.wa.us]
Sent: Thursday, April 01, 2010 10:09 PM
To: Jeff Watson; Jan Ollivier; Dan Valoff
Subject: FW: EIS

From: Tom Campbell[SMTP:TOMCAT1827@GMAIL.COM]
Sent: Thursday, April 01, 2010 10:08:56 PM
To: MarianDEIS email for public comments
Subject: EIS
Auto forwarded by a Rule

As one of the original 17 members of the Easton action group, I was involved working on the zoning and public hearings for this area. R-3 zoning was approved for this area of concern. At that time R-3 allowed 3 acres or 1/2 acre lots with a sewer system. We all knew this. When the county came up with cluster housing there was an improvement over 1/2 acre lots because of the open space required. I think the R-3 zone referred through out the EIS should be more clear.

The Easton airport is closed with very set dates for about 6 months every year by the government the last I knew. Living here, I feel your use figures are way off. I would be very surprised if there are 10 landings a month leaving a total of about 60 max for the year. C

I feel that the school section needs to be reviewed and changed. The student count at election time this year reported to the state was 97 total. Cle Elum reported to me that there were 15 of their students having legal transfers to Easton leaving 82 total for the school. At the time the new school was designed I was on the school board and the building was built to house 225 students. C

The access needs to be looked at closer and the Easton Ridge road added as an option. An expansion of this road out of Suncadia has been on the books for several years. Also there are other ways to access this area with work. 3.2. k

The section on the hill side needs to be reviewed as there is a large very buildable section which can not be seen from the bottom in the flats. A

There are many cities in the US and Canada which have deer and elk around homes year round including areas within this county. This section needs review. A

This is a very good draft but needs a few changes. As I am one of the many people who wants this cluster development, I urge you to only make changes that are suggested within the Easton area and not someone that does not live here.

Tom Campbell
P O Box 456

Easton, Wa 98925
509-674-1120

Notice: All email sent to this address will be received by the Kittitas County email system and may be subject to public disclosure under Chapter 42.56 RCW and to archiving and review.

message id: 38eb45916c6dcbdac24bb8719d004a14

April 2, 2010

Mr. Dan Valoff

Kittitas County Department of Community Services

411 N. Ruby Street, Suite 2

Ellensburg, WA 98962\

Dear Dan:

I would like to thank you for the opportunity to formally comment on the Marian Meadows DIES. I was encouraged to see that the Kittitas County required a detailed environmental review for a proposal like this. In review of this document, I have found some serious environmental impacts that were identified with no mitigation measure provided. Some severe and catastrophic impacts are described but they cannot be mitigated as required by state law.

Wildfire

The risk of wildfire is increased by the terrain and weather factors in the area of this proposed development. "All the factors for creating a extreme hazard conditions are present in the Easton area, especially in the slopes surrounding the valley. Adding to the risk is the near constant wind from the west that quickly dries forests after snow melt." (pg. 3-127 DEIS) "If access to Sparks Road is blocked there is no access to the site." Additionally, "Access could also be impeded by residents fleeing the area. Intense fires could make the single access road unusable to the proximity of heat and flames." (pg. 3-128 DEIS) Alternatives 1 & 2 potentially place more than 200 units on this site at risk of entrapment. The DEIS states that avoidance of development in the steep easterly portion of the site would reduce the risk of both structural and wildfires. (pg. 3-131) The steep easterly portion potential to wildfire and landslide hazards should render it unsuitable for this type of development. There is no mention in the DEIS of Roslyn's watershed, which is adjacent to this high hazard area. The potential environmental impacts associated with wildfire in the City of Roslyn's watershed need to be adequately addressed. 3.4. b

Water

The DEIS state on page 3-154 that "all scenarios result in water demand in excess of the water districts water rights and additional applications pending. " Also on page 3-247 the documentation of hydraulic continuity with surface and ground water is provided "depths to ground water near Lake Easton and Silver Creek suggest that these surface water features are losing water to the aquifer whereas at Easton pond and the nearby reach of the Yakima River are gaining water from the aquifer. Further on pg. 3-254 it states "The cumulative development will increase the watershed wide impacts of ground water withdrawal because water availability will be reduced for a variety of uses including agriculture, aquatic

habitat and recreation. In recent articles published in the Tribune (4-1-2010) and Daily Record (3-26-2010) the State Department of Ecology Director Ted Sturdevant is quoted concerning ground water. Noting the potential of drought this year and that this will be the fifth time since 2000 that **senior** water users will be rationed. "Allowing new, uncontrolled drilling into the very groundwater that folks downstream rely on – but won't get this year doesn't make sense." The Yakima basin is already short on water, as water right holders who get shut off in dry years know all too well. Ted Sturdevant said "And we know that groundwater in most of the basin feeds surface water needed by irrigators and fish." To summarize the proposal does not have an adequate supply and further ground water withdrawals will impair senior water rights. Also no water is left to the water district for growth in the Easton LAMRID. And this development is not in the water district. These facts can only lead to one conclusion. Reject this proposal until adequate senior water rights are provided. A

This proposal is an urban density development in a rural area next to the Easton LAMRID! It will require urban services such as sanitary sewer, storm sewers, police and fire protection. All to be provided by whom? This creation of a small town population in a rural area without government will be a disaster. It destroys wildlife habitat and will change the Easton area forever. It violates county policies and the State GMA Law. The DEIS states this could set a precedent for further PUD development in Kittitas County. A

Let's see, this proposal would create a small town the size of Cle Elum with a need for urban services but no government to provide them. It would be located in a rural area. It would have an inadequate water supply that would impair older water rights and fish. It would be located in a area of extreme fire danger with only one road in or out. The fire danger would threaten the neighbors, their watershed, and local firefighters if enough can be found, trained and equipped. Many lots would be on steep and unstable slopes with severe hazard from landslide, rock fall, and airplane crashes. Run off from rain on snow weather events will pose a catastrophic hazard on and off site. The sewer system will be small lot septic systems in an aquifer recharge zone. The built environment would replace the natural environment. Wildlife habitat will be destroyed along with the view and the rural landscape. It would be populated with people who drive at least 40 miles, one way, to work. They will have little or no interaction with the local community. All the development impact costs for schools, emergency care, police, parks and recreation will be passed on to existing county residents. Instead of seeing elk, you will see ten times more cars.

This is not the precedent for future growth in Kittitas County. A

This proposal should be rejected.

Joe Peck

PO Box 1

Roslyn, WA 98941

RECEIVED
MAR 3 1 2010
KITTITAS COUNTY
CDS

John Carlson
PO Box 632
Easton, WA 98925
509-656-2375
March 31, 2010

Kittitas County Community Development Services
411 N. ruby Street, Suite 2
Ellensburg, WA 98926

Subject: Comment on Draft EIS For Marian Meadows

Dear Kittitas County Community Development Services:

I have reviewed portions of your draft EIS for the Marian Meadows Planned Unit Development and Subdivision. It is my opinion this document does not adequately or correctly address the proposed project. In addition I found a minor typographical errors in listing your postal zip code as 98962 instead of 98926. My letter is my opinion about the information which should be addressed in the EIS For the Marian Meadows Planned Unit Development and Subdivision. C

The geographic area of interest is addressed in the Draft EIS as a 520 acre site in the vicinity of Easton, Washington located to the east and north of the state emergency airport. The Draft EIS does not adequately identify what property is proposed for development. The EIS should document the specific property proposed for development. There should be a legal description of the physical area involved to allow assessment of what exists on site to compare and contrast with the changes proposed by the development. Such a description should use the common terminology used to identify property parcels which could include parcel numbers , map numbers and property legal descriptions. Since the entire section of land in this general location is commonly owned by one owner, the Draft EIS does not explain what property is proposed for development. C

The fire protection for the area is incorrectly identified. The area is forest land within the forest protection zone administered by the Department of Natural Resources (DNR). The properties in this area are assessed for "Fire Patrol" by Kittitas County, which assessment is identified in RCW 76.04.610. This fee can be referred to as the forest fire protection assessment which the county is required to collect and transmit to DNR. This means DNR is responsible for resource protection in this area. DNR is dispatched by way of the Central Washington Interagency Communications Center (CWICC) located in Wenatchee, Washington. The suppression of previous wildfire in this immediate vicinity required more resources than the local fire district is expected to provide. Those suppression activities extended over several days, involving DNR, Forest Service (USFS) personnel, engines, handcrews, aircraft retardent drops, specialized equipment and additional contracted resources. The fuel load in this area continues to pose the same danger and potential cost for suppression activities. 3.4. j

The road access planning for the area continues to present the extreme hazard of being one-way in and one-way out. The wildland wildfire reference booklet, the Incident Response Pocket Guide, lists specific Wildland-Urban Watch Outs which seem to apply to this proposed development which include and are not limited to the following: poor access and narrow one-way roads; power lines; inadequate water supply; natural fuesl 30' or closer to structures; extreme fire behavior; evacuation of public; structures...on steep slopes (30% or greater). A

The Draft EIS does not address the migration patterns and needs of the mule deer population which use this area in their normal life cycle. C

The assumption in the Draft EIS involves local governmental entities voluntarily servicing the needs of a new urban community. It is my opinion this development is being proposed for the Wildland-Urban Interface where such services are provided in the context of a rural community. I believe there is no reasonable expectation such services will voluntarily expand to urban standards needed to serve an urban development. A

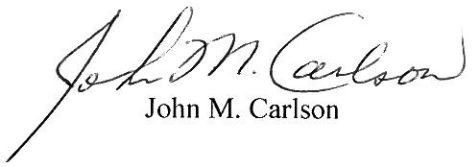
The potential change to this area by allowing an urban density development would alter the character of the area and potentially disappoint newcomers attracted to the area by the manner in which it currently presents. The present attraction to join this community is largely based on its rural character.

This area is a rural environment subject to extreme weather conditions which normally isolate the area several times during a typical winter season. Portions of the development proposal suggest this could be a commuter community. This could be that there is no local employment opportunity for an increase in population proposed on the scale of more than 400 new families in this development. Such new residents of a commuter based community might require daily travel on I-90. Winter travel on I-90 is subject to frequent closures and travel suspension due to environmental risks of snow-slide (avalanche and avalanche control), rock-slide and mud-slide. Such closures are not predictable and can prevent wage earners from commuting to work. Such closures can prevent travel on I-90 for several days at a time. A

There are none of the normal urban amenities in place to support an increase of population of more than 400 new families. The area supports a transient recreational population who bring most of their domestic needs with them. There are seasonal fluctuations in the recreational opportunities here making the area attractive to recreationalists the year round. The local area does not have the appropriate level of commercial services to support a larger resident community. If such services were to come into the area they would substantially alter the nature and character of the community and are not consistent with the lifestyle this area sustains. A

Thank you for your consideration of my concerns in this matter.

Sincerely,



John M. Carlson

SCRMA

P.O. Box 94, Easton, WA 98925-0094

RECEIVED
MAR 2 9 2010
KITTITAS COUNTY
CDS

March 26, 2010

Kittitas County Community Development Services
411 N. Ruby Street, Suite 2
Ellensburg, WA 98962

Re: *Marian Meadow Planned Unit Development – Road access via Country Drive (Environmental Impact)*

To Whom It May Concern:

On behalf of the Silver Creek Road Maintenance Association ("SCRMA"), we hereby object to the use of County Drive by the developers, and future home owners, of the Marian Meadow Planned Unit Development without the road either 1) being paved and maintained by the County or Developer as part of the development; or 2) the road stays gravel and the developer/future home owners are legally required to help pay for the maintenance and up-keep of Country Drive. Our official preference is option #1 (paved). This objection is based on the following: A

- Per your environmental impact statement, "***Country Drive is a public dedicated, privately maintained two-lane road that is not classified by Kittitas County. The posted speed limit is 15 mph and has an ADT of approximately 100 vpd (estimated from 2006 – 2008 counts). Unlike all other roads analyzed, Country Drive is a gravel road to which a bituminous treatment is applied in the summer for dust control***."
- First – once this development is fully built-out the vehicle traffic down this road will significantly increase causing major damage (and expenses) to a road that is already hard to maintain – this will be an excessive expense and hardship on SCRMA ;
- Second – this road is very prone to many large potholes that have to be constantly fixed even with the amount of traffic we have currently; the added traffic will not only cause this problem to worsen but also represents a safety issue as emergency vehicles would be hard pressed to use this access if no action were taken;
- Third – the bituminous treatment mentioned is done once each summer and barely lasts the summer with the current traffic flow. Additional traffic will render this expense and treatment worthless which means large amounts of dust can be expected to be generated from the new traffic; this affects not only the surrounding area home owners, but wildlife as well. We don't believe this impact has been fully examined.

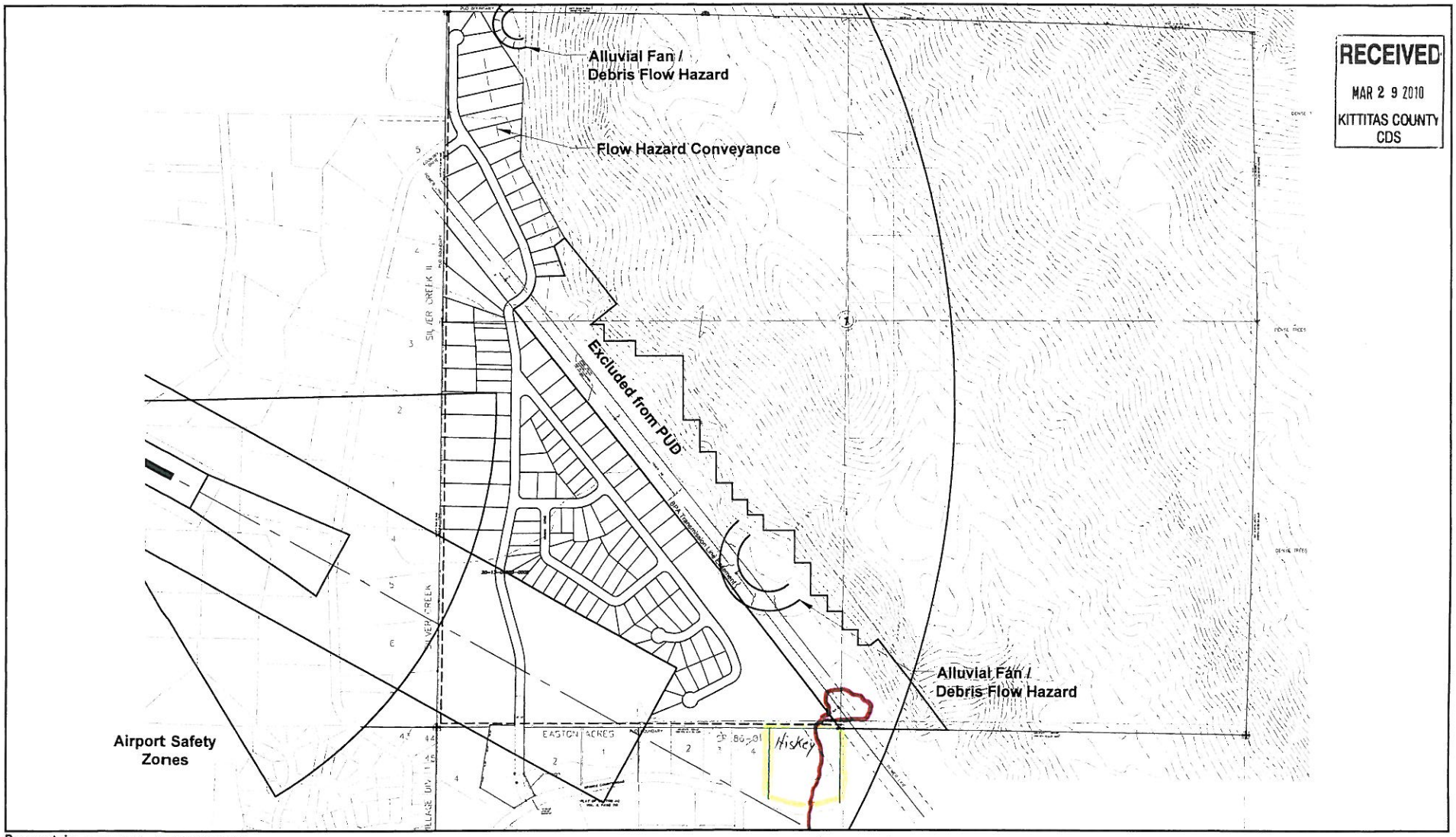
As mentioned above, SCRMA prefers to have the road paved as part of the development. Paving Country Drive is consistent with other like-kind developments of this type and size; especially for a key access road. SCRMA represents thirty (30) home owners that are affected by your decision.

Thank you for your consideration of our concerns.

Sincerely,



Jeff Crane
President of SCRMA
Jcrane4@comcast.net
#206/949-4339



Parametrix DATE Feb 01 2010 FILE BL1783007P03T19-F2-5

0 N 600
SCALE IN FEET

Water Build up + Course

Kittitas County Marian Medows Estates EIS

Figure 2-5
Alternative 5 - Mitigation Alternative: Development on Lower Portion of Site Only

Jim & Melanie Hickey
4211 Sparks Rd
Easton Wa

RECEIVED
MAR 2 9 2010
KITTITAS COUNTY
CDS

In Reference To the Marion Meadows EIS

Our property Boarders the South property line, We have some Concerns

1.) We draw well water and we are Concerned with Septic and grand water poluction, with a profect of this size. 3.5. n

2.) There is a low lying area to the east of our property by the powerline and gravel pit. Since we have lived here 1984-2010, 4 of 5 times, excessive Run off has flooded this area. Then flooded our yard. house and some of our out buildings, We are down stream from its puddling. (see picture). On page 2-3 in marion meadows EIS it talks about Berms and Channel water away from Building lots. We Believe this would make A worse for our Situation, As we are down Stream 3.5. p

3.) In the 26 years we have lived here. We have seen the decline in wildlife, and increase in people. We think a project of this size will hurt if not ruin the Wild life migration. 3.15. e

4f) Another concern is the population growth. Its not only the people who would be living in the area, but the people who visit, Especially on weekends. This is a recreational area and even now we are overun on weekends with people who are friends of property owners. How would we accommodate this project for emergencies such as a fire, school, post office, Hospital

A

March 18 2010 1.

Barbara Graham Howe
PO Box 36
Easton Wa 98925-
509-656-2203

RECEIVED
MAR 18 2010
KITTITAS COUNTY
CDS

RECEIVED
MAR 19 2010
KITTITAS COUNTY
CDS

Kittitas County Community Development Services
411 N. Ruby Street, Suite 2
Ellensburg Wa 98926

Re. Manor Meadows

Environmental Issues

1. This is a prime area for all our native wildlife and varied vegetion. Large scale building would destroy all the habitat.

A

2. Water issues. Is Easton Water District to be the only source of water? Will wells be permitted? What of senior and junior water rights. What of water moratoriums?

3.5.i

3. Little of this area is appropiate to building. Most is too steep. This brings up the issue of water drainage and low land flooding.

A

Safety protection

1. Fire and Police protection. Property owners who build expensive new homes expect, and rightly so, timely fire and police response. This area can not offer this.

A

2 Sparks road on the west end offers the only egress. This is impractical and potentially unsafe.

I have lived in Easton all my life - have spent many hours hunting, mushroom picking and berry Picking on Easton Ridge. In my opinion this development should not be allowed. If it is allowed it should be restricted to 3 acre parcels, per its current zoning. Also a second exit should be guaranteed. A

Respectfully yours
Barbara Graham Howe

Washington State Department of Transportation
Douglas B. MacDonald
Secretary of Transportation

Aviation Division
3704 172nd Street, Suite K2
P.O. Box 3367
Arlington, Washington 98223-3367
360-651-6300 / 1-800-552-0666
Fax: 360-651-6319
TTY: 1-800-833-6388
www.wsdot.wa.gov

April 23, 2010

Mr. Dan Valoff
Kittitas County Development Services
411 N. Ruby St. Suite 2
Ellensburg, WA 98926

RE: Marian Meadows Planned Unit Development and Subdivision Draft Environmental Impact Statement

Dear Mr. Dan Valoff,

Thank you for the opportunity to provide comment on the Marian Meadows Planned Unit Development and Subdivision Draft Environmental Impact Statement (EIS). The Washington State Department of Transportation (WSDOT) is concerned that the proposed Planned Unit Development and Subdivision, if approved, would allow significant incompatible development adjacent to Easton Airport.

WSDOT's Airport Land-Use Compatibility Program addresses elements of safety, airspace hazards, noise and land use in relation to public-use airports. These factors must be considered when addressing compatibility adjacent to public-use airports. WSDOT is primarily concerned with the safety and compatibility of placing single-family residential development adjacent to the airport and within the airport operating environment.

Easton State Airport is strategically located on the eastern approaches to Stampede Pass and Snoqualmie Pass and is one of 17 airports operated by WSDOT Aviation. The primary purpose for state-operated airports is to provide emergency landing areas along highly traveled routes, but they are also used for firefighting operations, emergency medical access, disaster emergency management and recreational use.

Homes constructed in this area would be exposed to noise, light, vibration, glare, low-flying aircraft and other activity generated by normal airport operations. Such activity could have an adverse impact on safety and the quality of life residents experience, and it could contribute to conflict between neighbors and the airport. As we have seen in other

communities, such situations often lead to conflict that ultimately disrupts operations of airports as essential public facilities. We offer the following observations and recommendations:

- (RCW 36.70547, RCW 36.70A.510) Requires that towns, cities and counties adopt comprehensive plan policies and regulations to discourage development of incompatible land uses adjacent to public use airports. The Growth Management Act (GMA) also identifies airports as essential public facilities.

- Kittitas County has adopted the following related comprehensive plan policies:

    - GPO 4.15E Recognize airports as essential public facilities

    - GPO 4.15F Protect Kittitas County Airport (Bowers Field), Cle Elum Municipal, DeVere Field and Easton State airports from adjacent incompatible land uses and/or activities that could impact the present or future use of the airports as essential public facilities.

    - GPO 4.15G A notice of title or disclosure statement should be required for new or substantial redevelopment of lots, buildings, structures and activities located adjacent to public use airports. The notice should indicate that the property is located adjacent to the airport and may experience low overhead flights, odors, vibrations, noise and other similar aviation impacts.

    - GPO 4.14H Protect public use airports from height hazards by developing a height overlay district that will prohibit buildings or structures from penetrating the Federal Aviation Agency (FAA) Part 77 "Imaginary Surfaces".

    - GPO 4.16A To adopt plans and regulations in compliance with RCW 36.70.547, or as amended thereafter, to protect airport operations.

- Given the proposed development's proximity to the airport, residents would be exposed to noise, vibration, light, glare, fumes and extremely low-flying aircraft activity. Such activity would have adverse impacts on safety and the residents' quality of life. This would inevitably contribute to conflicts between neighbors and the airport.

- As stated in the Kittitas County Zoning Ordinance Section 17.36.010, the purpose of a PUD is to provide for and encourage a harmonious mixture of land uses with greater flexibility in land use controls. This PUD will not result in a more harmonious mixture of land uses, but will most likely produce conflict and a

significantly diminished quality of life for the residents. As a result of this conflict, the long-term viability of aviation facilities will be impacted.

Alternatives 1, 2, 4 and 5: propose an incompatible residential density, and are inconsistent with state law, and the goals and policies of Kittitas County. A

Alternative 3: The density proposed in alternative 3 exceeds recommend residential density found in WSDOT's Airports and Compatible Land Use Vol. This alternative places single-family residential development in the approach to Easton State Airport.

WSDOT Aviation recommends that EIS address: 3.2. o

- Residential density
- Stormwater facilities - best management practices are found in WSDOT's Airport Stormwater Design Manual 3.2. p
- Airport operational characteristics in relation to the proposed alternatives 3.2. q
- Approach and departure phases of flights in relation to the proposed alternatives 3.2. r
- The elevation of the proposed development in relation to aircraft operations 3.2. s
- Firefighting operations 3.2. t

Safety:

- The majority of off-airport accidents occur along the extended runway centerline during the approach and departure phases of flight. The EIS should address this fact. 3.2. w
- All alternatives exceeded recommended residential densities 3.2. o
- The airport is often used as an emergency landing facility 3.2. x

Nuisance Noise

- This noise level constitutes a nuisance and continual irritant. Often, people experience a diminished quality of life as a result of nuisance noise. For example, unwanted noise can: 3.2. y
  - Disrupt sleep patterns
  - Be an aggravation
  - Cause conflict between neighbors

- Raise blood pressure

We thank you again for the opportunity to comment, and remain available to provide technical support and assistance. Please don't hesitate to contact me at 360-651-6312 or timmerc@wsdot.wa.gov if you have any questions.

Sincerely,



Carter Timmerman
Aviation Planner
WSDOT

CC:
Dan Valoff, Kittitas County
Doug Peters, CTED

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Appendix B contains written comments received on the Draft Environmental Impact Statement issued February 2010.

All comments received are reproduced in Appendix B with a comment number in the margin that corresponds to the comment summary and response in Appendix C.

Comments were received from the following:

- Kittitas County Department of Public Works, dated April 2, 2010
- Washington Department of Ecology, dated April 2, 2010
- Washington Department of Ecology, dated March 31, 2010
- City of Roslyn, dated April 2, 2010
- Washington Department of Fish and Wildlife, dated April 2, 2010
- Michael Long, dated April 2, 2010
- Petition requesting additional Alternative, dated March 22, 2010
- Kittitas County Fire District No. 3, dated March 29, 2010
- John R. Jenson, dated March 22, 2010
- Marge Brandsrud, dated March 31, 2020
- David and Terri Lombardy, dated April 1, 2010
- Department of Energy, dated April 1, 2010
- Tom Campbell, dated April 1, 2010
- Joe Peck, dated April 2, 2010
- John Carlson, dated March 31, 2010
- Silver Creek Road Maintenance Association, dated March 26, 2010
- Jim and Melanie Hiskey, dated March 29, 2010
- Barbara Graham Howe, dated March 18, 2010
- Washington State Dept. of Transportation Aviation Division, dated April 23, 2010

APPENDIX C

Response to Comments

Received in the Draft Environmental Impact Statement

KITTITAS COUNTY
Marian Meadows Draft EIS Comments and Responses

Comment Number	Comment	Response
A	A variety of comments were received that indicate preference for specific actions on the PUD application including: a preference for Alternatives, preference for implementation of mitigation measures, and preference for approval or denial of the proposal	Preferences are not appropriate for inclusion in the EIS. The purpose of the EIS is to identify and evaluate probable significant environmental impacts that could result from the applicant's proposal and the alternative actions, and to identify measures to mitigate those actions. The EIS is a disclosure document and does not authorize or recommend a specific action or alternative. Rather, it is a resource to be used in making decisions and will be considered in the process of review of the application for a Planned Unit Development (PUD), preliminary plat and subsequent decisions.
B	A variety of comments were received requesting more detailed on-site analysis of specific resources and issues.	Analysis appropriate to the level of detail that can be identified by the rezone/PUD action are included in the DEIS. The analysis provided and mitigation measures identified are sufficient to address the issues raised in the rezone/PUD review. Approval of future permits and approvals may require additional site specific field work, or additional review of specific issues relating to specific permit requirements.
C	A variety of comments were received that indicate the need for corrections in the text for accuracy but do not change the impacts described.	Corrections or additions that do not change the impacts described in the Draft EIS are included in the Final EIS but are NOT in underlined format.
D	A variety of comments were received requesing identification of the the responsibility of the Project Sponsor for implementation of mitigation measures.	The decision of how to implement mitigation is a decision to be made at project review. The EIS provides information but does not anticipate the decisions to be made in permit review
E	A variety of comments requested discussion of compliance with specific code provisions.	The EIS addresses environmental impacts. The DEIS does not attempt to provide an analysis of code compliance which will be addressed as part of PUD consideration or subsequent permits.
CHAPTER 1 Project Summary 1		
1.1 .a.	It is possible that US Army Corps of Engineers 404 permit may be required as well as 401 water quality certification from Ecology	Added to permit list as a possible permit. This must be determined at the point of development permit application and will also depend on whether the project design avoids impacts or results in disturbance to the resource. Potential wetland impacts and mitigation is identified in the DEIS to be used for administration of whatever permits are required.
1.1 .b.	It is possible that Ecology may have wetland jurisdiction under RCW 90.48 and WAC 173-201A	Added to permit list as a possible permit. This must be determined at the point of development permit application and will also depend on whether the project design avoids impacts or results in disturbance to the resource. Potential wetland impacts and mitigation is identified in the DEIS to be used for administration of whatever permits are required. According to Attorney General Opinion 1989 No. 2190 Chapter 90.48 RCW gives Ecology authority to control water pollution in wetlands when they constitute waters for the state, but does not confer sufficiently comprehensive authority on the Department of Ecology to promulgate rules establishing the comprehensive wetlands protection programs. Approval under RCW 90.48 has been added to the FEIS as a possible permit/approval.
1.1 .c.	If "Associated Wetlands" are in the 100 year floodplain a Shoreline Substantial Development Permit may be required	There are no wetlands on the site determined to be under Shoreline Management Act jurisdiciton
1.1.d.	NPDES Construction Stormwater General Permit Required	Listed on DEIS page 1-11.
1.1 .e.	Burn permit required for outdoor burning of cleared vegetation	Added to permit list as a possible permit.
1.1 .f.	Water right change approval by Ecology is required to add additional area outside of the service area specified in existing withdrawal permits.	Added to permit list.
	Traffic concurrency not included in permit list	Added to permit list.
CHAPTER 2 Description of Alternatives		
2.2.a.	An additional alternative should be included consisting of 3 acre lots only excluding areas eliminated in DEIS alternatives 4 and 5 including the easterly portion of site and airport safety zones	Additional Alternatives 3B and 3C are included in the FEIS.
2.2.b.	The significance and consequences of "pro forma" subdivision should be discussed	DEIS text indicates that the "pro-forma lot layout" represents a potential buildout of the proposed PUD - Alternative 1 for the purposes of assessing impacts. The DEIS text states that applications could vary from the layout shown. By representing the maximum number of units allowed, it provides a reasonable worst case.

Comment Number	Comment	Response
2.2.c.	Topography should be taken into consideration with lot layout. Steep areas should not be treated the same as gentle terrain.	Topography is considered in many alternatives. Alternative 1 has much larger lots on the steep easterly poriton of the site. Alternatives 2 and 5 eliminate development on the steep easterly portion of the site. Alternative 4 clusters lots on the least steep portions of the stie.
2.2.d.	Alternative 1 lots may not allow use of septic tanks per KCC 13.04.070	The proposed lot size meets current Health Dept standard with public water supply
2.2.e.	Alternative 2 should indicate location of Sewage Treatment Plant	The exact location of the plant does not change impacts substantially Additional FEIS text addresses proximity impacts such as noise and odor
2.2.f.	The No Action Alternative should not include service by the Easton Water District.	Extension of water service to the site is a reasonable presumption, notwithstanding lot size. The discussion of impacts also includes assessment of impacts of service by individual wells exempt from obtaining individual water rights certification.
2.2.g.	The No Action Alternative should not include development within an airport safety zone	Three acre lots are allowed in the Airport Safety Zones (ASZ) by Kittitas County zoning as provided in Alternatives 3A and in accordance with WSDOT recommendations fro 5 acre lots in Alternative 3C. Exclusion of lots within ASZ 4 is incorporated in Alternatives 2, 4 and 5 to avoid the area of highest hazard.
2.2.h.	Tenure alternatives should include only full-use or worst case	Reasonable projection of impacts is required, as well as assessment of uncertainty. The tenure options provide a full range of potential impacts reflecting uncertainty about the future tenure of residents and also providing a reasonable worst case scenario.
2.2.e.	Need to update project schedule and phasing There is nothing that would limit phasing of the project	Analysis is largely based on build-out of the project Phasing reflects information provided by the applicant, but generally does not affect the analysis, except for specific public services (such as schools) where assessment over time is included
CHAPTER 3 Environmental Consequences		
Section 3.1 Land Use		
LAND USE		
3.1.a	Should map and identify the LAMIRD	Revision incorporated in the FEIS.
3.1.b.	DEIS does not make the distinction between density allowed in the LAMIRD and the density of the proposal outside the LAMRID	Revision incorporated in the FEIS.
3.1.c.	Fails to address how the proposal fits with the rural designation or meets the requirements of GMA for rutal lands.	DEIS includes discussion of criteria related to rural character. The DEIS does not attempt to provide an analysis of code compliance.
3.1.d	Should address cumulative impacts including county-wide precedent of allowing urban levels of development in a rural area	Cumulative analysis includes the relevant geographic area in the proximity. This is a project EIS, not a county-wide policy analysis. This issue may be addressed in the subsequent code compliance review
3.1.e	No discussion of impacts of the density bonus request	All analyses of Alternatives 1 and 2 address the requested PUD density
3.1.f.	No analysis of how the population projected for the PUD correlates with Comprehensive Plan population allocations	Revision incorporated in the FEIS. Added to FEIS discussion of the percent of total non UGA growth projections represented by the alternatives
3.1.g.	No discussion of correlation with Capital Facilities Plan	Addressed under each relevant element
	Discussion of the definition of rural does not address county compliance with obligations	Assesses in terms of environmental impacts, not code compliance
	Does not discuss violation of GMA criteria	Assesses in terms of environmental impacts, not code compliance
	Does not document how the proposal fails to foster traditional rural lifestyles	Assesses in terms of environmental impacts, not code compliance
	Fails to address how tripling parcels is in keeping with the rural character and does not adequately acres cumulative impacts	Assesses environmental impacts, not code compliance Cumulative impacts are addressed throughout relevant elements
	Cumulative impacts are important because the Project Sponsor has proposed similar development proposals in other parts of the county	This is a project EIS, not a county-wide policy analysis. This issue may be addressed in the subsequent code compliance review

Comment Number	Comment	Response
3.1.h	The need for commercial use is not addressed	On DEIS page 3-37 and 3-43, , it states that commercial needs likely will be met at existing centers. No revisions are included in the FEIS.
3.1.i.	Include effects of recent CUP approved for 300 Mini Storage Units	Revision incorporated in the FIES in Alternatives and analysis.
TRANSPORTATION		
3.2.a.	ATV use on public roads is not legal except for snowmobile travel of specific County Roads.	FEIS includes additional discussion
3.2.b.	West Sparks Rd volumes appear low	Traffic counts were taken in 2008. The comparison of 2008 and 2006 counts revealed no consistent trend (in fact, two locations showed a decrease in volume); therefore, it was concluded that no new intersection turning movement counts would be collected and the existing 2008 analysis would utilize 2006 volumes provided in the 2006 traffic study.
3.2.c.	Table 3-13 delay times for 226 lot subdivision not shown	FEIS incorporates the additional information.
3.2.c.	LOS analysis not prepared for 226 lot subdivision + Rural Cumulative	This is not one of the Alternatives analyzed in the EIS - it is merely a phase of the 447 unit alternative and doesn't warrant separate cumulative analysis.
3.2.d.	Maintenance of Intersections 1, 2 and a portion of 3 by WSDOT	FEIS incorporates the additional information
3.2.e.	Accuracy of depiction of DNR land surrounding the Easton Airport	Information is from the county interactive web map and Assessors data
3.2.f.	Reference for Kittitas Co standards for trails in new development	Revision incorporated in the FEIS Table 3-16
3.2.g.	Is growth rate of 1.43 percent consistent with recent environmental reviews by the county	This growth rate is realistic given long term trends of new residential permits permitted over the long term. It is higher than recent rates affected by the current economic downturn.
3.2.h.	Update baseline year of data	Data used is consistent with trends and does not require updating to accurately describe proected conditions in the future. There also has been almost no building in the vicinity of the site that would change the baseline conditions. Any off-site development that may occur is accounted for in cumulative trip generation.
3.2.i.	Doesn't address the increase in maintenance cost to the county	Assessed in the DEIS page 3-62 and retained in the FEIS
3.2.f.	Assess the impacts of the failure of the homeowners association to adequately maintain roads on-site	Assessed in the DEIS page 3-62 and retained in the FEIS
3.2.g.	Document the location of required new roads	Locations are shown on site plans for all alternatives. Impacts of construciton are assessed on DEIS page 3-232
3.2.h	Assess impacts associated with use of logging roads	Clarified in FEIS. Logging roads are not proposed to be used because they cannot meet county road standards.
3.2.i.	Need to accurately describe the isolation of the community during snow avalanche and other events	FEIS includes clarification.
3.2.j.	Address safety concerns of restriction of sight distance due to snow plowing	FEIS includes clarification.
3.2.k.	Easton Ridge Road from Suncadia should be added as an option	Not reasonable mitigation. No such road is contemplated in county plans. The cost and impacts of up to 8 miles of such a road on extremely challenging terrrain are well beyond the scope of reasonable mitigation for this project.
3.2.k.	No mention of easements in conjunction with location of structures in airport safety zones	Analysis of impacts and alternatives is provided. Kittitas County has no specific easement requirements in these areas.
3.2.l.	Analysis is inadequate	The analysis follows WSDOT and other agency guidelines for utilization of safety zones as the basis of analysis. Safety zones are based on studies of a wide range of aviation accidents.
3.2.m.	More attention should be given to avoidance of development in safety zones	Alternatives 2, 4 and 5 address avoidance in highest risk zones FEIS Alt 3D addresses WSDOT 1 unit per 5 acre recommendations.
3.2.n.	Only Alternative 3 meets standards for aviation safety zones	Alternatives 2, 4 and 5 provide greater avoidance of zones 2, 3 and 4 and reduce hazard exposure by 86 percent. Zone 6 WSDOT recommendations are not met FEIS Alt 3C meets WSDOT 1 unit per 5 acre standard
3.2.o.	All alternatives exceed residential density recommendations	Alternatives 2, 4 and 5 meet WSDOT recommendations for Airport Safety Zones (ASZ) 2, 3, and 4. Zone 6 recommendations are not met by Alternatives 2 and 5. Alternative 4 meets the Kittitas County standard of an average of one unit per three acres within ASZ 6 but does not meet WSDOT Aviation recommendation of 1 unit per 5 acres.

Comment Number	Comment	Response
3.2.p.	Address stormwater standards for the airport.	The airport is not on the site Management of stormwater on the airport site is not relevant to the potential impacts of the proposed development
3.2.q.	Address airport operational characteristics in relation to alternatives	FEIS includes clarification.
3.2.r.	Address airport approach and departure phases	FEIS includes clarification.
3.2.s.	Address elevation as it relates to airport operation	FEIS includes clarification.
3.2.t.	Address firefighting as it relates to the airport	DEIS addresses in Section 3.2.2. Minor additional clarification is added in the FEIS.
3.2.w.	Address accident exposure along runway centerline	DEIS addresses in Section 3.2.2. Minor additional clarification is added in the FEIS.
3.2.x.	Address emergency landing at the airport	DEIS addresses in Section 3.2.2. Minor additional clarification is added in the FEIS.
3.2.y.	Address noise as it relates to adjacent land use	DEIS addresses in Section 3.7. Minor additional clarification is added in the FEIS.
PARKS AND RECREATION		
3.3.a.	Address recreation impacts of continued use of ORV on Roslyn watershed	Mentioned in the FEIS. The Roslyn watershed generally is distant from the site and has a relatively low probability for use by residents on the site.
3.3.b.	The approved CUP for 250 to 300 storage units will eliminate the use of the BPA easement for a trail	Not addressed. The mini storage proposal does not encroach on the BPA easement and would not change the potential for trail use.
PUBLIC SERVICES		
3.4.a.	History of wildfire on the site should be identified	FEIS includes additional information.
3.4.b.	Potential impacts of wildfire on Roslyn watershed should be addressed	Wildfire characteristics are addressed in Section 3.4.2. Additional clarification is added in the FEIS to address this resource.
3.4.c.	Review capabilities of fire equipment, specifically for travel on steep slopes	DEIS addresses in Section 3.4.2. Minor additional clarification is added in the FEIS.
3.4.d.	Assess the capability of fire equipment to ford Silver Creek.	DEIS addresses in Section 3.4.1.4. No additional analysis is needed to assess potential impacts.
3.4.e.	Assess whether an adequate buffer can be established to protect the Roslyn watershed	Wildfire characteristics are addressed in Section 3.4.2 including mitigaiton measures. Additional clarification is added in the FEIS to address this resource.
3.4.f.	Assess potential damage and costs of wildfire in the area	Wildfire characteristics are addressed in Section 3.4.1.3. Additional clarification is added in the FEIS to address this resource.
3.4.g.	More clearly identify actions that can be taken to reduce the risk of fire spreading to adjacent lands	Wildfire characteristics are addressed in Section 43.4.2, including mitigaiton measures. Additional clarification is added in the FEIS to address this resource.
3.4.h.	There is currently no access through the Easton airport. Such access would require widening and improvement.	DEIS addresses in Section 3.4.2. Minor additional clarification is added in the FEIS.
3.4.i.	Fording Silver Creek is not feasible under low or high flow conditions	DEIS addresses in Section 3.4.2. Minor additional clarification is added in the FEIS.
3.4.j.	Fire protection of forest lands is by DNR per RCW 76.04.610	After development, forest land fire protection would no longer apply because the land would no longer be commercial forest land. Additional clarification added in FEIS text.
3.4.k.	The relation of residential population to police service should be reconciled with the assumptions in other sections	Each public service has a different type of demand in relation to population, as discussed for each element.
3.4.l.	Cumulative impacts of cumulative population growth on police service should be assessed with mitigating measures	Cumulative impacts on each public service has been assessed separately.
3.4.m.	Assess financial impacts on the taxpayers	Public service impacts include a qualitative assessment of the potential financial burden on each public service and the extent to which it would increase the costs bourne by the general public
UTILITIES		
3.5.a.	Analyze extent to which Easton District Water Rights are junior to other downstream rights	Not relevant, the proposal and alternatives do not affect the Water District's priority date
3.5.b-c	Application of provisions of the 2003 Municpal Water Law (MWL) to existing water rights is uncertain.	Added to permit list.
3.5.d.	Revise water system demand projections assuming full time use of all residences	DEIS addresses in Section 3.5.1. Minor additional clarification is added in the FEIS.
3.5.e.	Assess viability of approval of pending water rights applications and the consequences if this application is not approved.	DEIS analysis is based on existing water rights.

Comment Number	Comment	Response
3.5.e.	Review legal status of agreement of the Water District with the applicant	The EIS analyzes environmental impact. Legal analysis may be made in a separate forum, such as permit review.
3.5.f.	Analyze effects on service to Marian Meadows to the rest of the District including existing pacels not currently served.	Analysis assumes continuation of current demand of existing hookups Additional analysis in the FEIS addresses current demand plus demand of existing parcels without service.
3.5.g.	Evaluate the SEPA/NEPA review done for the service agreement between the Water District and the applicant	Previous decisions such as this are not relevant to analysis of the impacts of the proposal under consideration.
3.5.h.	Analyze how an adequate water supply can be obtained, given the lack of capacity of the Water District	The EIS addressed the extent to which the Water District can serve various levels of water demand. Minor clarification is added in FEIS. The function of the EIS is to assess impacts. These can be used to condition a project. It is not appropriate for the EIS to develop specific Water District programs to address impacts of the proposal.
3.5.i.	Identify the impacts of use of private wells	Use of private wells are not proposed or projected under any alternatives. Additional discussion provided of need for water rights certification for subdivisions with water demand in excess of 5,000 gpd.
3.5.j.	Correct maps to show correct Water District Boundary	FEIS includes clarification.
3.5.f.	Available Water District water must include platted lots within the water district boundary	Analysis assumes continuation of current demand of existing hookups Additional analysisin FEIS considers current demand plus demand in the district outside of proposal
3.5.k.	Assess impacts on well protection zones	Addressed in DEIS on page 3-164. Minor clarification added in FEIS.
SEWER		
3.5.l.	Identify location of sewage discharge. Identify winter disposal for reclaimed water.	Addressed in DEIS on page 3-164. Minor clarification added in FEIS.
3.5.m.	Analyze applicant's proposal for stream augmentation	Stream augmentation is not discussed because it is judged to be inconsistent with Ecology regulations Additional explanatory text in FEIS
3.5.n.	Analyze impacts of septic tanks.	DEIS addresses on page 3-165. Minor additional clarification is added in the FEIS.
STORM WATER		
3.5.o.	Stormwater may not be conveyed in County Road distches	The county has clarified that the requirement is that downstream conveyance be provided that is sufficient to meet the demands of the proposal, including additional runoff from impervious surfaces. Additional discussion of mitigation added in FEIS.
3.5.p.	Analayze impacts from rain on snow events that have caused flooding of residences along Silver Creek in the past	Addressed in DEIS on pages 3-168, 3-243, 3-345 and 3-282. Minor clarification added in FEIS.
3.5.q.	Ditch systems on Sparks Road do not extend to Silver Creek. Additional runoff will affect property owners.	FEIS addresses.
3.5.r	Discussion of existing BPA easement rights	These easements were provided by BPA, reviewed and considered in assessment of potential impacts.
VISUAL QUALITY		
3.6.b..	Idenfity the number of lots needed to address visual impacts	The comparison of alternatives provides varying levels of impact that may be considered by decision makers.
3.6.b..	Assess the effectiveness of existing County Regulations governing lighting and more specific mitigation measures to ensure that "dark skies" are maintained	There are no current regulations. The DEIS assesses relevant impacts.
AIR QUALITY		
3.8.a.	Air quality information must reflect local micro-climate. There are many windless days, especially in winter. Wood stoves would affect air quality	Clarification is added in the FEIS to incorporate local information about localized stagnant air conditions.
3.8.b.	Need for a Fugitive Dust Control Plan (FDCP).	Similar mitigating measures are discussed on DEIS page 3-208.
3.8.c.	Ecology encourages a smoke fee project and alternative to burning clearing debris.	Additional mitigation included in FEIS.
3.8.d.	Home heating should be addressed	DEIS addresses in Section 3.8. Minor additional clarification is added in the FEIS.
3.8.e.	Natural gas or propane space heating should be considered.	Additional mitigation included in FEIS.
GEOLOGY, TOPOGRAPHY AND SOILS		
E	Requirements and significance of Environmentally Critical Area Modification Approval should be explained	Analysis appropriate to the level of detail that can be identified by the rezone/PUD action are included in the DEIS. EIS is not intended to provide an evaluation of code compliance.

Comment Number	Comment	Response
2.11.a	Perform detailed geotechnical analysis now	Analysis appropriate to the level of detail that can be identified by the rezone/PUD action are included in the DEIS and is adequate to make a decision of whether to allow analysis on the easterly portion of the site or exclude the area as in Alternatives 2 and 5. Detailed assessment is appropriate if and when specific development in those areas is allowed/proposed.
2.11 .b.	Assess impacts of earth movement on site	Addressed in DEIS pages 3-231 through 3-234. Minor additional analysis in FEIS.
SURFACE WATER		
3.12.a.	Identify Roslyn watershed and potential impacts	FEIS includes additional analysis.
3. 12.b.	Assess stream crossings and development within 200 feet of watercourses	Analysis appropriate to the level of detail that can be identified by the rezone/PUD action are included in the DEIS and is adequate to make a decision of whether to allow analysis on the easterly portion of the site or exclude the area as in Alternatives 2 and 5. Detailed assessment is appropriate if and when specific development in those areas is allowed/proposed.
VEGETATION AND WETLANDS		
3.14.a.	Wetland delineation should be prepared with extent of direct and indirect impacts	1. Wetlands have not been delineated. Delineation is not needed for assessment of impacts of the PUD. Delineation is appropriate at the stage of development permit application (such as a subdivision) Analysis is appropriate to the level of detail that can be identified by the rezone/PUD action. 2. Project maps show locations in appropriate detail for the EIS purposes
3.14.b.	Detailed wetland mitigation should be identified. Comment not reproduced since it is entirely boilerplate	Mitigation measures appropriate to the level of detail that can be identified by the rezone/PUD action are included in the DEIS
WILDLIFE		
3.15.a	Mountain Goat habitat shown underestimates area of use.	FEIS includes additional analysis.
3.15.b	Mountain Goat habitat particularly access to winter elevation habitat would be eliminated.	FEIS includes additional analysis.
3.15.c.	Disturbance related to construction, snow management and high density development, and motorized recreation are concerns.	DEIS addresses on pages 3-282 through 3-289. FEIS includes additional analysis.
3.15.d.	High density development along the I-90 corridor forecloses options that allow for mountain goat movement across the valley.	This project is not adjacent to I-90. The DEIS assesses impacts on north-south movemement. The FEIS adds analysis of how restriction of north-south movement across the site might affect patterns elsewhere, including east-west movement across I-90.
3.15.e.	Assess impact on wildlife movement, specifically impacts on the investment of WSDOT to provide movement across I-90.	This project is not adjacent to I-90. The DEIS assesses WSDOT plans on pages 3-272, 273 and 288. Impacts on north-south movemement are discussed in the DEIS. The FEIS adds analysis of how restriction of north-south movement might affect patterns elsewhere, including east-west movement across I-90.
3.15.f	Impacts of septic systems on Silver Creek and related habitat should be assessed	Septic issues addressed on page 3-165. Groundwater addressed on pages 3-247 and Figure 3-37 that indictes groundwater depth well below the level of Silver Creek. Groundwater flow into that stream is very unlikely. Groundwater contamination impacts on the Easton Ponds and the nearby reach of Yakima River are addressed in additional FEIS discussion.
3.15.e.	Assess impacts on wildlife corridors	The DEIS assesses impacts on north-south movemement. The FEIS adds analysis of how restriction of north-south movement might affect patterns elsewhere, including east-west movement across I-90.
2.25.h.	Refer to studies currently underway on cougars in the vicinity	FEIS includes additional analysis.
2.25.i.	Assess impacts of the CUP for 250 to 300 storage units on wildlife corridors	FEIS includes additional analysis.