3.10 AESTHETICS/LIGHT AND GLARE

Kittitas County's Comprehensive Plan designates the lands of the Desert Claim project area as Rural in. The Kittitas County Zoning Code zones the project-area lands as Agriculture-20 and Forest and Range. The zoning code (KCC Title 17) does not designate or protect any visual resources in the vicinity of the project area. However, State Route (SR) 10, running northwest from Ellensburg along the Yakima River, has been recognized in American Automobile Association (AAA) and local tourist literature for the scenic value of its surrounding landscapes and vistas (Sagebrush Power Partners, LLC, 2003). The Swift Water Corridor Vision, prepared by Kittitas County's Corridor Planning Management Team in 1997, documents this corridor's scenic values, but the County has not formally adopted this Vision.

This visual analysis for the EIS is based on assessment methods employed by the U.S. Department of Transportation Federal Highway Administration (FHWA). The methodology was originally developed for FHWA by Jones & Jones Architects and Landscape Architects, Ltd. (Jones & Jones) in 1979 (American Society of Landscape Architects, 1979), and is based on a methodology developed by Jones & Jones in response to the National Environmental Policy Act (NEPA) of 1969. A fundamental aspect of this methodology, which also meets the requirements of the Washington State Environmental Policy Act (SEPA), is the evaluation of impacts to the visual quality of key views before and after the project is built.

Some of the material presented in this section was included in the Development Activities Application submitted to Kittitas County Community Development Services by the project developer, Desert Claim Wind Power LLC (2003). The analysis was based on research into wind energy aesthetics and public perception issues, field observation and photography of the project area and surrounding landscapes, review of the project characteristics and appearance as summarized in the Development Activities Application and the project's EIS scope summary, review of public comments, and review of USGS topographic maps.

Some key assumptions of this visual analysis approach are:

- The landscape setting makes a difference. These settings differ in their visual quality and the compatibility of any project differs with different landscape settings.
- The viewer makes a difference. Viewer groups differ in visual exposure to a project based on their population and distance. Viewers also differ in their sensitivity, that is, in their degree of visual receptivity, but not in their recognition of a positive or negative visual impact of a project.
- Major aspects of these concerns can be assessed, quantified and described objectively.

3.10.1 Affected Environment

3.10.1.1 Regional Landscape Setting

For the purpose of this analysis, the regional landscape is defined as the Kittitas Basin. The term 'basin' is used here rather than the more familiar 'valley' because the basin is a more inclusive physical description that includes the surrounding slopes, as well as the basin floor, which will be referred to here as the valley. The Kittitas Basin is a sub-basin of the Columbia Basin, the physiographic province between the Cascade and Northern Rocky Mountains (Highsmith, 1968). The basin is bordered on the north and west by the Stuart Range of the Wenatchee Mountains, on the south by Manastash Ridge and the Saddle Mountains, and on the east by the Columbia River. It is steeply sloping at the edges and mostly flat in the valley, although a prominent ridge running north from Ellensburg provides some distinct topographic

relief. The Yakima River flows from northwest to southeast through the eastern portion of the Kittitas Basin. Interstate 90 (I-90) also crosses the basin from east to west.

Native vegetation in the valley is mostly shrub-steppe interspersed with some grassland steppe and narrow riparian corridors with wetlands at occasional impoundments. The foothills surrounding the valley are covered with shrub-steppe vegetation and the mountains to the north have ponderosa pine and Douglas fir forests. The climate of the Kittitas Basin is relatively dry because prevailing westerly winds from the Pacific Ocean leave most of their precipitation on the Cascade Mountains. Today, the valley landscape is dominated by agricultural uses, mostly cattle ranches and forage crops in the north and fruit orchards in the south. Most agricultural lands are irrigated, and there is an extensive network of canals, laterals and ditches. There is one city in the basin, Ellensburg, as well as two towns, Kittitas and Thorp. Unincorporated areas adjacent to Ellensburg are characterized by scattered suburban residential development, while rural residential uses are interspersed with agricultural uses throughout the basin.

The Desert Claim project area is located in the north central part of the Kittitas Basin on broad alluvial fan and foothill landforms. The project area is relatively flat and open, and slopes gently from north to south. The area is characterized by agricultural uses such as grazing and ranching, though there are some remaining patches of native grassland steppe and shrub-steppe vegetation. Creeks and intermittent streams flow generally north to south across the project area. High-voltage power lines cross the project area from east to west. The area is sparsely populated and contains several rural roads. **Figure 3.10-1** illustrates the location of the project area within the Kittitas Basin.

3.10.1.2 Landscape Units

The Kittitas Basin can be divided into a series of Landscape Units. A landscape unit is an area or volume of distinct landscape character and/or spatial enclosure that forms a discrete unit with its own sense of place at ground level. **Figure 3.10-2** illustrates the 27 landscape units identified in the Kittitas Basin. The Desert Claim project area spans the Northwest Valley, Northeast Valley, and Table Mountain Slope Landscape Units, but the affected environment extends to surrounding Landscape Units to an extent based on the project's visibility.

3.10.1.3 Project Visibility

The extent of the affected environment is determined by the project's viewshed. A viewshed is the area within which a viewer would have an unobstructed sightline of the project. **Figure 3.10-3** indicates the topographically determined potential viewshed of the top of the turbine blades, based on the maximum turbine envelope evaluated in the Draft EIS with a total height of 120 meters or 393 feet from the base to the tip of the rotor. (The actual viewshed area for the turbine model currently proposed by Desert Claim, which would have a maximum height of 103.5 meters or 340 feet, would be somewhat reduced from the area shown in **Figure 3.10-3**; the degree of difference is small enough that the graphic has not been revised, but will provide some level of visual mitigation for the modified project.) Points based on the turbine locations and heights were mathematically draped over a Digital Elevation Model (DEM) of the Kittitas Basin and visibility algorithms built into ESRI's Spatial Analyst extension for ArcGIS 8.2 Workstation were utilized to calculate the cumulative viewshed of these points. This analysis represents the maximum potential viewshed, but the actual viewshed of the turbines could be significantly reduced by nearby structures and vegetation that would be closer to a viewer and thereby obstruct views of the turbines.

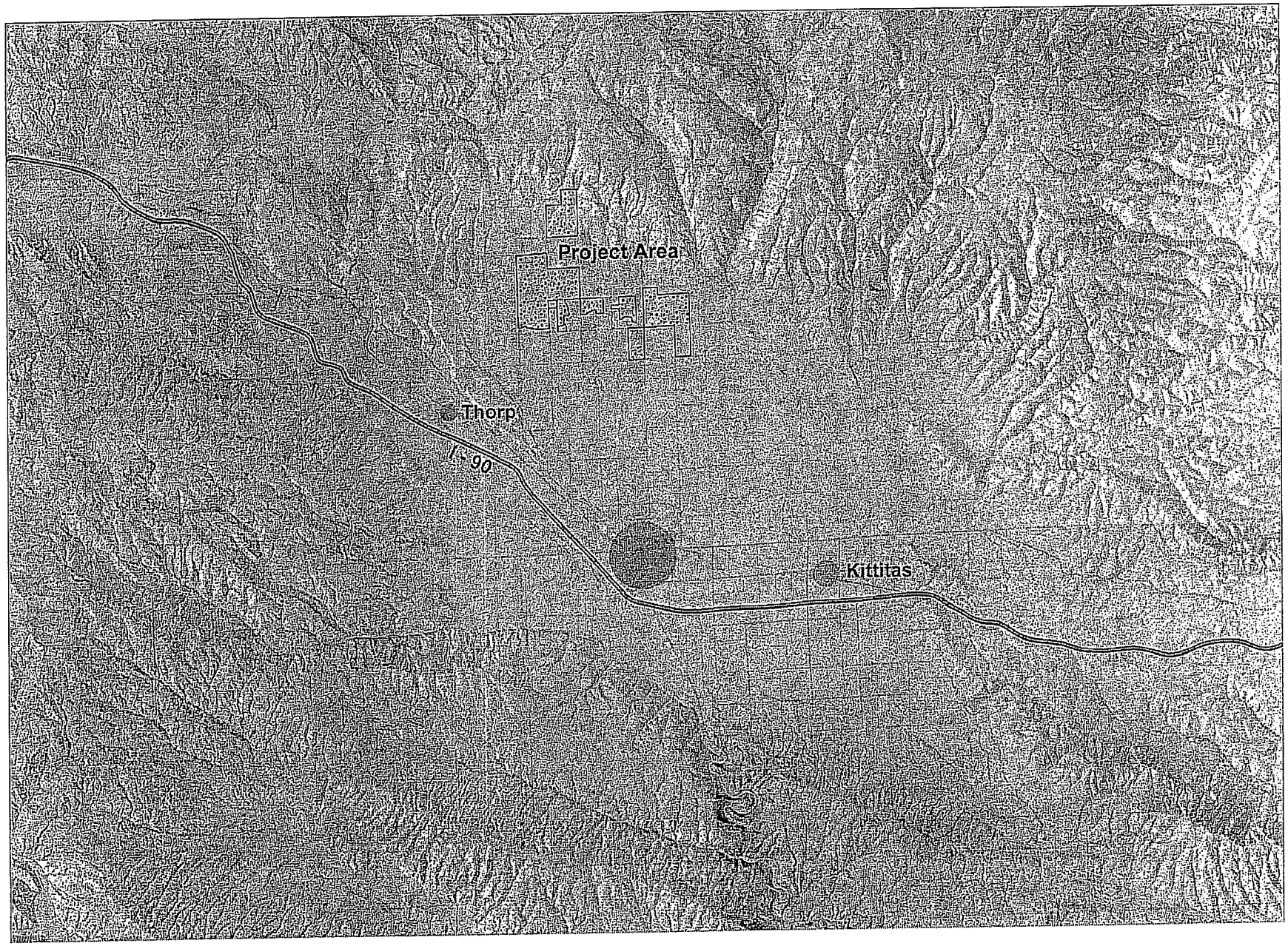

Figure 3.10-1
Kittitas Basin and Project Area

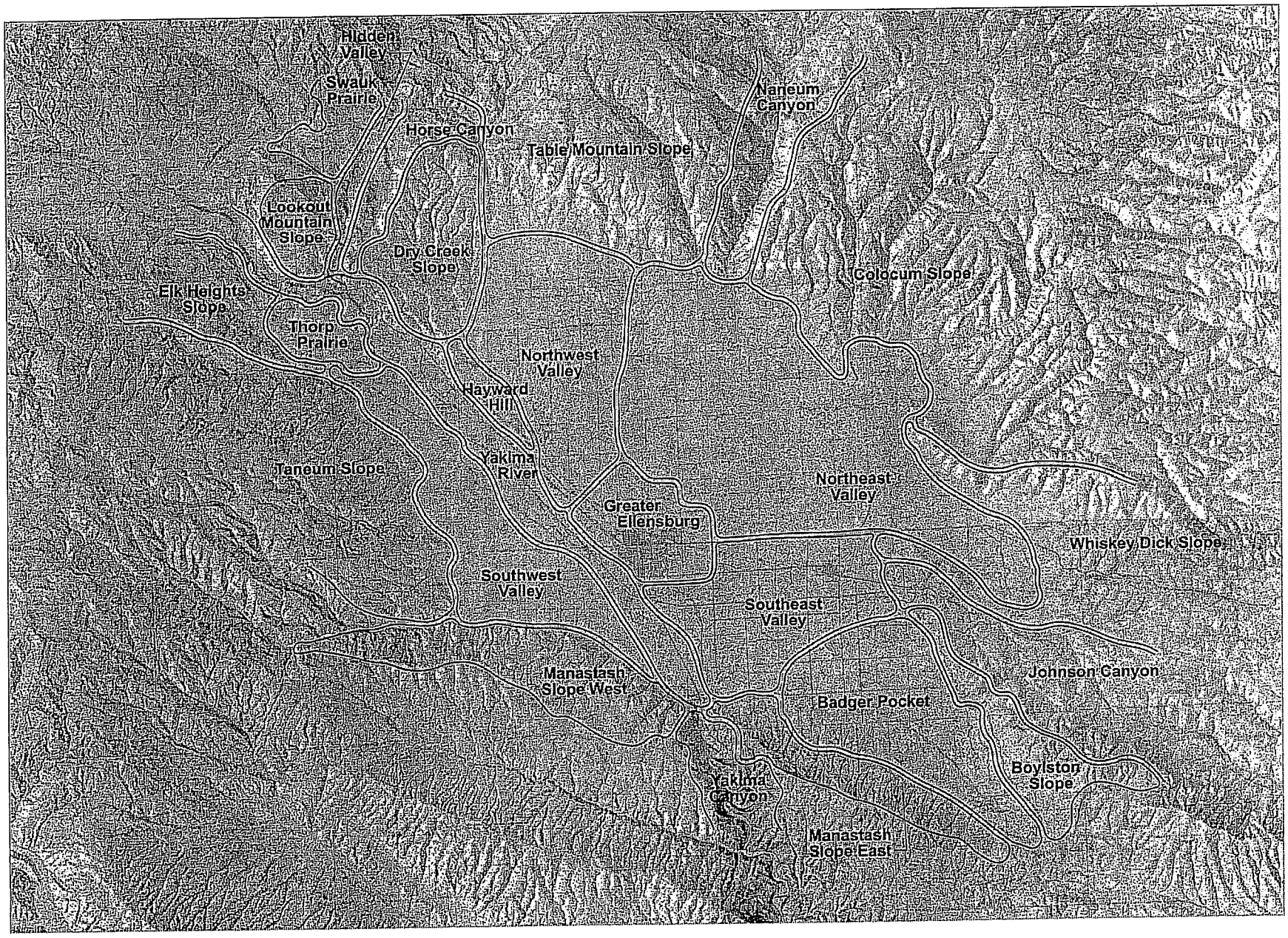

Figure 3.10-2
Landscape Units of the Kittitas Basin

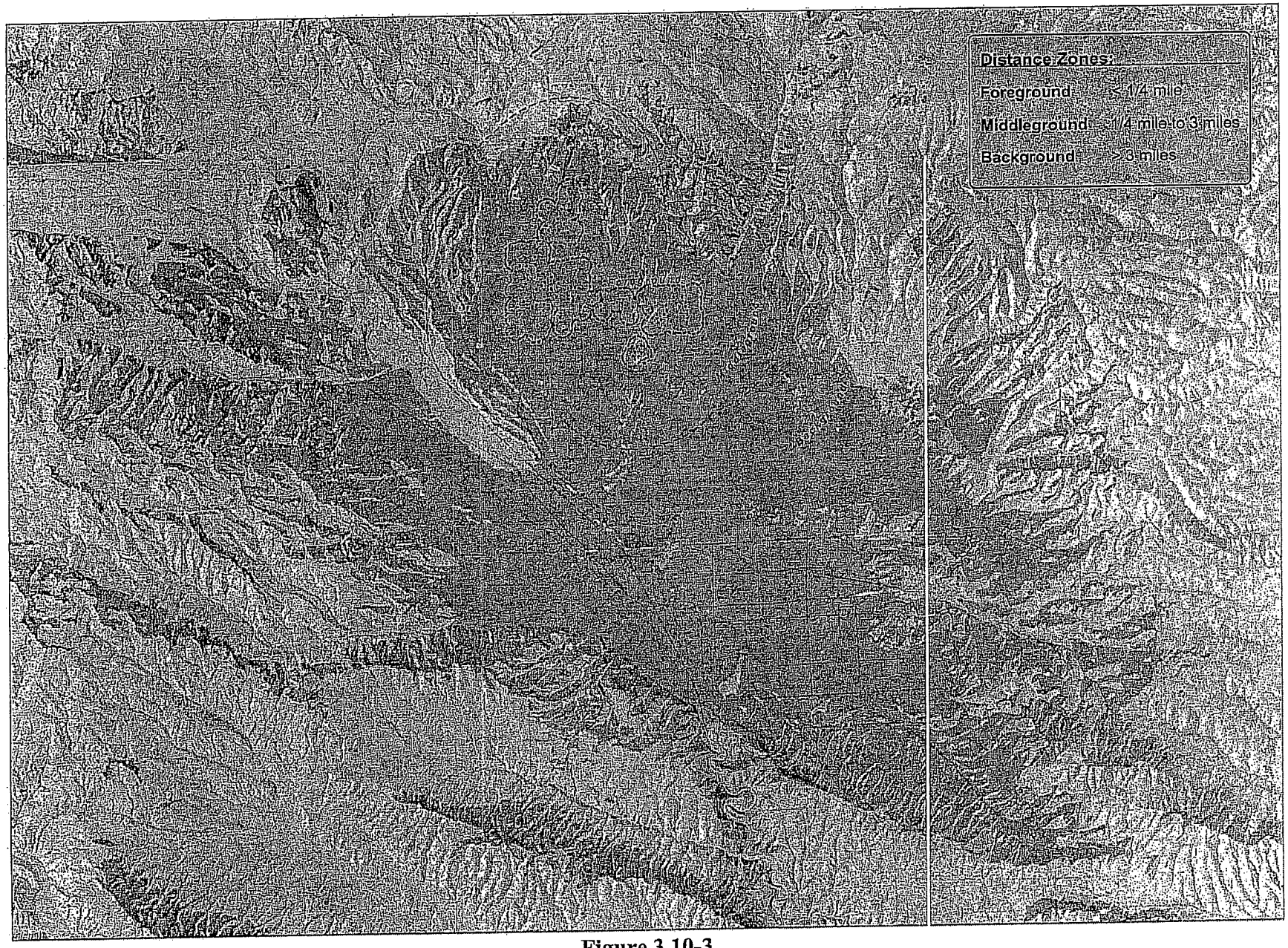

Figure 3.10-3
Project Area Viewshed

Project visibility is also affected by a viewer's distance from the project. Visual impact decreases as the distance between a viewer and the project increases. **Table 3.10-1** describes distance categories based on the system employed by the U.S. Forest Service and other agencies to define foreground, middleground, and background views (U.S. Forest Service 1973). The smaller end of the Forest Service distance ranges are used based on field observation of visual patterns perceived from each distance. **Figure 3.10-3** also distinguishes between these distance zones in the tower and blade viewsheds.

Table 3.10-1
Viewing Distance Zones

Distance Zones	Distance	Visual Patterns Perceived
Foreground	From observer out to ¼ mile.	Surface details.
Middleground	Beyond foreground out to 3 miles.	Masses, relationship between setting and project.
Background	Beyond middleground out to the horizon.	Flat planes.

3.10.1.4 Visual Assessment Units

In order to focus attention on the places from which the project would be most visible, it is necessary to combine Landscape Unit and visibility information into Visual Assessment Units. Essentially, the Visual Assessment Units are the portions of the Landscape Units from which the project would be significantly visible. Many of the Landscape Units identified in **Figure 3.10-2** were not defined as Visual Assessment Units because they would not be significantly affected by the project (i.e., the project would not be significantly visible from these units). Parts of some other Landscape Units were excluded from the Visual Assessment Units for the same reason. Some, such as the Manastash Slopes and Badger Pocket, are simply too far away from the project area to provide distinct views of project facilities. Major topographic features block views toward the project area from other units, such as Thorp Prairie and Swauk Prairie. Units such as Naneum Canyon and Lookout Slope also are entirely obstructed by vegetation and have no publicly accessible roads or viewpoints from which to view the project. The Northeast Valley and Yakima River Landscape Units also became Visual Assessment Units, but only up to a certain distance or over a certain portion.

There would be possible distant views of project facilities (primarily turbines) from some locations that are beyond the boundaries of the Visual Assessment Units defined for this analysis. At the Manastash Ridge scenic viewpoint on I-82, for example, the project area is visible, but at such a distance that project features would be indistinguishable. Impacts to views at these locations would be less significant than from the most distant views addressed in the Visual Assessment Units.

In **Section 3.10.1.6**, the existing conditions of each of these Visual Assessment Units are described, as well as the exposure and sensitivity of the various viewer groups in each unit, and the existing visual quality of representative key views from each unit. **Figure 3.10-4** identifies the eight Visual Assessment Units, and the locations and directions of key views for each unit (see subsequent discussion in **Section 3.10.1.6**).

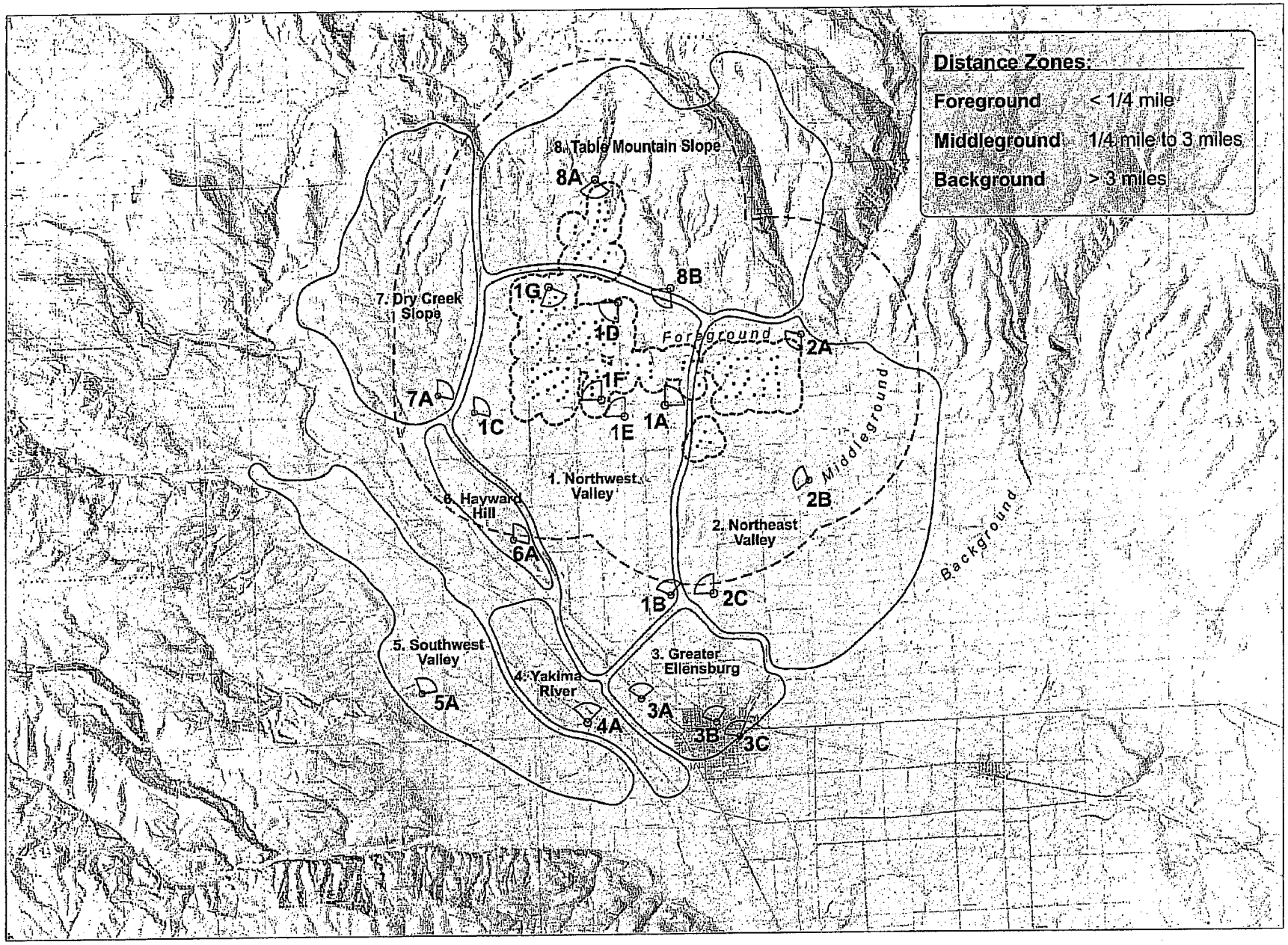

Figure 3.10-4
Visual Assessment Units and Key View Locations

3.10.1.5 Viewer Group Exposure and Sensitivity

For each Visual Assessment Unit, distinct viewer groups have been characterized. Viewer groups are classes of viewers that differ in their expected visual response to the project and its setting. Examples of viewer groups are rural residents, motorists on county roads, and outdoor recreation users. Their responses are affected by their exposure and sensitivity. Viewer exposure is primarily based on the number of people viewing the project, but also considers the degree to which viewers are exposed to a view by their physical location and the duration of the view. Viewer sensitivity is the degree to which viewers are likely to be receptive to the visual details, character, and quality of the surrounding landscape. Two principle factors affect viewer sensitivity: activity and awareness. Activity relates to whether the viewer's activity encourages him or her to look at the landscape or distracts the viewer from the landscape. Awareness relates to how a viewer's position, recent visual experience, or individual preconceptions and values affect their receptivity to visual character. **Tables 3.10-2** and **3.10-3** describe viewer exposure and sensitivity scales that will be used to characterize the viewer groups of each Visual Assessment Unit. In this analysis, viewer sensitivity is based primarily on viewer activity. While viewer groups often vary in their sensitivity, that is the *degree* to which a visual impact is felt, they rarely differ in their recognition of a positive or negative visual impact of a project.

Table 3.10-2
Viewer Exposure Scale

Rating	Explanation
3—High	High exposure applies primarily to a high number of viewers, as well as unobstructed views and foreground experience of the project.
2—Moderate	Moderate exposure applies primarily to a moderate number of viewers, as well as filtered views and a middleground experience of the project.
1—Low	Low exposure applies primarily to a small number of viewers, as well as blocked or non-existent views and background experience of project.

Table 3.10-3
Viewer Sensitivity Scale

Rating	Explanation
3—High	High sensitivity applies primarily to viewers whose activity and awareness make them very conscious of changes in the visual environment, such as rural residents and outdoor recreation users.
2—Moderate	Moderate sensitivity applies primarily to viewers whose activity and awareness make them mildly conscious of changes in the visual environment, such as tourists visiting the region, motorists on local roads, and urban residents.
1—Low	Low sensitivity applies primarily to viewers whose activity distracts and whose awareness is diverted from changes in the visual environment, such as university students, agricultural workers, and motorists on high speed roads.

3.10.1.6 Existing Visual Quality

Visual quality measures the degree to which a view expresses the essence of the Kittitas Basin, including landforms such as mountains, foothills, or alluvial fans; native vegetation such as shrub-steppe and riparian corridors; and built features such as farmsteads and canals. Visual quality relates to the intrinsic qualities of a landscape, so this analysis is based on the inherent capacity of a landscape to evoke a perceptual response rather than on individual preferences.

The visual quality of each key view can be described in terms of the overall vividness, intactness, and unity of the view (American Society of Landscape Architects, 1979). Vividness is the visual power or memorability of landscape components as they combine in striking and distinctive visual patterns. Intactness is the visual integrity of the natural and man-built landscape and its freedom from encroaching elements. Unity is the visual coherence and compositional harmony of the landscape considered as a whole.

Because it is not feasible or necessary to evaluate all possible views of a project, key views have been chosen that represent the range of visual resources in the vicinity of the proposed project. Representative key views have been chosen to reflect both views that would be seen by the largest numbers of people, i.e. high exposure, and views of people who would be most impacted, i.e. high sensitivity. Key views are distributed throughout the foreground zone, the middleground zone, and the background zone to reflect the range of viewing distances. There is an emphasis on views from publicly accessible places because these have the potential to be viewed by the largest number of people. The key views were photographed over several seasons so that variations such as snow on the mountains or dry summer vegetation could be illustrated. **Figure 3.10-4** illustrates the locations and directions of the key views.

To make this analysis relevant to this region, the vividness, intactness, and unity of the key views are compared to other views within the basin, rather than to nationally significant landmarks such as Niagara Falls or the Grand Tetons. In the evaluation of each key view, most immediate foreground elements such as pavement and street signs have been disregarded because their impact depends primarily on the observer's position.

Vividness, intactness, and unity are evaluated and assigned a score of 3 (high), 2 (moderate), or 1 (low) for each key view. These scores are added together and divided by three to determine an overall visual quality rating for each key view: high (3.0, 2.67), moderate (2.33, 2.0, 1.67), or low (1.33, 1.0). **Table 3.10-4** explains these visual quality ratings.

The following discussion summarizes the results of the assessment of viewer groups and visual quality of each Visual Assessment Unit. The summary for each unit includes a description of the landscape, viewer group exposure and sensitivity ratings, and the overall visual quality rating of the key views. Details of the assessment with respect to viewer group exposure and sensitivity and the visual quality attributes of the key views are provided in **Appendix G**.

Table 3.10-4
Visual Quality Scale

Rating	Explanation
High	High visual quality applies to key views with a score of 3.0 or 2.67 when their vividness, intactness, and unity scores are averaged. High ratings generally correspond to views that embody the fullest expression of intrinsic qualities potentially visible in the Kittitas Basin. These views have distinct and uninterrupted visual patterns and display overall harmony between built and natural features.
Moderate	Moderate visual quality applies to key views with a score of 2.33, 2.0, or 1.67 when their vividness, intactness, and unity scores are averaged. Moderate ratings generally correspond to views that embody an average expression of intrinsic qualities potentially visible in the Kittitas Basin. These views may lack outstanding or memorable expressions of regional character or may have been diminished by some visual encroachment or disorder, but they retain some appeal as the common visual experience of the basin.
Low	Low visual quality applies to key views with a score of 1.33 or 1.0 when their vividness, intactness, and unity scores are averaged. Low ratings generally correspond to views that embody a weak expression of the Kittitas Basin. These views may have discordant and incoherent elements, or may have major visual intrusions that do not relate harmoniously to the surrounding landscape.

Visual Assessment Unit 1: Northwest Valley

Landscape Description

This unit is located northwest of Ellensburg, between U.S. Highway 97 and the small ridge running north from Ellensburg. The unit slopes evenly and gently from north to south over broad alluvial fan landforms. It gradually changes from irrigated fields and windrows of locust, willows, and poplars in the south, to gray, green, and brown tints of earth and shrub-steppe vegetation in the north. Riparian corridors follow creeks and ephemeral streams north to south out of the foothills of the Wenatchee Mountains. It is generally open in character, and contains irrigated agricultural lands and seasonal grazing lands, as well as rural residential clusters, horse corrals, spring calving grounds, meadows, and barns. **Figure 3.10-5**, a photo of existing visual conditions at Key View 1E (from Reecer Creek Road), is considered representative of this Visual Assessment Unit. Photos for Key Views 1A-1D are included in **Appendix G.** In response to comments on the Draft EIS, additional key views in Unit 1 were investigated for the Final EIS. This resulted in the production and inclusion in the Final EIS of two additional key view simulations. Both of these are additional simulations produced from existing key view locations. The additional supplemental key views are 1F and 1G. These are included as **Figures 3.10-6** and **3.10-7**, respectively.

Figure 3.10-5
Existing View, Key View 1E
(looking northwest from Reecer Creek Road)

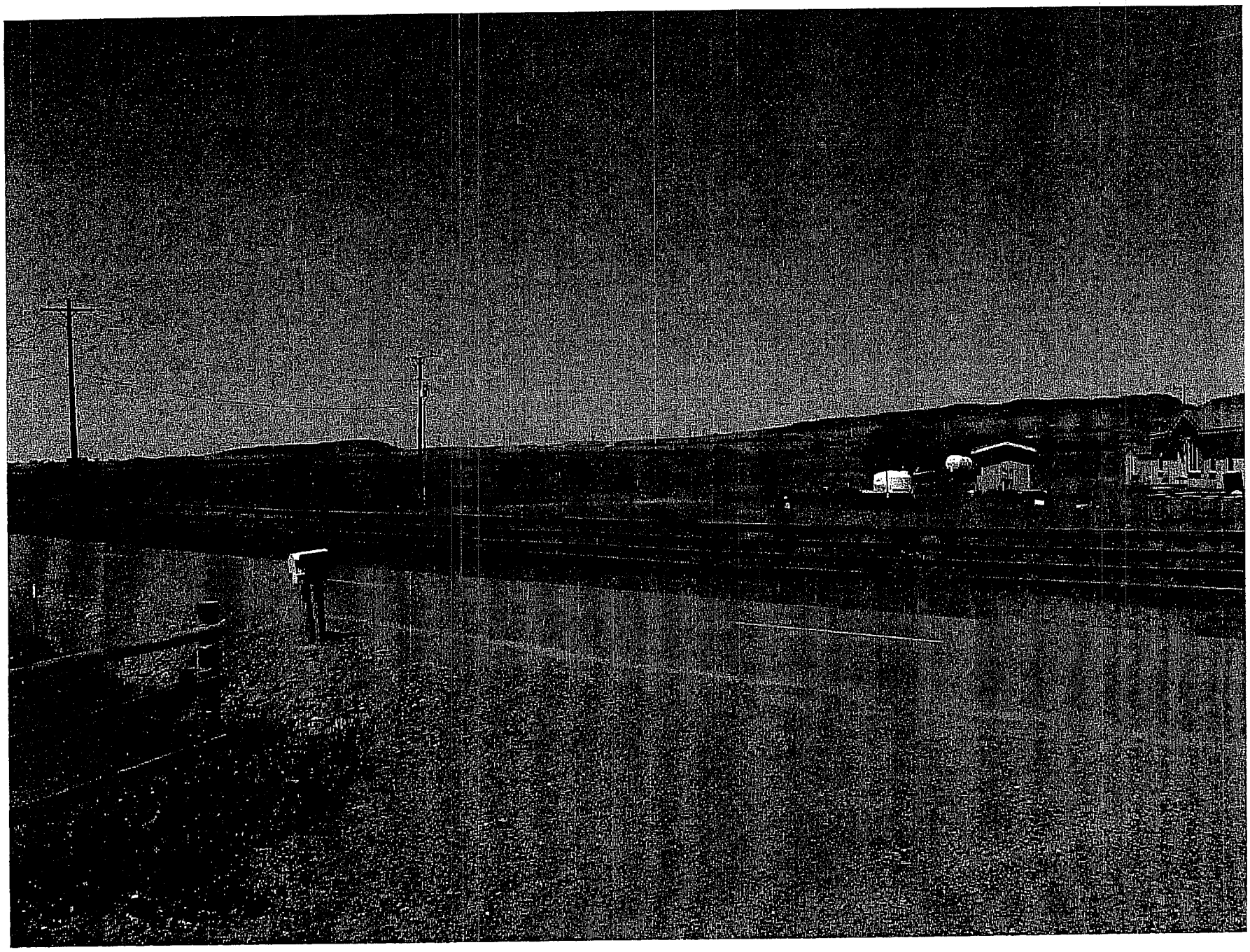

Figure 3.10-6
Existing View, Supplemental Key View 1F
(looking northwest from Smithson Road near CTC farm)

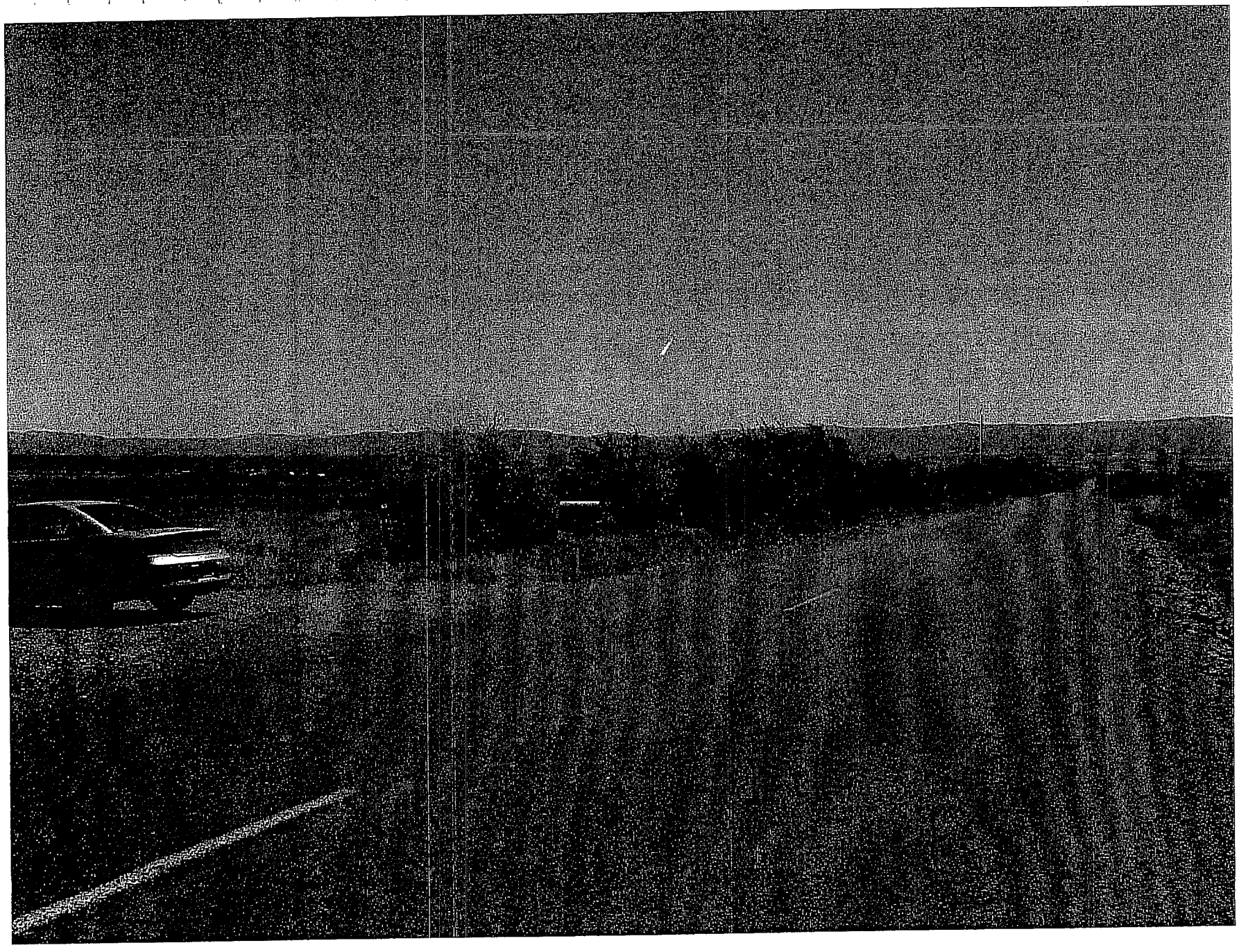

Figure 3.10-7
Existing View, Supplemental Key View 1G
(looking southeast from Reecer Creek Road immediately north of project boundary)

High voltage power lines run east-west across the northern portion of this unit. The density of development diminishes to the north, creating greater visual openness, and allowing views to surrounding hills and mountains. Suburban development is extending northward from Ellensburg. Second homes, ranchettes, and subdivisions are steadily transforming the rural landscape. Existing homes, farms, and roads create minimal light and glare impacts. Low-angle late afternoon light causes the high voltage power lines to shimmer and be visible from a considerably greater distance.

Viewer Group Exposure and Sensitivity

The primary viewer groups of this unit are rural residents, agricultural workers, motorists on Reecer Creek Road, motorists on smaller county roads, and outdoor recreation users of the John Wayne Trail.

Rural resident.	Viewer Exposure: 2—Moderate	Viewer Sensitivity: 3—High
Agricultural workers	Viewer Exposure: 2—Moderate	Viewer Sensitivity: 1—Low
Motorists on Reecer Creek Rd.	Viewer Exposure: 2—Moderate	Viewer Sensitivity: 2—Moderate
Motorists on county roads	Viewer Exposure: 1—Low	Viewer Sensitivity: 2—Moderate
John Wayne Trail users	Viewer Exposure: 1—Low	Viewer Sensitivity: 2—Moderate

Visual Quality of Key Views-Existing

Key View 1A Overall Visual Quality: 3.0—High
Key View 1B Overall Visual Quality: 3.0—High
Key View 1C Overall Visual Quality: 2.0—Moderate
Key View 1D Overall Visual Quality: 2.0—Moderate
Key View 1E Overall Visual Quality: 2.0—Moderate
Key View 1F Overall Visual Quality: 2.33—Moderate
Key View 1G Overall Visual Quality: 2.0—Moderate

Visual Assessment Unit 2: Northeast Valley

Landscape Description

This unit is located northeast of Ellensburg, east of the small ridge running north from Ellensburg. The unit is gently sloping from north to south over broad alluvial fan landforms. The unit rises subtly in the west to form the ridge dividing the valley. The lower part of the unit contains vegetative windbreaks of poplars and willows, as well as narrow riparian corridors oriented north to south. Trees surround dispersed rural residences, ranch buildings, and farm equipment. Large grazing areas gradually transition to scattered patches of grassland steppe and to larger areas of shrub-steppe to the north. On the north side of the high voltage power lines, low shrub-steppe vegetation increases in density as it approaches the rugged terrain of the foothills. **Figure 3.10-8**, a photo of existing visual conditions at Key View 2A (from Wilson Creek Road), is considered representative of this Visual Assessment Unit. Photos for Key Views 2B and 2C are included in **Appendix G**.

Figure 3.10-8
Existing View, Key View 2A
(looking southwest from Wilson Creek Road)

This unit is predominantly a working landscape of livestock grazing and ranching. Bowers Field, Ellensburg's airport, is located in the southwestern corner of this unit. Most roads are paved, but some smaller county roads are unpaved. In most of the unit, views out are interrupted by low hills and filtered by wind rows, residential garden vegetation, and houses. Existing homes, farms, and roads create minimal light and glare impacts. Low angle late afternoon light causes the high voltage power lines to shimmer and be visible from a considerably greater distance.

Viewer Group Exposure and Sensitivity

The primary viewer groups of this unit are rural residents, agricultural workers, motorists on county roads, and airport users.

Rural residents	Viewer Exposure: 1—Low	Viewer Sensitivity: 3—High
Agricultural workers	Viewer Exposure: 2—Moderate	Viewer Sensitivity: 1—Low
Motorists on county road	Viewer Exposure: 1—Low	Viewer Sensitivity: 2—Moderate
Airport users	Viewer Exposure: 2—Low	Viewer Sensitivity: 2—Moderate

Visual Quality of Key Views-Existing

Key View 2A Overall Visual Quality: 1.67—Moderate
Key View 2B Overall Visual Quality: 2.0—Moderate
Key View 2C Overall Visual Quality: 2.67—High

Visual Assessment Unit 3: Greater Ellensburg

Landscape Description

This unit is located roughly in the center of the Kittitas Basin, east of the Yakima River and to the north of I-90. **Figure 3.10-9**, a photo of existing visual conditions at Key View 3C (from Reed Park), is representative of this Visual Assessment Unit. Photos for Key Views 3A and 3B are included in **Appendix G**. The unit can be divided into two distinct sub-units: the city center and its outskirts. The topography of the city is mostly flat except for several hills and small ridges in the eastern part of the city. Vegetation consists mostly of non-native species in gardens, parks, and on the Central Washington University campus. Further away from the city center, the vegetation is less dense. The city blends an old town center and retail district, commercial strips, residential neighborhoods, the campus, and some industrial uses and suburban subdivisions at its periphery. The outskirts of Ellensburg (mostly in unincorporated Kittitas County) are covered with low-density subdivisions interspersed with some ranches and farms. Vegetation and structures block or filter most views out of this unit. Existing homes, offices, and businesses create some light and glare impacts. Moving traffic on main streets creates considerable light impacts.

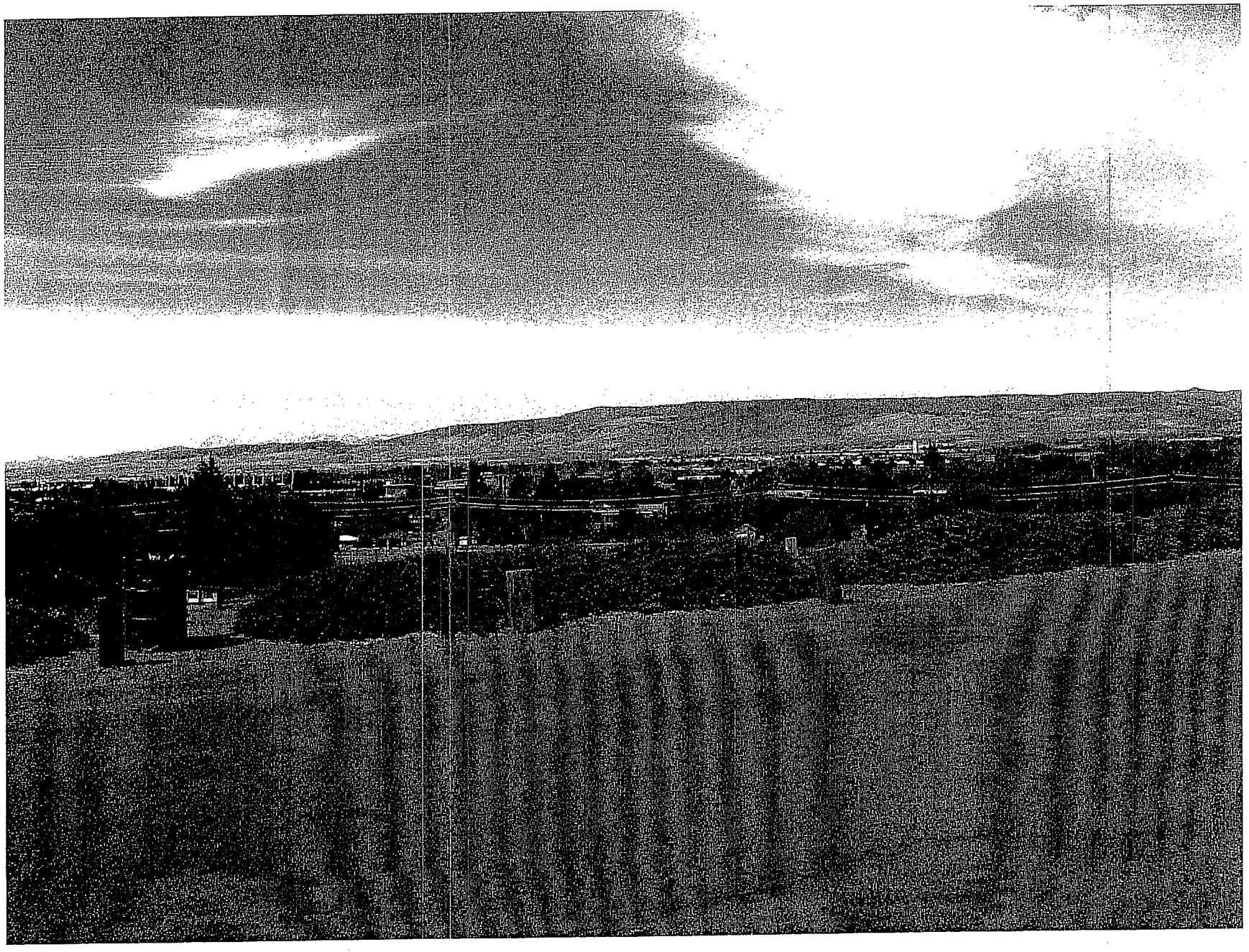

Figure 3.10-9
Existing View, Key View 3C
(looking northwest from Reed Park in Ellensburg)

Viewer Group Exposure and Sensitivity

The primary viewer groups of this unit are city residents, suburban residents, university students, and tourists.

City residents	Viewer Exposure: 1—Low	Viewer Sensitivity: 2—Moderate
Suburban residents	Viewer Exposure: 2—Moderate	Viewer Sensitivity: 2—Moderate
University students	Viewer Exposure: 1—Low	Viewer Sensitivity: 1—Low
Tourists	Viewer Exposure: 1—Low	Viewer Sensitivity: 2—Moderate

Visual Quality of Key Views-Existing

Key View 3A Overall Visual Quality: 1.33—Low
Key View 3B Overall Visual Quality: 1.33—Low
Key View 3C Overall Visual Quality: 2.67—High

Visual Assessment Unit 4: Yakima River

Landscape Description

This unit crosses the southwestern part of the valley, west of Ellensburg. A photo of existing conditions at Key View 4A, which is representative of this unit, is included in **Appendix G**. The Yakima River is shallow and meandering through much of the Kittitas Basin. It has formed braided channels and carved a series of bank terraces along its corridor. In the river's floodplain grows thick riparian vegetation that filters or blocks many views out from the corridor. The river moves through both forested areas and open grasslands and agricultural fields spotted with horses and ranch buildings. I-90 follows this river corridor from Thorp Prairie to Ellensburg. Parts of scenic State Route 10 and the Thorp Highway also follow the river. Views of the nearby Manastash Ridge to the south and west of the unit are most prominent. Moving traffic on I-90 can cause significant light impacts to this view.

Viewer Group Exposure and Sensitivity

The primary viewer groups in this unit are rural residents, motorists on I-90, motorists on State Route 10, motorists on the Thorp Highway, and outdoor recreation users of the river corridor.

Rural residents	Viewer Exposure: 1—Low	Viewer Sensitivity: 2—Moderate
Motorists on I-90	Viewer Exposure: 2—Moderate	Viewer Sensitivity: 1—Low
Motorists on State Route 10	Viewer Exposure: 1—Low	Viewer Sensitivity: 2—Moderate
Motorists on Thorp Highway	Viewer Exposure: 1—Low	Viewer Sensitivity: 2—Moderate
River corridor users	Viewer Exposure: 1—Low	Viewer Sensitivity: 3—High

Visual Quality of Key Views-Existing

Key View 4A Overall Visual Quality: 3.0—High

Visual Assessment Unit 5: Southwest Valley

Landscape Description

This landscape unit is located southwest of Ellensburg, between the foothills of Manastash Ridge and the Yakima River. The unit is generally flat and open, with a gradual slope from southwest to northeast over a broad alluvial fan. The unit contains vegetative windbreaks, agricultural fields, grazing areas, and small riparian corridors following creeks down the slope. New homes are emerging among existing ranches and farms. This landscape unit offers significant views to the western and southwestern slopes of Manastash Ridge. Views to the north are dominated by the riparian corridor of the Yakima River in the middleground and mountains in the background. **Figure 3.10-10**, a photo of existing visual conditions at Key View 5A (from Killmore and Robinson Road), is representative of this Visual Assessment Unit. Higher up the slope, there are some expansive views to the north over the basin. Existing homes, farms, and roads create minimal light and glare impacts.

Viewer Group Exposure and Sensitivity

The primary viewer groups of this unit are rural residents, agricultural workers, and motorists on county roads.

Rural residents	Viewer Exposure: 1—Low	Viewer Sensitivity: 2—Moderate
Agricultural workers	Viewer Exposure: 1—Low	Viewer Sensitivity: 1—Low
Motorists on county roads	Viewer Exposure: 1—Low	Viewer Sensitivity: 2—Moderate

Visual Quality of Key Views-Existing

Key View 5A Overall Visual Quality: 2.33—Moderate

Visual Assessment Unit 6: Hayward Hill

Landscape Description

This landscape unit is located west of Ellensburg, between the Yakima River and U.S. Highway 97. A photo of existing conditions at Key View 6A, which is representative of this unit, is included in **Appendix G**. Hayward Hill is a ridge approximately 400 feet high, aligned northwest to southwest. It forms a distinct edge to the valley because of its dramatic topography. The hill is mostly covered by sparse shrub-steppe vegetation, except in small canyons where thicker vegetation grows. A large area of Hayward Hill was burned in a July 2003 wildfire, and the darkened south-facing slope of the hill was prominent from a considerable viewing distance. Existing homes and roads create minimal light and glare impacts.

Viewer Group Exposure and Sensitivity

The primary viewer groups of this unit are rural residents and motorists on unpaved county roads.

Rural residents	Viewer Exposure: 1—Low	Viewer Sensitivity: 3—High
Motorists on unpaved roads	Viewer Exposure: 1—Low	Viewer Sensitivity: 2—Moderate

residents comprise the primary viewer group, with a low viewer exposure and high viewer sensitivity.

- The Elk Heights Slope is located west of Thorp Prairie and to the west of I-90. The unit is characterized by foothills and forested mountains of Cle Elum Ridge. In this unit, vegetation transitions from a bit of shrub-steppe in its lowest eastern reaches to predominantly ponderosa pine forest. From the easternmost part of the unit, below the forested slopes, there are clear views across Thorp Prairie. The primary viewer groups in this unit are rural residents and motorists on I-90. The viewer exposure is low and the viewer sensitivity is high for the rural residents, while I-90 motorists have a high exposure and low viewer sensitivity.

The terrain on most of the Springwood Ranch is rolling, giving way to high bluffs along the steep and relatively narrow canyon that contains this reach of the Yakima River, to the north and east of the site. Taneum Creek flows through a shallow valley that crosses the property from southwest to northeast and divides the ranch into two areas of unequal size. Most of the site is grassland; tree cover is very limited, and confined almost exclusively to riparian areas, the Yakima River canyon, and north-facing slopes of some of the shallow draws that are present.

The small community of Thorp is located about ½ mile to the east of the extreme southeastern corner of the ranch. No other sizable developed areas are within view of the ranch, and Ellensburg is the next-closest community. I-90 provides visual access to most of the ranch. The freeway adjoins the southeastern section of the site and is generally within ½ mile of the property line in other locations. Views to the property from I-90 are generally unobstructed, and include virtually the entire ranch except for the canyon area along the river. SR 10 parallels the property for about 5 to 6 miles as the highway follows the east bank of the Yakima River, providing additional visual access to the ranch. In some locations views from SR 10 are limited to the canyon, while in other places more expansive views over the ranch and toward Manastash Ridge are possible.

Some developed features, primarily several homesites, are present in selected locations on or near the ranch. These are generally in the area near Taneum Creek and along the east side of the property, near Thorp. The main ranch house is located on a bluff overlooking Taneum Creek from the north. The old railroad right-of-way that is now the Iron Horse State Park passes along the edge of the ranch, generally adjacent to the west bank of the Yakima River, for several miles. Nearby off-site homes and the community of Thorp are visible at several locations, and I-90 is a prominent development feature from the ranch and the surrounding area. **Figure 3.10-13** is a view to the Springwood Ranch site from Taneum Road near the south edge of the site.

Regarding existing light and glare impacts, there is some outdoor lighting associated with the existing ranch buildings on the site. Occasional vehicle traffic on the existing roads within the site also represents a minor source of light and glare. The local road network surrounding the site accounts for the majority of existing light and glare in the vicinity. The high volume of traffic on I-90 produces reflected sunlight during daytime hours and illuminated vehicle lights at night. The Thorp Highway, SR 10 and Taneum Road are other sources of vehicle light and glare adjacent to the Springwood Ranch site. Outdoor lighting in the community of Thorp and at scattered residences in the surrounding area contribute to the local nighttime visual environment.

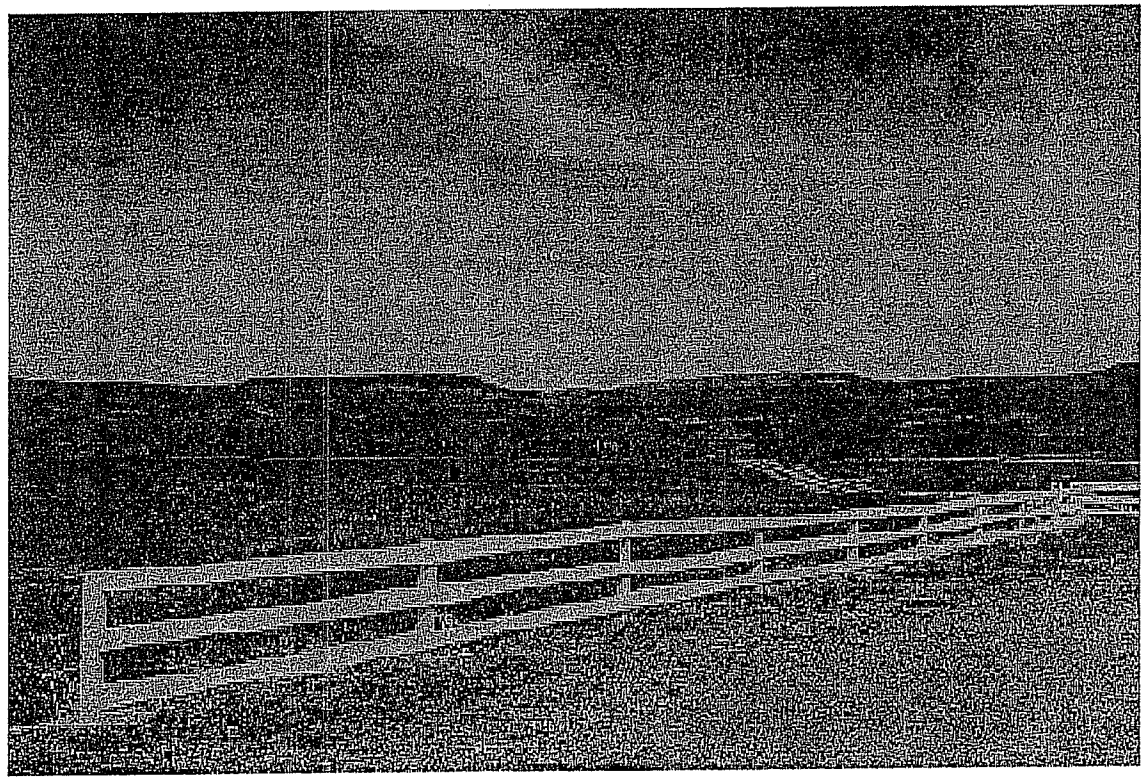

Figure 3.10-13
View to Springwood Ranch (Alternative 2) Site

3.10.2 Environmental Impacts of the Proposed Action

3.10.2.1 Construction and Decommissioning

Construction activities would last approximately 9 months. Trucks, cranes, and other heavy equipment would be visible in views toward the project area, especially from Smithson Road and nearby residences. Construction activities would create clouds of dust and areas of exposed soil that would contrast with the surrounding landscape. Dust clouds and exposed soil would be especially evident during the first few months of construction because this is the period when roads, tower foundations, power collection and communication lines, and the project substation would be constructed. The construction of the turbines would follow and during this stage the large construction cranes erecting the towers, nacelles, and blades would be the most dominant visual aspect of construction. The visual changes associated with the construction activities would have a moderate, but temporary, visual impact on views from nearby residences and roads in the Northwest Valley and Northeast Valley Visual Assessment Units. The construction-related visual impact from more distant viewpoints would be low.

If project construction occurred in phases, the effect on the level of visual impacts would be to extend the total duration of temporary disturbance from project construction, but to reduce the intensity or magnitude of impacts for any one phase. Construction activity and visual features would result in temporary, moderate visual impact on views from nearby residences and roads in the Northwest Valley and Northeast Valley Visual Assessment Units. Viewers in these units would likely not be exposed to relatively near views of the project in all construction phases, however, as the phases would likely be distributed geographically. Construction–related visual impacts from more distant viewpoints would still be low and temporary, but would extend over a longer total duration.

The project operating life is assumed to be 30 years. Decommissioning at the end of that period would involve removal of all project features and restoration of the disturbed lands. Visual impacts of this temporary process would be similar to those experienced during construction. Replacement, or repowering, of the turbines could occur based on new technology in the future. Visual impacts of this temporary process would be similar to those experienced during construction.

3.10.2.2 Operation

Evaluation of the operation impacts of the proposed project was based on comparison of "before" and "after" versions of the representative key views. The "before" views were assigned existing visual quality ratings **(Section 3.10.2.6)** based on their vividness, intactness, and unity. The "after" views are computer-generated photosimulations of the proposed turbines in the same key view setting. The "after" views were assigned proposed visual quality ratings based on the same standards of vividness, intactness and unity.

The large scale (primarily the height) of the turbines would be a major component of the long-term visual impact of the project. With a maximum height of 340 feet to the tip of the turbine blades, the turbines would likely be taller than any existing structures in Kittitas County. Larger buildings in Ellensburg typically do not exceed approximately 50 to 60 feet in height. Steel-lattice towers on the high-voltage transmission lines common to the region typically range from 125 feet to 175 feet tall, or somewhat less than half the height of the proposed wind turbines. The Space Needle in Seattle, a well-known regional landmark, is 605 feet high.

In addition to the turbines, the proposed project would include a number of other structures that would have limited visual impacts: a small transformer at the base of each turbine, a series of junction boxes, possibly some aboveground collection lines where the use of underground cable is not feasible, a 2-acre substation, overhead lines to the major transmission lines, an operations and maintenance facility, five 50-meter meteorological towers, and various new access roads. These features would be much smaller and have much less visual impact than the turbines. They would only be visible in the immediate vicinity of the project and could be designed to blend into the surroundings.

Evaluation Criteria

Table 3.10-5 defines impact level ratings used to assess the significance of potential visual impacts from the project. The impact ratings are based on a comparison of the visual quality ratings, described in **Table 3.10-4**, of the "before" and "after" versions of the key views. The impact ratings include consideration of the viewer exposure and sensitivity of the primary viewer group for each key view, as documented in **Section 3.10.1.6**. The methodology for assessing the level of visual impact is described in **Appendix G**.

Table 3.10-5
Definition of Aesthetic Impact Levels

Rating	Explanation
High	Overall visual quality is substantially decreased (score decrease of 1.0 or greater) and turbines are visible in areas with high viewer exposure or sensitivity.
Moderate	Overall visual quality is moderately decreased (visual quality rating decrease of 0.67) and turbines are visible in areas with moderate to high viewer exposure or sensitivity.
Low	Overall visual quality is minimally decreased (visual quality rating of 0.33 or less) or the turbines are visible in areas with low viewer exposure and sensitivity.

Key View Simulations

The visual impact analysis included preparation of simulations of future views of the proposed project from all of the key viewpoints identified in **Section 3.10.1.6**. For each key view, the photo of the existing view was compared with the simulated future view to determine the specific changes to each visual quality element (vividness, intactness and unity) that would occur with the addition of the project to the landscape. A level of visual impact for each view was assigned by combining the with-project visual quality rating with the applicable viewer exposure and viewer sensitivity ratings for each view.

The simulations prepared for the Draft EIS were based on a defined maximum turbine envelope, which consisted of a turbine with a maximum height above ground level of 120 meters or 393 feet. As discussed in Section 2.2, Desert Claim has subsequently determined it would use a turbine model with a maximum height of 104 meters or 340 feet. This model is 53 feet shorter than the maximum turbine height assumed for the Draft EIS analysis. The difference in height would be noticeable to the casual observer if the two models were viewed at the same time, and there are some locations near the project area from which a

393-foot turbine (the maximum envelope) would be visible while a 340-foot turbine (the model to be used in the project) would not be visible. Nevertheless, Kittitas County concluded that the difference in scale of the turbines was not sufficient to warrant reproduction of the simulations based on the shorter turbine model and the original turbine layout. Therefore, the key view simulations presented in the Draft EIS have been re-used for the Final EIS, and are based on a 393-foot turbine height and the project configuration documented in the Draft EIS. These graphics overstate the height and the visual impact of the turbines that would be developed under the proposal.

Appendix G includes a complete set of existing and simulated conditions for each of the key views. The appendix also provides detailed documentation of the operation period impact assessment for each Visual Assessment Unit. Several of the simulations are included here in **Section 3.10.2** to illustrate the long-term changes in visual quality that would occur with the development of the project.

Figures 3.10-14 through **3.10-20** are simulated views of future, with-project conditions at Key Views 1E, 1F, 1G, 2A, 3C, 5A and 8B. These simulations correspond to the existing views shown in **Figures 3.10-5** through **3.10-11**. The simulations illustrate a representative range of conditions including relatively near to distant views and visual impacts classified as high, moderate and low. Simulations for the remaining key views analyzed for the EIS are provided in **Appendix G**. In response to comments on the Draft EIS, three additional key views near the project area (Key Views 1F, 1G and 8B) were investigated for the Final EIS. **Figures 3.10-15, 3.10-16** and **3.10-20** show simulated views from these supplemental key views. The simulations in these three graphics depict the 340-foot turbine model and the modified turbine layout now proposed by Desert Claim, as described in **Section 2.2. Appendix G** includes detailed documentation of the operation period impact assessment for each supplemental key view.

At Key View 1E (shown in **Figure 3.10-14**), along Reecer Creek Road in the Northwest Valley unit, the dramatic height and the light color of the wind turbines would be seen in the foreground and middleground, where they would break up the skyline and interrupt the view to the mountains. The intactness and unity of this scene would both be reduced from ratings of 2 to 1, and the overall visual quality rating would likewise be reduced from 2 to 1. The level of visual impact at this location was classified as high. Similarly, the existing visual quality would be reduced from 2.33 to 1.33 for Key View 1F and from 2 to 1 for Key View 1G, based on the simulated views presented as **Figures 3.10-15** and **3.10-16**, respectively.

Figure 3.10-17, simulating the view at Key View 2A along Wilson Creek Road in the Northeast Valley Floor unit, illustrates a situation in which the turbines would be relatively prominent but would not have a significant impact on visual quality. In this location (and in other locations near the existing high-voltage transmission lines that cross the project area), the power lines already disrupt the vividness and intactness of the view and the turbines would have little incremental effect on the overall visual quality.

Figure 3.10-18 represents a location with a moderate level of visual impact. In this simulated view from Reed Park in Ellensburg (Key View 3C), the turbines in the distance would diminish the dramatic view of the mountains contrasted with the city, and thereby reduce the vividness of the scene. The unity of this scene would also be reduced, as the turbines would interrupt the continuity of the existing view that includes the city, the valley floor, foothills and mountains. The overall visual quality rating in this location would be reduced from the existing 2.67 (high) to 2 (moderate) with the project, resulting in a visual impact rating of moderate.

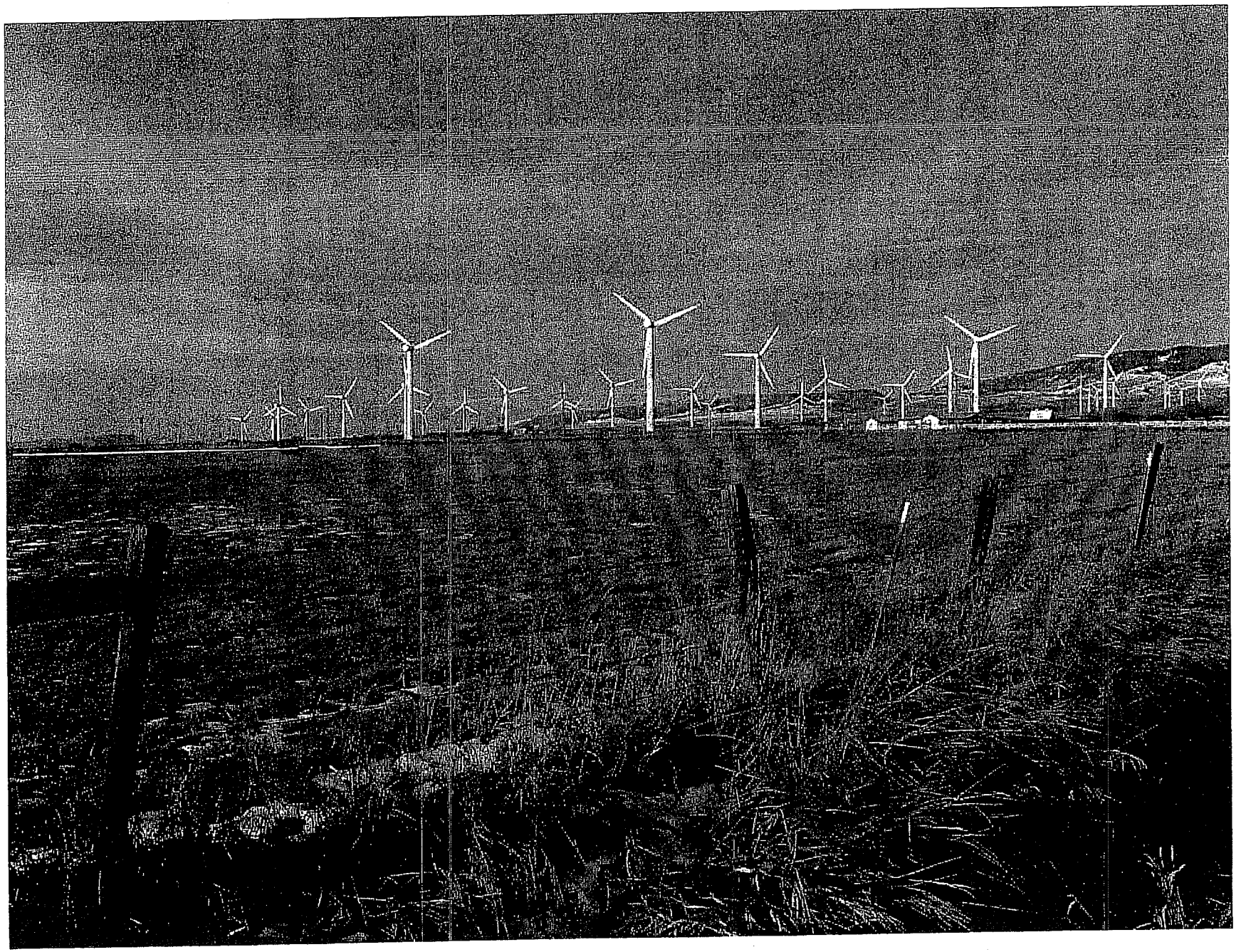

Figure 3.10-14
Simulated View, Key View 1E

The simulation for Key View 5A (**Figure 3.10-19**) in the Southwest Valley unit illustrates what would likely be a typical condition for many locations on the valley floor. The turbines would be visible and would contrast in color with the foothills, but the viewing distance would be such that the turbines would not be strong features in the scene; they would be less noticeable than the existing development in the area. The view of the project would not reduce the vividness, intactness or unity of the scene, resulting in no change to the existing visual quality and a low level of visual impact.

Figure 3.10-20 represents another location with a moderate level of visual impact. In this simulated view from a residence in the Sun East development in the Table Mountain Slope unit (Key View 8B), the turbines would diminish the appreciation of Mount Adams and add some clutter to the middleground view, but would not have a drastic effect on the overall setting. The presence of the project would reduce the vividness and unity of this scene (from 3 to 2 in each case), while the intactness would retain a rating of 2. The overall visual quality rating in this location would be reduced from the existing 2.67 (high) to 2 (moderate) with the project, resulting in a visual impact rating of moderate.

Evaluation of Modified Turbine Layout and Height

The original key view simulations for the Draft EIS (**Figures 3.10-11** through **3.10-14 in that document)** and those in **Appendix G** are based on the original project layout and maximum potential turbine height of 393 feet, as described in the Draft EIS. Since the publication of that document, further study and project definition have led Desert Claim Wind Power LLC to modify the proposed turbine layout and select a turbine model that is smaller than the maximum size depicted and analyzed in the Draft EIS. As indicated previously, the selected turbine model has a maximum height of 340 feet to the top of the blade. The modified project configuration was developed primarily in response to issues relating to project safety, and to environmental constraints identified in the Draft EIS, but also in an effort to mitigate visual impact by using a smaller turbine.

The modified project layout and smaller turbines would reduce aesthetic/light and glare impacts compared to the results documented in the Draft EIS. One improvement from an aesthetic perspective is that the modified project configuration would result in grouping of turbines into more distinct clusters. Several of the "sore thumbs" (outlying turbines that stick out from the rest) or "missing teeth" (gaps between turbines that make the overall layout hard to perceive) that were evident in the turbine layout presented in the Draft EIS are no longer apparent with the modified turbine layout. The modified layout is preferable visually to the somewhat more dispersed field of turbines originally proposed, but the clusters are still quite close together and might not always be perceived as distinct groups from eye level. While the lesser height of the proposed turbine model would make the turbines less obtrusive than the larger turbines evaluated in the Draft EIS, thereby reducing the aesthetic/light and glare impacts of the project to a certain degree, , the reduction in height amounts to a 13.5 percent change that would not be enough to significantly alter the overall visual effect of the turbines.

Impact Summary

This updated impact summary is based on evaluation of the supplemental key view simulations as well as the original key view simulations prepared for the Draft EIS, with consideration for the influence of the modified turbine layout and reduced turbine height. The actual impacts would in many cases be less than those depicted by the original key views, due to the modified turbine layout and reduced turbine height, and in no case would the impact be greater due to the modifications to the proposed project.

Table 3.10-6 summarizes the assessment of long-term visual impacts of the project (based primarily on the visibility of the turbines) from representative key views that are characteristic of the intrinsic visual qualities of the Visual Assessment Units. The views showing the greatest degree of visual impact were 1A, 1E, 1F, and 1G in the Northwest Valley Visual Assessment Unit. These four key views are all close to the proposed project boundary, placing them within the foreground distance zone. Key views 1F and 1G, in particular, are representative of views that would exist for some landowners adjacent to or very near the project. All of these views have foothills of the Wenatchee Mountains or Manastash Ridge as their background, have the turbines near the foreground of the view (approximately ¼ mile from the nearest turbine), and look out over relatively flat terrain. Under these circumstances, the turbines' color contrasts sharply with the browns, greens and blues of the foothills and sky, and the turbines' size is such that the turbines break the skyline and dominate the view. The arrangement of the turbines appears overwhelming because from eye level it looks like a large continuous cluster with little topographic or geometric order. Rural residents of this unit would be the viewers most affected by this change in visual quality; their proximity suggests a moderate exposure rating and their activity and landscape appreciation suggest a high sensitivity rating. Some residents of the Northwest Valley unit would experience relatively near views, as shown in the simulations for key views 1E or 1F, while other residents in this unit would have more distant views similar to the simulation for key view 1B (Figure G32 in **Appendix G**).

Views 1A, 1E, 1F and 1G were the only key views for which the level of visual impact was rated as high. The level of visual impact was considered to be moderate for 6 of the 19 key views. These views were 1B and 1D in the Northwest Valley Visual Assessment Unit, 3C in the Greater Ellensburg Visual Assessment Unit, 6A in the Hayward Hill Visual Assessment Unit, and 8A and 8B in the Table Mountain Slope Visual Assessment Unit. These views tend to be from high points at moderate distances from the project (1 to 4 miles). Under these circumstances, the turbines' color contrasts somewhat with the valley floor's varied texture of natural and human features, but not as significantly as against the natural foothills and sky. These high points allow long views over the valley, but they also mean that the turbines rarely break the skyline in these views. With greater distance from the viewer, the turbines occupy less of the view and are comparable to powerlines, fences, and other human-made features in the foreground of many views.

The remaining 9 views were assigned low impact ratings. The visual quality of these views would not be changed significantly with the project, primarily due to their distance from the project and/or the pre-existence of disrupting visual elements, especially suburban development around Ellensburg. Details supporting the summary of changes in visual quality for each key view are provided in **Appendix G**.

In summary, the degree of long-term visual impact created by the project would be largely dependent upon location within Kittitas County and proximity to the project. The project would be most apparent to many of the rural residents in the northwest quadrant of the Kittitas Valley, particularly those within foreground viewing distance (approximately ¼ or 1/2 mile) of large concentrations of wind turbines. Viewed from most adjacent or nearby residences, the project would be visually dominant due to the size, number and arrangement of the turbines. For this area and viewer group, the visual impacts would be significant. Surrounding the zone of high visual impact would be a larger band, generally corresponding to the middleground distance zone (out to a distance of about 3 miles), within which the turbines would be prominent from many or most viewpoints, but would not dominate the scene. Visual impacts from most locations within this zone would be moderate rather than high, but in some cases might still be considered significant. The project would be noticeable in longer-distance views from many elevated positions in the rest of the valley but would not have a significant impact to visual quality, especially when compared with existing development. The Desert Claim project would not be visible from many of the level, vegetated places in the valley, including most residences in Ellensburg, Kittitas, and Thorp.

Table 3.10-6
Summary of Visual Impacts

Key View	Primary Viewer Exposure	Primary Viewer Sensitivity	Existing Visual Quality	With Project Visual Quality	Level of Visual Impact
Unit 1: Northwest Valley Floor					
1A	2	3	3.0	1.67	High
1B	2	2	3.0	2.33	Moderate
1C	2	2	2.0	2.0	Low
1D	2	3	2.0	1.33	Moderate
1E	2	3	2.0	1.0	High
1F	2	3	2.33	1.33	High
1G	1	3	2.0	1.0	High
Unit 2: Northeast Valley Floor					
2A	2	3	1.67	1.33	Low
2B	1	2	2.0	2.0	Low
2C	2	2	2.67	2.33	Low
Unit 3: Greater Ellensburg					
3A	2	2	1.33	1.33	Low
3B	1	1	1.33	1.33	Low
3C	1	2	2.67	2.0	Moderate
Unit 4: Yakima River					
4A	1	2	3.0	2.67	Low
Unit 5: Southwest Valley Floor					
5A	1	2	2.33	2.33	Low
Unit 6: Hayward Hill					
6A	1	3	3.0	2.33	Moderate
Unit 7: Dry Creek Slope					
7A	2	1	2.33	2.0	Low
Unit 8: Table Mountain Slope					
8A	2	3	3.0	2.33	Moderate
8B	3	3	2.67	2.0	Moderate

3.10.2.3 Light and Glare

The Federal Aviation Administration (FAA) requires that objects more than 200 feet in height be appropriately marked as a safety measure for aircraft traffic. The proposed marking system, noted in **Section 3.13.5.2**, is a dual lighting system with red lights for nighttime and medium intensity flashing white lights for daytime and twilight use. Two of these systems would be mounted on top of the generator housing of each of 48 wind turbines marking the perimeter of the 120-turbine project.

Experience at the Stateline and Nine Canyon wind projects in Washington suggests that the daytime white flashing lights, which flash about 40 times per minute and are approximately 20,000 candelas in intensity, would be visible, but not very intrusive because they do not contrast significantly with daylight conditions. As for the nighttime flashing red lights, the intensity is stepped down to 2000 candelas and they flash only about 22 times per minute, roughly 1 second on and 2 seconds off. The flashing red lights contrast significantly with the nighttime sky and the lights would be similar in appearance to those observed on many cell towers around the country. There is relatively little existing exterior light in the vicinity of the project, so the flashing red lights would be a very noticeable aspect of the project for residents around the Northwest Valley and Table Mountain Slope Visual Assessment Units. Both the white and red lights have their own internal shielding which directs the light out level and upward from the unit, instead of down toward the ground, but the FAA does not typically allow external shielding that might allow directional shielding to protect homes to the north which are at or above the elevation of the nacelles. The impact would be greater if the flashing lights are not synchronized to flash in unison, but this technology exists and can be integrated in the project.

Comments on the Draft EIS expressed concern that the project safety lights would interfere with the ability to view the night sky, and specifically with popular stargazing activity from Table Mountain. Outdoor lighting can diminish the visibility of objects in the night sky, through a phenomenon known as skyglow. Skyglow is the haze or glow of light emitted above a source of outdoor lighting; it is a combination of upward-directed light emitted directly from the source, light reflected from illuminated surfaces, and light reflected from airborne particles. Skyglow is evident over large distances, particularly from elevated vantage points, and is not a localized condition. The largest existing sources of skyglow in the Kittitas Valley area are the concentrations of exterior lights in the Ellensburg and Yakima urban areas (Kittitas County 2000). The Desert Claim turbine safety lights would be at an elevation approximately 3,000 to 4,000 feet below the top of Table Mountain and would not be in a direct line of sight for people engaged in stargazing activities on Table Mountain (or other higher-elevation points nearby). The incremental contribution of approximately 50 small, blinking red lights at an intensity of 2,000 candelas to existing skyglow in the area would be negligible and would not be measurable. The project lights would not have any identifiable direct or indirect effect on the ability to observe celestial features from popular local vantage points. The ability to view objects in the night sky is and would remain dependent primarily on the amount of skyglow created by urban development in the region, and on domestic lighting associated with rural developed uses.

The project operations and maintenance facility and substation(s) would be minimally lit at night for purposes of operational safety and security. This would create sources of light where there generally are limited existing exterior lights. The impacts associated with this low level lighting would be minimal, especially if the lights were generally kept off and triggered on when necessary by motion sensors.

Blade glare or glint (also known as "flashing") is the intermittent reflection of sun off the glossy surface of rotating turbine blades. It is typically a short-term condition, but can be a recurring annoyance. Its occurrence depends on a combination of circumstances arising from the orientation of the nacelle, the angle of the blade, and the angle of the sun. The reflectivity of the surface of the blades is also important, and this is to some extent influenced by the color and age of the blade. Matte-surface finishes can be specified to minimize glare or glint effects.

Blade glint is an aspect that could be a potential distraction to drivers, as the effect can be noticed over distances of as much as 6 to 9 miles. Based on geometry and timing considerations, however, it is unlikely that blade glare or glint would be more than an occasional and minor nuisance. Drivers or other viewers who could experience blade glint at long distances would see intermittent pinpricks of light flashes, and the phenomenon would be transitory as they traveled out of view or to a different viewing angle; there is no evident risk that drivers at some distance from the project would be blinded by large, sudden flashes of light. Drivers at relatively close range would be viewing turbines at considerably steeper angles and would not likely experience blade glare or glint. Sunlight reflection from wind turbine blades has not been identified as a significant environmental problem in the U.S., although it has been more noticeable in higher-latitude areas such as northern Europe (Manwell et al. 2002).

3.10.2.4 Shadow Flicker

Shadow flicker, or strobe effects, can arise within or near houses when an operational wind turbine is located in a position where the blades pass across the sun, causing a flickering shadow. This potential effect would occur only where a turbine is relatively close to a dwelling, and at very low sun angles. Although flickering is only likely to occur for a short duration and at certain times of the year, it can be annoying to people living near a turbine. This issue is discussed in more detail in **Section 3.8**.

3.10.3 Impacts of the Alternatives

3.10.3.1 Alternative 1: Wild Horse Site

The aesthetic, light and glare issues of potential concern for Alternative 1 are the same as described for the proposed action. To structure the analysis of the aesthetic impacts of the proposed Wild Horse project, consultants working for Zilkha Renewable Energy divided the project area into viewing areas – areas which offer similar kinds of views toward the Project site and/or within which there would likely be similar concerns about landscape issues. The existing conditions of views from these areas toward the Wild Horse site were documented. Within each viewing area, a Simulation Viewpoint (SV) was selected as a location for a photo that would be used to develop a simulated view that would provide the basis for visualizing the project's potential visual effects on that viewing area. The simulations were developed using photographs taken with a 35 mm camera, using a 50 mm focal length. The Photomontage module of the WindPro software program (a widely accepted and applied program used for planning and assessing wind generation projects) was used to carry out the computer modeling and rendering required to produce the images of the project facilities that were superimposed on the photographs to create the simulations. The work conducted for Zilkha is reported in this EIS to document the visual impacts of Alternative 1.

The visual impact assessment conducted for the Wild Horse proposal was very similar in approach to that described in **Section 3.10.2** for the Desert Claim project. It was based on evaluation of the changes to the existing visual resources that would result from construction and operation of a wind energy project at this location and included assessment of the "after" views provided by the computer-generated visual

simulations in comparison to the existing visual environment. Consideration was given to the following factors in determining the extent and implications of the visual changes:

- The specific changes in the affected visual environment's composition, character, and any specially valued qualities;
- The affected visual environment's context;
- The extent to which the affected environment contains places or features that have been designated in plans and policies for protection or special consideration; and
- The relative numbers of viewers, their activities, and the extent to which these activities are related to the aesthetic qualities affected by the expected changes. Particular consideration was given to effects on views identified as having high or moderate levels of visual sensitivity.

Levels of impact were classified as high, moderate, and low. In general, high impact ratings were assigned in situations in which turbines would be highly visible in areas with sensitive viewers, and would alter levels of landscape vividness, unity, and intactness to the extent that there would be a substantial decrease in the existing level of visual quality. Moderate levels of aesthetic impact were assigned in situations in which turbines would be visible in areas with high levels of visual sensitivity in which the presence of the turbines would alter levels of landscape vividness, unity and intactness to the extent that there would be a moderate change in existing visual quality. Moderate levels of visual impact were also found in situations in which the presence of turbines in the view would lead to more substantial changes in visual quality, but where levels of visual sensitivity were moderate to low. Low levels of visual impact were found in situations where the project would have relatively small effects on overall levels of landscape vividness, unity, and intactness and/or where existing levels of landscape aesthetic quality are low or where there are low levels of visual sensitivity.

The types of visual impacts during the 12-month construction period for Alternative 1 would be the same as described in **Section 3.10.2.1**. Close-at-hand views for this alternative would be limited to those from nearby segments of Vantage Highway. The visual changes associated with the construction activities would be moderately to highly visible and would have a moderate level of visual impact. From more distant viewing locations, the visual effects would be relatively minor and would have little or no impact on the quality of views. From the middleground areas with the greatest numbers of viewers, i.e. the areas to the south and west, much of the area in which construction activities would take place would not be visible behind the ridgeline formed by Whiskey Dick Mountain. Consequently, the visual impact of construction activities in views from these areas would be low.

During the operational period, many of the Alternative 1 turbines would be clearly visible along the ridgeline of Whiskey Dick Mountain, on the mountain's southern slopes, and on the ridge lands to the north. The aesthetic impacts of the visual changes brought about by the presence of the project in views of this landscape would vary from low to moderate, and would be less than significant. The greatest visual change would be in views of the site from lands to the immediate west, north, and east, where up to 100 turbines would be visible on the high-elevation plateau north of Whiskey Dick Mountain. The visual impact in these areas would be moderate, however, because of the low numbers of viewers. Moderate visual impacts would also occur in views toward the project from Vantage Highway and from the rural residential areas at the eastern end of Kittitas Valley. From the community of Kittitas and the areas around it, and from the areas to the east of the Columbia River, the project would appear as elements in the distant landscape and would have relatively little impact on the overall quality of the view. Because the 230 kV project feeder line to the BPA system would pass through an area with few viewers, it would have a low level of visual impact. The PSE feeder line would be more visible from publicly accessible

viewing areas, but because its siting and design would be consistent with other elements of the existing landscape, its overall visual impact would be moderate at most. The PSE interconnect substation would be visible from I-90 and nearby areas, but would be visually consistent with existing infrastructure in the vicinity and would have a relatively low impact on existing visual conditions.

The lighting system employed to comply with FAA safety requirements and the impacts of those lights for Alternative 1 would generally be as described in **Section 3.10.2.3**.The flashing red lights would be most noticeable in the areas within a mile or so of the project, but the impacts on potential viewers would be negligible because there are no residences or public roads in these areas.

The O&M facility and substation(s) for Alternative 1 would create sources of light in areas where there are currently no nighttime sources of light. However, the impacts of the lighting associated with these facilities would not be substantial, particularly because there are few viewers in the areas to the immediate west, north, and east where they would otherwise be most visible. The potential impacts of the night lighting required for operational safety and security would be attenuated by the lighting mitigation measures that have been built into the project's design.

3.10.3.2 Alternative 2: Springwood Ranch Site

The visual impacts of constructing and decommissioning Alternative 2 would be of the same type as those described previously for the proposed action and Alternative 1. Because Alternative 2 would involve only 40 to 45 wind turbines, compared to 120 turbines for the other alternatives, construction activity would be less extensive overall. The duration of construction would be essentially the same, approximately 9 months. Trucks, cranes, and other heavy equipment would be visible in views toward the project area, especially from I-90 and nearby residences. The visual changes associated with the construction activities would have a temporary, but moderate visual impact on views from nearby residences and roads in the Thorp Prairie Visual Assessment Unit. The construction-related visual impact from more distant viewpoints would be low.

Alternative 2 would have significant visual impacts during operation. The visual quality of expected future views would be markedly affected by the size, color and arrangement of the turbines. In views from I-90, many of the turbines would be quite noticeable because they would be in the middleground (from ¼ mile out to 3 miles), their light color would contrast with the brown and green foothills beyond, and the turbine profiles would break the skyline. There would be similar impacts on views from SR 10 and the Thorp Highway. Views from rural residences would include the additional impact of experiencing the turbine's strong vertical forms across the wide-open, horizontal space of Thorp Prairie. From all views, the turbine arrangement would appear cluttered and overwhelming because it would be unrelated to a topographic or geometric order and it would include too many turbines in a continuous cluster (Gipe, 2002). Overall, development of Alternative 2 would significantly change the aesthetic character of the local landscape, especially as viewed from I-90.

Aviation marking lights required for Alternative 2 would result in significant additional impacts on nearby residents and passing motorists. Flashing white lights during the day would be noticeable, but not significant due to the lack of contrast with daylight. However, flashing red lights at night would be visible from I-90, the Thorp Highway and SR 10, and from residences in the immediate vicinity and in Thorp. Security lighting at the operations and maintenance facility and project substation would have minimal impact on the nighttime visual environment if it were tied to motion sensors. Blade glint or glare from sunlight reflecting off moving blades could be an annoyance to eastbound drivers on I-90 late in the day.

3.10.3.3 No Action Alternative

Under the No Action Alternative, the visual quality of the surrounding environment would not be influenced by the proposed project. Visual character in and near the project area would continue to be influenced by existing land uses, and by potential future changes in land use. Continued development pressure on rural land near Ellensburg might cause some of the project area to be subdivided for housing, while low-density rural residential uses would likely expand. Alternative generating resources might be built in response to regional power demand (instead of the proposed project); if this occurred, it could have negative visual impacts of varying degrees in locations that cannot be predicted.

3.10.4 Cumulative Impacts

Cumulative impacts for all elements of the environment are discussed in **Chapter 4**.

3.10.5 Mitigation Measures

The Draft EIS identified a variety of possible mitigation measures related to visual impacts of the project, which were presented as measures involving visual integration, ecological restoration and management, equipment maintenance and community outreach. Most of these were generic (rather than site-specific) measures identified in published reviews of the aesthetic impacts of wind energy development. The modified project configuration described in **Section 2.2** of the Final EIS responds to and includes a number of the possible mitigation measures identified in the Draft EIS, particularly some of the measures relating to methods of visual integration, including grouping turbines together, removing the "sore thumb" and "missing teeth" turbines, setting turbines back from ridgelines, and placing all project cables underground. The following mitigation measures remain applicable, to varying degrees (e.g., Desert Claim is applying to FAA for permission to use the minimum number of required lights on the turbines), for consideration on the proposed project (or Alternative 1 or 2):

Visual integration:

- To the extent this has not already been accomplished, relocate selected turbines to create more distinct visual units, breaking the project into distinct groupings of turbines and leaving some open space between these groups (Nielsen, 2002).
- Limit the number of turbines in each cluster to 10-15 turbines (Brittan, 2002).
- Relocate selected turbines to better follow and reinforce the natural topography. This approach would be most appropriate for any turbines that still occur near ridgetops.
- Relocate selected turbines to establish clear visual order through geometric arrangements with uniform spacing, This approach would be most appropriate for the remaining turbines that occupy the very gradual slopes of the alluvial fans.
- Construct required ancillary structures of local materials and maximize their fit in the vernacular landscape by studying local building types and siting them sensitively.
- Use native shrub-steppe vegetation around buildings and equipment boxes to integrate the structures into the surrounding landscape.
- Use existing roads to access turbines. Minimize or eliminate new roadbuilding.
- Do not piggyback advertising, cell antennas, or other clutter on the turbines. Do not prominently display the logo of the manufacturer on the nacelle.
- Sculpt natural landforms and plant foreground screening native vegetative along some nearby roads and around residenceswith expected significant visual impacts.

- Use low-reflectivity, neutral-color finishes for turbines, equipment boxes, substation equipment, and operations and management building. Earth-tone finish would blend in best with the surrounding landscape.
- Use only minimum required lighting on turbines (aviation warning lighting) required by the FAA, and minimize security lighting at the substation and O&M facility. Make any ground level security lighting motion-sensitive so that most of the time it does not impact the night landscape.
- Use lighting devices designed to be least visible from ground level.
- Synchronize blinking of aviation warning night lights and maximize period in light-off condition.

Ecological restoration and management of disturbed areas during and after construction:

- Keep construction time to a minimum.
- Remove construction debris.
- Locate construction staging and storage areas away from adjacent county roads.
- Replace native vegetation disturbed in non-road surface areas or non-turbine areas.
- Seed or cover temporarily stockpiled materials and disturbed sites to reduce dust and prevent erosion.

Equipment maintenance:

- Maintain uniform, high-quality turbine towers, nacelles, and blades. Any replacements should maintain uniform height, model, color, etc.
- Remove or promptly repair all parts of non-functioning turbines.
- Keep operation and maintenance area and turbines clean.
- Keep vehicles and maintenance equipment on site away from residences and public access areas.

Information and education related to the project and wind energy:

- Notify the local community of the timing and duration of construction.
- Build a facility for information displays in Ellensburg or near the project.
- In association with WSDOT and Kittitas County, provide signs and safe areas for public viewing with interpretation signs.

3.10.6 Significant Unavoidable Adverse Impacts

Development of the project as proposed would result in significant unavoidable adverse impacts to the visual environment, especially for nearby rural residents in the northwest quadrant of the Kittitas Valley, including part of the Northwest Valley Visual Assessment Unit and the lower foothills of the Table Mountain Slope Visual Assessment Unit. Project facilities, primarily the wind turbines, would be a dominant element of the visual environment for residents and others within short-range viewing distance of the project. Wind turbines would be visible to varying degrees from portions of several other visual assessment units in the Kittitas Basin, although in these cases the views of the turbines would be more distant and the level of visual impact would generally be low. These impacts are summarized in **Section 3.10.2.2**. With considerable efforts to mitigate the project through visual integration, ecological restoration, sound maintenance, and community information from siting through operation, the visual impact has been or could be reduced to a degree. This mitigation process would not, however, lead to a project that would be invisible. On the contrary, it would yield a project that would be quite noticeable but that fit better with the landscape of the Kittitas Basin and the aesthetic values of the people who live there.