WINTER BROOK
COMMUNITY RESOURCE PLANNING

# MEMORANDUM

To: Deborah McMahon

From: Tim Brooks and Greg Winterowd

Date: February 12, 2007

**Re: Updated Natural Features Program Outline**

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## INTRODUCTION

The first task in the City's current Goal 5 planning effort is to review background documents and maps and develop an outline for a Natural Features Program to meet Goal 5, consistent with the administrative rule (OAR 660-023-0050). The draft program is intended to resolve conflicts among significant Goal 5 resources. These resources include:

- riparian corridors
- wetlands
- wildlife habitat
- scenic area, and
- groundwater

Following review by City staff, this draft program outline will serve as the basis for review of other steps in the Goal 5 process, including the analysis of Economic, Social, Environmental and Energy (ESEE) consequences, where appropriate. It is anticipated that changes will be made in the draft program as a result of the ESEE analysis and public review and adoption process.

In some cases, we recommend proceeding under the "safe harbor" provisions of the new Goal 5 administrative rule, or with protection of natural hazards under Statewide Planning Goal 7. Neither of these options requires an analysis of ESEE consequences.

The program outline is organized by groups of resource categories (i.e., water resources, wildlife habitat, scenic areas, and groundwater resources). In many cases, the resource categories overlap geographically, and the proposed resource protection strategies are similarly overlapping and integrated.

## WATER FEATURES

Significant water features include the following Goal 5 and 7 resource categories:

1. Fish-bearing streams and their riparian corridors – including associated wetlands;
2. Other riparian corridors (e.g., Hudspeth Drainage) – including associated wetlands;
3. Isolated Wetlands; and
4. Ravines and Dry Washes.

The eastern (upstream) reach of Ochoco Creek flows through grasslands and areas of recent development.

We recommend a three-tiered Goal 5 protection program for the first three categories of water resources, depending on their level of significance. We recommend that ravines and dry washes be protected to minimize erosion and maintain water quality – as Goal 6 and 7 resources.

## Riparian Corridors for "Fish-Bearing" Streams

Crooked River and Ochoco Creek (including the Ryegrass Ditch) are "fish-bearing streams" within the Prineville UGB, as shown on Oregon Department of Forest (ODF) maps. All have average annual flows of less than 1,000 cubic feet per second (CFS).

Comprehensive Plan Policy 8 calls for the protection of Crooked River and Ochoco Creek floodplains:

> *The Ochoco Creek and Crooked River floodplains lying within the urban growth boundary shall be protected as greenway by such zoning restrictions as deemed necessary.*

This policy is implemented in part by the Prineville Title XV – Land Usage and Crook County Article 15 – Zoning Regulations. Prineville Chapter 153 – Flood Damage Control regulates how development may occur within the 100-year floodplain and prohibits most types of development within the "floodway." Crook County Section 3.170 – Floodplain Combining Zone, sets forth similar limitations on development within the 100-year floodplain, but does not require building setbacks. Both of these sections address how development is allowed within the riparian corridor; neither are effective in resolving conflicts between development and riparian values.

However, Prineville Section 153.088 – Riparian Habitat establishes a 50-foot setback for development along the Crooked River and a 25-foot setback for development along Ochoco Creek. Both setbacks are measured from the "ordinary high water line or identified stream channel." Outside the Prineville City Limits, but inside the UGB, Crook County Section 4.190 establishes a 100-foot building setback from Class I and II streams (i.e., from Crooked River and Ochoco Creek). Exceptions are allowed where "a narrower riparian area protects equivalent habitat values" as determined by the Oregon Department of Fish and Wildlife. However, the setback cannot be reduced below 50 feet (the Crooked River) and 25 feet (Ochoco Creek).

In 1998, Prineville adopted Section 153.064, Significant Resource Combining Zone, to resolve conflicts between significant Goal 5 resources and development. This section is based on the "old" Goal 5 administrative rule (OAR Chapter 660, Division 016). Subsection 153.064(E)(2) is intended to supplement the provisions of Section 153.088 (Riparian Habitat) described above. If applied within the Prineville UGB, Subsection (E)(2) would require a 50-foot setback from Ochoco Creek and a 100-foot setback from the Crooked River. Exceptions to this building setback could be granted base on a site-specific evaluation. However, the minimum setback could not be less than 25 feet for Ochoco Creek or 50 feet for the Crooked River.[1]

[1] This provision is similar to the "safe harbor" provisions of the new Goal 5 administrative rule as applied to riparian corridors. (OAR 660-023-090)

***Crooked River and Ochoco Creek, and Associated Wetlands Program Outline***

We recommend that the City consider a three-tiered approach to resolving development conflicts[2] within the Ochoco Creek and Crooked River "riparian corridors."

Our recommended approach minimizes unnecessary inventory and ESEE analyses,[3] and the potential for legal challenge to such analyses by relying on a combination of: (a) existing adopted regulations; and (b) the "safe harbor" provisions of the "new" Goal 5 administrative rule.[4]

1. **Tier 1** standards would be applied only to the Crooked River reaches located within unincorporated areas of the Prineville UGB, as shown on Water Resources Figure 1. Tier 1 standards would continue to rely on adopted Crook County riparian regulations and would remain in effect as land is annexed to the City. As noted above, Crook County now requires 100-foot setbacks for development along the Crooked River.

2. **Tier 2** standards would be applied along undeveloped reaches of Ochoco Creek, the Crooked River, and to "associated wetlands" – as shown on Figure 1. The "safe harbor" provisions of the new Goal 5 administrative rule would be applied to Tier 2 riparian corridors. Basically, the riparian corridor "safe harbor" protects fish-bearing streams with average annual flows of 1000 or less CFS with a 50-foot setback from the "top of bank." "Associated wetlands" are considered to be a part of the riparian corridor and also have a 50-foot setback from the wetland edge.[5] Limited setback reductions may be permitted "upon a demonstration that equal or better protection for identified resources will be ensured through restoration of riparian areas, enhanced buffer treatment, or similar measures." (OAR 660-023-090(8)(e)) As noted above, application of "safe harbor" provisions eliminates the need for an ESEE analysis, and mirrors provisions already adopted by the City.

3. **Tier 3** standards would be applied along developed reaches of Ochoco Creek – as shown on Figure 1. Tier 3 standards would rely on Prineville Section 153.088 – Riparian Habitat.

[2] A "conflicting use" is defined in the new Goal 5 administrative rule as "a land use, or other activity reasonably and customarily subject to land use regulations, that could adversely affect a significant Goal 5 resource ... Local governments are not required to regard agricultural practices as conflicting uses." Conflicting uses in riparian corridors are vegetation removal, grading and construction.

[3] The new Goal 5 rule defines "ESEE consequences" as "the positive and negative economic, social, environmental, and energy (ESEE) consequences that could result from a decision to allow, limit, or prohibit a conflicting use."

[4] As defined in OAR 660-023-020(2): "A 'safe harbor' consists of an optional course of action that satisfies certain requirements under the standard process. Local governments may follow safe harbor requirements rather than addressing certain requirements in the standard Goal 5 process. For example, a jurisdiction may choose to identify 'significant' riparian corridors using the safe harbor criteria under OAR 660-023-0090(5) rather than follow the general requirements for determining 'significance' in the standard Goal 5 process under OAR 660-023-0030(4). Similarly, a jurisdiction may adopt a wetlands ordinance that meets the requirements of OAR 660-023-0100(4)(b) in lieu of following the ESEE decision process in OAR 660-023-0040."

[5] As noted in OAR 660-023-090(5)(c): "Where the riparian corridor includes all or portions of a significant wetland as set out in OAR 660-023-0100, the standard distance to the riparian corridor boundary shall be measured from, and include, the upland edge of the wetland."

However, because this section allows setbacks to be reduced to 25 feet, we suggest modifying this adopted standard to require restoration and enhancement of the protected 25-foot setback area when new or expanded development is approved on properties abutting Ochoco Creek. A limited ESEE analysis would be required to assess the ESEE consequences of this restoration and enhancement provision.

## Other Riparian Corridors and Associated Wetlands

The Prineville UGB includes two riparian corridors – and associated wetlands – that are not listed as "fish-bearing streams": Hudspeth Drainage and Ryegrass Drainage (north tributary to Ryegrass Ditch). Hudspeth and Ryegrass Drainages include most of the remaining locally significant wetlands within the UGB that are not associated with Ochoco Creek and the Crooked River. As shown on Figure 1, the 1995 Local Wetland Inventory (LWI), as modified by DSL wetland determination files and Winterbrook field verification, serves as a primary basis for mapping these two riparian corridors. Secondary sources include topographic maps and aerial photos.

Prineville and Crook County have little in the way of Comprehensive Plan policies that protect riparian corridors and associated wetlands. Comprehensive Plan Policy 3 limits the construction of impoundments and other facilities that adversely affect natural resource values:

> *Construction of impoundments or any other stream facility shall not reduce stream flow, water levels, or the carrying capacity of down stream areas to support fish, wildlife, agriculture, recreation, pollution abatement or visual aesthetics.*

Outside the Prineville City Limits, but inside the UGB, Crook County Section 4.190 establishes a 100-foot building setback from lakes and reservoirs, both of which qualify as "wetlands." The Hudspeth reservoir would appear to be protected by this County provision. Otherwise, neither the City nor County has specific wetland protection standards (other than setbacks from Ochoco Creek and the Crooked River), and simply refers requests to fill wetlands to the Department of State Lands.

In 1998, Prineville adopted Section 153.064 Significant Resource Combining Zone to resolve conflicts between some significant Goal 5 resources and development. This section is based on the "old" Goal 5 administrative rule (OAR Chapter 660, Division 016). Subsection 153.064(F)(1) identifies uses and activities that conflict with wetland protection, but does not resolve conflicts between development and wetlands.

### ***Other Riparian Corridors Program Outline***

We recommend that the City consider protection of the Hudspeth and Ryegrass Drainage and riparian corridors using a two-tiered approach to resolve development conflicts within the city. Under the recommended approach, the two riparian corridors would be managed *as if* they were fish-bearing streams, because there is a "significant nexus" between development adjacent to these streams and

water quality in Ochoco Creek and the Crooked River.[6] Because these two riparian corridors do not qualify for "safe harbor" protection under the new Goal 5 administrative rule, an ESEE analysis will be required to implement most of the recommended program.

1. **Tier 1** standards would be applied only to the Hudspeth Reservoir located within the unincorporated portion of the Prineville UGB, as shown on Figure 1. Tier 1 standards would continue to rely on adopted Crook County riparian regulations and would remain in effect as land is annexed to the City. As noted above, Crook County now requires 100-foot setbacks for development near lakes and reservoirs.

2. **Tier 2** standards would be applied along undeveloped reaches of Hudspeth and Ryegrass Drainages, as shown on Figure 1. Although an ESEE analysis would be required, the "safe harbor" provisions of the new Goal 5 administrative rule would be applied to Tier 2 riparian corridors – as if they were "fish bearing streams." This approach would be consistent with a long-term policy to "daylight" these streams to the extent practicable in the future. As noted above, the riparian corridor "safe harbor" standards require a 50-foot setback from the "top of bank." Limited setback reductions may be permitted if "equal or better protection for identified resources will be ensured through restoration of riparian areas, enhanced buffer treatment, or similar measures."

## Ravines and Dry Washes

Ravines and dry washes are shown on Figure 1. These intermittent natural drainages provide a storm water conveyance function. As development occurs, flows become more concentrated in ravines and dry washes, there is an increased likelihood of erosion, slope failure, and attendant adverse impacts on water quality.

***Ravines and Dry Washes Goal 6 and 7 Program Outline***

We recommend protection of mapped ravines and dry washes by (a) prohibiting most types of development within 25 feet of the top of the ravine or wash, and (b) using best management practices when ravines and washes must be crossed by streets and utilities. In effect, Tier 3 standards (25-foot setback from the top of the ravine, plus restoration and enhancement) are recommended for maintaining and improving soil stability and downstream water quality.

[6] See *Rapanos* and *Cababell v. U.S. Army Corps of Engineers*, 547 U.S. ___, 2006. On June 19, 2006 the U.S. Supreme Court ruled the U.S. Army Corps of Engineers must show a "significant nexus" between a wetland and a navigable body of water in order to assert regulatory control under the Clean Water Act.

## Isolated Wetlands

There are a limited number of locally significant wetlands located outside of protected riparian corridors. The significance of local wetlands is determined based on Department of State Lands (DSL) administrative rules.

***Isolated Wetlands Program Outline***

We recommend Tier 3 protection (25-foot setback from the wetland edge, plus restoration and enhancement) for such isolated wetlands. This will require an ESEE analysis. However, because there are only three isolated wetlands, and these wetlands are relatively small, the ESEE analysis need not be extensive.

## Summary of Recommend Water Resources Protection Program

| Resource | Location | Protection Level | Summary |
|---|---|---|---|
| The Crooked River<br>Riparian Corridor<br>Hudspeth Reservoir | Outside City Limits /<br>Inside UGB | Tier 1 | 100-foot setback; adjustable if no loss in resource value with restoration and enhancement |
| The Crooked River<br>Ochoco Creek<br>Hudspeth Drainage<br>Ryegrass Drainage | Inside City Limits<br>Undeveloped Reaches<br>Inside UGB<br>Inside UGB | Tier 2 | 50-foot setback; adjustable through quasi-judicial process if no loss in resource value + enhancement |
| Ochoco Creek<br>Mapped Ravines and Dry Washes<br>Isolated Wetlands | Developed Reaches<br><br>All land within UGB | Tier 3 | 50-foot setback; adjustable to 25'if supported by ESEE analysis (no subsequent review requirement) |

Program recommendations would require amendments to the Prineville Comprehensive Plan and to City and County zoning regulations.

## WILDLIFE HABITAT

Prairie falcons nest on Barnes Butte

Wildlife habitat areas in Prineville include the riparian corridors and wetland complexes located along the Crooked River, Ochoco Creek, and the Hudspeth and Ryegrass Drainages. These corridors provide forage, water, cover and movement corridors for a variety of birds, mammals, and other terrestrial wildlife. For example, as many as 187 species of birds have been documented using these riparian areas within the county, and many of these species occur along Prineville's water resources. The Crooked River and Ochoco Creek provide important aquatic habitat as well, supporting populations of native redband trout and seven other game fish species.

Important upland habitats include Barnes Butte and the Crooked River Rimrocks. The butte's rock crevices, vegetation, dry wash canyons, and the neighboring wetlands complexes (most notably along the Hudspeth Drainage) provide forage, cover and nesting habitat for a variety of wildlife. Prairie falcon, golden eagle, red tailed hawk and osprey all nest on the slopes of Barnes Butte and its adjacent lowlands. Similar nest sites (e.g., golden eagle) are found along the Crooked River Rimrocks.

Natural/Scenic/Buffer Areas Policy 4 of the Comprehensive Plan identifies several other significant habitats, as follows:

> *Crucial deer winter range and waterfowl nesting habitat shall be protected and preserved. Elk and antelope habitat shall also be protected in accordance with Oregon Fish and Wildlife management plans.*

These habitats are mapped by federal and state resource agencies. Deer winter range habitat borders the eastern boundary of the City's UGB and includes the Combs Flat area. Deer habitat also occurs south of the City along the Crooked River. Antelope year round habitat is mapped in the southwestern edge of the City's UGB. The County's Comprehensive Plan "Wildlife Resources" map shows waterfowl nesting habitat along Crooked River and Ochoco Creek in Prineville.

The County's Sensitive Bird Habitat Area (Section 4.220) provides protections for sensitive species such as bald eagle, golden eagle, and prairie falcon. "Sensitive habitat sites" for these species are identified as 1320 feet (1/4 mile) from nest or roost sites.

The "Site Plan" review criteria are summarized below:

- "Prevent destruction of the subject site and…reasonably avoid causing the site to be abandoned";

- "Development activities… shall be prohibited during the nesting season identified in the site specific ESEE analysis and decision for each habitat site, or based on current information from ODF&W or the U.S. Fish and Wildlife Service";
- "New roads, driveways, or public trails shall be located at the greatest distance possible from the nest site";
- "Existing vegetation or other landscape features that are located on the subject property and obscure the view of the nest from the proposed development shall be preserved and maintained";
- "No partitions or subdivisions shall be permitted which would force location of a dwelling or other structure…within the designated sensitive habitat area";
- "All exterior lighting…shall be sited and shielded so that the light is directed downward and does not shine on the subject site"; and
- "The site plan shall conform with the requirements of the ESEE decision for the subject Sensitive Bird Habitat Area contained in the Crook County Comprehensive Plan."

Subsection H of the Sensitive Bird Habitat Area provisions notes that **"**In regard to those sites for which ESEE's have not been completed, no conflicting uses shall be permitted until ESEE analyses have been performed. Within 120 days from the date of this Ordinance, ESEE analyses shall be completed for those sites."

***Wildlife Habitat Program Outline***

For upland habitat areas, compliance with the County's Sensitive Bird Habitat Area standards and ODFW protection measures may serve as an effective part of an overall habitat protection program. However, the species of interest and the mapping of sensitive sites must be made explicit. In addition, these standards must be made clear and objective, and if discretion is desired, a land use process with public notice and opportunity for appeal must be implemented.

Significant upland habitats are largely associated with Barnes Butte and the Rimrock areas in Prineville. These are the same areas addressed under the Scenic program, and the Scenic protection measures will provide habitat protection as well.

For riparian and wetland habitats, a significant portion of Prineville's wildlife habitat is found along the stream and wetland corridors as identified above. Current City regulations (Section 153.088) provide partial protection to some of these areas in the form of a 25-foot setback along Ochoco Creek and a 50-foot setback along Crooked River. In the County, both Crooked River and Ochoco Creek are protected with 100-foot buffers (Section 4.180).

A proposed program to address wetland and riparian areas is provided in the preceding section of this memo, and this program will serve to protect significant wildlife habitat located along these and other important water bodies (e.g., the Hudspeth Drainage).

The program outline for wildlife habitat can be summarized as follows:

- Apply clear and objective standards specific to the timing, location and construction activities within a quarter mile of sensitive bird habitats using ODFW guidelines, and/or create a discretionary review process for Sensitive Bird Habitat Areas;
- Apply Goal 7 natural hazard and Scenic program standards to address upland habitat protection; and
- Apply Wetland and Riparian Area program standards to address protection of wetland and riparian habitats.

## SCENIC AREAS

Scenic areas are defined in the Crook County Comprehensive Land Use Plan as "Lands that are valued for their aesthetic appearance." The Plan describes several scenic viewpoints within or adjacent to Prineville. These include Ochoco Wayside Viewpoint, Oregon Scenic Highways (Oregon 126/U.S. 26), Barnes Butte, and the Rimrocks.

### Wayside Viewpoint and the Oregon Scenic Highways

Of the scenic areas identified, the Plan identified no conflicting uses for Ochoco Wayside Viewpoint and the Oregon Scenic Highways. These scenic sites are protected Goal 5 Resource Sites and no further action is needed.

### Rimrock

Natural/Scenic/Buffer Areas Policy 7 of the Plan identifies significant Rimrock areas and a protection program as follows:

> *Rimrocks from the intersection of Elliot Lane and O'Neil Highway, including Westwood Subdivision and Ochoco Wayside Viewpoint, to Stearns Ranch; and those rimrocks paralleling Juniper Canyon, Combs Flat Road and Ochoco Creek to Ochoco Reservoir shall be protected against manmade structures by such zoning restrictions as deemed necessary. Restrictions addressing setbacks and building restrictions shall be applied to protect scenic values.*

The Crooked River Rimrocks provide a dramatic southern backdrop to the city.

The County completed a conflicting use and ESEE analysis for development which "breaks the skyline when viewed from the valley floor." Among the findings was a loss of aesthetic quality of the Prineville area and an associated economic loss in the form of tourism interest in the area. Detrimental environmental and social impacts were also identified. As part of its Goal 5 program, the County adopted a 200-foot setback from the top of the Rimrock edge for structures (Ordinance 18, Section 4.210).

Natural/Scenic/Buffer Areas Policy 15 reads as follows[7]:

> *Relative to the protection and preservation of the scenic and aesthetic values of the Prineville Valley "rimrock" a site development plan shall be required for all land use/ development proposals. A specific procedure shall be incorporated into the Zoning Ordinance to provide clear and objective criteria to review all proposed land use development proposals.*

***Rimrock Program Outline***

The setback from the top of Rimrock edge is a clear and objective criterion. However, there are no clear and objective criteria that address the protection of the scenic and aesthetic values of the Rimrock face, nor the related hazards identified in the Plan's Natural Hazards Policies. Natural Hazards Policy 5 discourages development in areas having "low carrying capacities and high or severe physical limitations." The criteria to be "considered" include areas with "slopes greater…than 30%" and maintaining a "safe distance from rimrock scarps, talus debris and fractures."

While there is limited risk that development will climb the precipitous and extremely hazardous slopes of the Rimrock face, some scars from grading and other activities are visible on the face of the Rimrock. To fully implement the intent of the Natural/Scenic/Buffer Areas and Natural Hazards policies, we recommend that two additional clear and objective standards be adopted for Rimrock areas. These standards will serve to protect the public from natural hazards associated with Rimrock scarps, talus debris and fractures, and the area's very steep slopes.

Thus, the recommended program outline covering the area between the rim and 100 feet out from the base of the Rimrock side slopes is as follows:

- No development on the Rimrock face, on talus debris slopes of 30 percent or greater, or within mapped dry wash canyons.
- Design standards shall apply to all development and earthwork, including fill or removal, within areas of 18 to 30 percent slopes.
- All development within 100 feet from the base of the Rimrock (talus) slope (the potential hazard area) shall be subject to a geological analysis completed by a licensed engineering geologist and approved by the City Engineer.

## Barnes Butte

Barnes Butte is geologic landmass that forms a backdrop to the City of Prineville. It has important scenic qualities recognized in both City and County planning documents dating back at least as far as the Crook County Comprehensive Land Use Plan of 1978. Other features of the butte include its steep slopes, rimrock areas, and large rock outcrops which also contribute to these scenic qualities. Between areas of exposed rock, the vegetative cover on the butte includes bunchgrasses and forbs, a light cover of shrubs, and juniper trees. The butte's side slopes are carved by multiple dry wash

[7] We believe this was amended by Ord. 17, Amendment 57, but don't have the full new text of the policy.

canyons, whose channels are subject to periodic inundation and flooding from heavy rains. The butte's vegetation and dry wash canyons further contribute to its scenic qualities.

The view from the north and east shows Barnes Butte rising abruptly from the valley as a coherent and continuous landmass.

The term "butte" is defined in the *Webster's Unabridged Dictionary* (1996) as "an isolated hill or mountain rising abruptly above the surrounding land." This "abrupt rise" is quite distinct when viewing Barnes Butte from a variety of vantage points, and when studying topographic maps of the area. The surrounding land, the floor of the broad Crooked River valley, has gentle slopes averaging approximately 5 percent. Rising from this gentle terrain, the side slopes of the butte average 35 percent for much of its perimeter. On the southwest side, slopes range between 10 and 35 percent.

For the purpose of the scenic inventory, Barnes Butte can be defined as the landmass rising abruptly from the surrounding valley floor and visible from identified viewpoints. In terms of assessing the scenic quality of the butte, however, not all of the butte is necessarily of equal value. Visually, from the elevated Ochoco Viewpoint or from Barnes Butte Road to the east, the entire landmass is recognizable as a butte. However, from most vantage points in town, the southern terrace from the central topographic saddle point south is not visible or only slightly recognizable as an integral part of the butte. This distinction gives rise to the notion of a primary backdrop (the more prominent northern section with the pinnacle) and a secondary backdrop (the southern terrace and the steep slopes along the base of the butte). Thus, while the whole of the butte is considered a significant scenic resource for Goal 5 purposes, two levels of significance are identified and mapped in Figure 4 (see further discussion below).

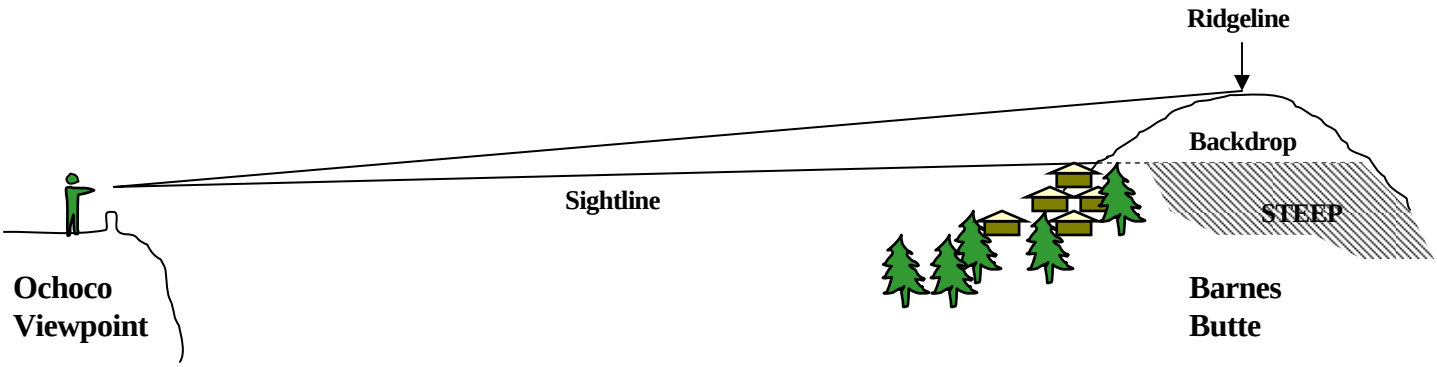
The continuous ridgeline is a defining visual element of the butte. However, it is more than the ridgeline that forms the scenic backdrop to the City. The slopes of the butte are part of that backdrop. To define the attributes and location of this scenic backdrop, a combination of field surveys, topographic maps, aerial photographs and visual survey methods were used. Using one key survey method, a view preservation formula used by Austin, Texas and other communities, the views to Barnes Butte from the Ochoco Viewpoint, Barnes Butte Road, and locations in downtown Prineville and the Northridge neighborhood were evaluated. The formula is summarized below:

$\text{Tan } \theta = \alpha/\beta = \alpha'/\beta'$ (% angle of view to butte)

$\text{Tan } \theta \times \beta' = \alpha'$

$\alpha' - \varepsilon = \eta$

where $\alpha$ is the difference between the viewpoint and view elevation, $\beta$ is the distance from viewpoint to view, $\alpha'$ is the difference between the viewpoint and building elevation, $\beta'$ is distance from viewpoint to building, $\varepsilon$ is the difference between the viewpoint and ground elevation at the building site, and $\eta$ is the allowed building height (in the R2 zone, for example, $\eta = 35$ feet). The formula shows the interplay of building height, location and ground elevation, and how these variables can be managed to maintain unobstructed sightlines to Barnes Butte.




As noted above and shown in Figure 4, the primary backdrop on Barnes Butte includes the northern pinnacle (at elevation 3,549 feet) and the top approximately 200 feet of the northern ridge that is visible from all vantage points, including multiple sites within downtown and from the Northridge neighborhood. The secondary backdrop includes the southern terrace, discernable as an integral part of the butte from the east or from higher elevations (e.g., Ochoco Viewpoint), but either not visible or not visually prominent from most of the viewpoints in town. The steep sides of the butte, generally defined as exceeding 18 percent slope, also form part of the secondary backdrop by defining the edges and base of the larger mass.

***Barnes Butte Program Outline***

Natural/Scenic/Buffer Areas Policy 6 of the County Comprehensive Plan states as follows:

> *Barnes Butte shall be protected against development of any structures except for transmission lines or communication towers, either by the existing park reserve zone or by adopting an open space zone similar to the one described in the Parks and Recreation and Open Space Study for the greater Prineville area.*

Without defining Barnes Butte, this policy offers two "program" options (i.e., park reserve zone and open space zone), both of which are typically applied to publicly owned lands. However, both the present study and the Parks and Recreation and Open Space Study contemplate the protection of lands that are currently in private ownership. Hence, these program options may be overly limiting.

Developing a program to protect the scenic qualities of Barnes Butte will require a detailed ESEE analysis, weighing the relative economic consequences of scenic protection with the relative scenic values identified above. The result may use one or more zoning tools, such as an open space zone combined with a scenic overlay zone, but the different protection options to be assessed by the City will include, in order:

- No development[8] on the mapped primary scenic resource area;
- No development on slopes of 30 percent or greater, or within mapped dry wash canyons (protected as Goal 7 hazard areas);
- Specific density and design standards shall apply to development and earthwork within areas identified as secondary scenic resource area, and areas of 18 and 30 percent slopes;
- All earthwork and development within the scenic impact area and not addressed above shall be subject to a geological analysis completed by a licensed engineering geologist and approved by the City Engineer.

## Summary of Recommend Scenic Protection Program

| Resource | Location | Protection Level | Summary |
|---|---|---|---|
| Rimrocks and Barnes Butte | Primary scenic backdrop/resource area; slopes ≥ 30%, dry washes | Tier 1 | No development within mapped areas (see footnote 8) |
| Rimrocks and Barnes Butte | Secondary scenic backdrop/resource area; slopes of 18% to 30% | Tier 2 | Specific density and design standards apply; where previous development approvals exist, applicable open space/development standards apply |
| Rimrocks and Barnes Butte | Impact area | Tier 3 | Subject to favorable geological/engineering analysis |

## GROUNDWATER

In Prineville, groundwater is the water source for the public water supply and irrigation. Because it serves the public water supply, it is important to the health of the community to protect the groundwater from possible contamination. One reason groundwater is a particular interest in Prineville is because of the area's high water tables. High water tables mean that

[8] "Development" here is not intended to include recreational trails or viewpoints. Passive recreational uses and below ground utilities would be permitted.

ground and surface waters have greater interaction and the shallow water table in general is more vulnerable to contamination from lands above.

The Oregon Department of Environmental Quality (DEQ) provides information on Significant Groundwater Areas and Potential Contaminant Sources. Significant Groundwater Areas are defined by the Oregon Drinking Water Program (DWP) based on the susceptibility of groundwater to contamination in relation to the length of time it takes for water to infiltrate an aquifer. The length of time is a function of the soils and geology surrounding the aquifer and the depth from surface to aquifer. As water passes through layers of soil, it may be stripped of many possible contaminants, ideally minimizing the transport of contaminants from the surface to the aquifer. The less time it takes for water to infiltrate, the more susceptible the aquifer and the groundwater in the aquifer are to contamination.

The DWP also has identified Potential Contaminant Sources (PCS) in Prineville. For public water systems served by groundwater sources, the most threatening "potential contaminant sources" from the higher risk categories of inventoried sites include[9]:

- Housing - High Density (more than 1 house per half acre)
- Transportation - Freeways/state highways/other heavy use roads
- Large Capacity Septic Systems (serves more than 20 people)
- Sewer Lines - Close proximity to public water system
- Above Ground Storage Tanks - Excluding water and residential tanks
- Crops - Irrigated (inc. orchards, vineyards, nurseries, greenhouses)
- Automobiles - Repair shops
- Septic Systems - High density (more than 1 system per acre)

Significant Groundwater Areas with potential aquifer infiltration of less than 2 years were considered significant, as were Potential Contaminant Sources listed as “higher” hazards. The remaining area within DEQ’s Significant Groundwater Area outside of the > 2-year sensitivity zone is shown as the Impact Area. These areas are mapped on Figure 5, Groundwater Resources.

**Table C. Groundwater Resources and Potential Threats in Prineville**

| Resource | City | UGB |
|---|---|---|
| Drinking Water Source Area < 2 years | 581 acres | 1060 acres |
| Groundwater Impact Area | 1924 acre | 2827 acres |
| Potential Contaminate Source (PCS) ranked “high” | 105 sites | 200 sites |

[9] DEQ - http://www.deq.state.or.us/wq/dwp/riskoverview.htm (accessed 1/15/2007)

***Groundwater Program Outline***

Though no specific groundwater protection regulations have been adopted, the City has set the development of comprehensive stormwater and wellhead planning, management and regulatory strategies as a priority (Draft Lower Crooked River Watershed Assessment, 2006).

We recommend three part program to protect groundwater resources:

1. Adopt the proposed program to protect Wetland and Riparian Areas, to reduce the risk of contamination through surface water and groundwater interaction;
2. Obtain technical assistance from DEQ to develop and implement a drinking water protection strategy to assure a safe and adequate drinking water supply for Prineville over the long term; and
3. Adopt a groundwater protection program, developed in coordination with DEQ, that reduces the risk of potential contaminants in local drinking water protection areas, particularly within the 2-year sensitivity zone areas mapped in Figure 5 of the Inventory.