WHITE PAPER

USDA Forest Service Pacific Northwest Region Umatilla National Forest

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Tower Fire…Then and Now
Using Camera Points to Monitor Postfire Recovery[1]

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[1] White papers are internal reports; they receive only limited review. Viewpoints expressed in this paper are those of the author – they may not represent positions of USDA Forest Service.

COVER PHOTOGRAPH

A burned hillside in 1996 Tower Fire, with white area in the foreground being a cut slope above 52 road (a portion of Blue Mountain Scenic Byway). This image was acquired by John Marshall, of John Marshall Photography in Wenatchee, Washington, during summer of 2014, about 18 years after Tower Fire occurred. The area shown in this image is a few miles west of Winom Meadows at a sharp bend in the 52 road.

John Marshall Photography provides a wide array of photographic services – he has been providing panoramic photography for both the Okanogan-Wenatchee and the Umatilla National Forests for many years now. In particular, he has been retaking many Osborne panoramic photographs acquired in 1930s by using a special camera designed by W.B. Osborne.

Osborne's camera, known as a 'photo-recording transit,' was used by USDA Forest Service to evaluate possible areas in which to develop forest fire lookout towers.

Figure 8 provides an example of a repeat photography photo-pair utilizing an original photograph acquired by a photo-recording transit camera.

John Marshall has also been photographing response of big huckleberry plants, an important First Foods species for Native Americans, following implementation of forest management activities on Pomeroy Ranger District of Umatilla National Forest.

ACKNOWLEDGMENTS

The monitoring effort described in this white paper would not have been possible without assistance of two individuals: Don Justice, data analyst in the Silviculture section of the Supervisor's Office, and Earle Rother, public affairs officer (retired) for Umatilla National Forest.

Don was involved in all aspects of this project, whereas Earle helped get it off the ground by assisting with camera point location decisions, and by taking all initial-take photographs for 18 camera points (he also acquired some early retakes as well).

Don prepared all geographic information system graphics used in this report, including figure 9 and any small-format maps included with initial-take camera point forms in appendix 1.

CONTENTS

INTRODUCTION

Tower Fire was first reported at 5:55 PM on Tuesday, August 13, 1996. It and numerous other fire starts resulted from a lightning storm passing over the Blue Mountains during most of the day. At first, Tower Fire was difficult to find, and it was unmanned until the morning of the 15th, when smokejumpers were flown to the area.

By late that afternoon, the fire incident log included the following statements: "blowing up, abandon the area, go out, travel to the road, get helicopter to get them" [the smokejumpers]. On August 16th, the fire was reported as moving northeast and 80 acres in size; the Tower Mountain fire lookout was evacuated at 3:30 that afternoon (Rother 1996).

Tower Fire progressed somewhat normally until late afternoon on August 25th, when extreme fire behavior began and continued throughout the night. The fire increased approximately 20,000 acres in size in a 24-hour period ending at 5:00 PM on August 26th. This major blow-up phase was associated with a combination of weather factors particularly conducive to extreme burning conditions: strong northeast winds, high temperatures, and low humidity (Rother 1996).

By the time the Tower wildfire was controlled in mid-September, slightly more than 50,800 acres had burned.

Tower Fire was a very unusual disturbance event for the Umatilla National Forest (NF). Although significant fire years occurred in 1960, 1986, and 1987, no recent wildfire had the magnitude and impact of Tower Fire (i.e., no wildfire in previous 35 years had similar impact as Tower, a time period spanning collective memory of Forest employees at that time). It is no exaggeration to state that Tower Fire affected the 'psyche' of Forest and District employees in profound ways. Here are some reasons for strong employee reaction to Tower Fire:

1. A Forest Plan was approved 6 years earlier (USDA Forest Service 1990). When the Plan was approved, employees then assumed that: (a) high levels of vegetation management activity would occur; (b) management activity would target forest areas with high stand density and thereby reduce future fire risk; and (c) fire risk reductions would result in large wildfires being uncommon in the future. Between 1990 and 1996, this assumption seemed to hold true because no particularly large or atypical forest fires occurred.

   Note: Although Umatilla NF's Forest Plan was above-average for its era (my purely subjective opinion after helping prepare a Forest Plan for the Pike & San Isabel NFs in 1983, and after working on Malheur NF's Plan in late 1980s), the Plan's fundamental assumptions were based largely on science produced from early 1970s to middle 1980s. During this era, much fire science was based on stand-scale considerations, inevitably leading to a presumption that stand-level silvicultural treatments would effectively address stand-level fire susceptibility. After very large fires began to occur (including Yellowstone fires in 1988 and Silver Fire in southwest Oregon in 1989), fire science began shifting its focus to broad-scale considerations by examining atmosphere-ocean interactions. Much broad-scale work emphasized the influence of El Niño Southern Oscillation and Pacific Decadal Oscillation climate phenomena on regional fire patterns (a Moist Forest white paper, WP-Silv-7, describes how these atmosphere-ocean interactions affect regional fire patterns in more detail).

2. Tower Fire began in a roadless area, but it eventually spread into previously managed portions of Umatilla NF, including areas in Oriental Creek and Texas Bar Creek watersheds where extensive timber harvests had occurred (including post-harvest activities financed with Knutson-Vandenberg funds to reduce woody debris (slash) and establish vigorous plantations of seedling- and sapling-size trees). Employees were disheartened to observe stand-replacing fire effects in areas where stand density had been reduced significantly by silvicultural treatments, and where post-harvest slash fuels had been largely mitigated. Even areas where regeneration cutting methods had been used (clearcutting, seed-tree cutting, shelterwood cutting) were often devoid of live-tree cover following Tower Fire. Employee reaction reflected this reasoning: stand-replacing fire effects were expected for Wilderness and roadless fires because stands in these areas tended to be overstocked and often contained abundant amounts of surface, ladder, and canopy fuels, but stand-replacing fire was not expected for managed portions of the landscape where silvicultural treatments (and timber sales) had theoretically mitigated most fuel loading and fire risk issues.

My goal for this white paper about 1996 Tower Fire is to address five objectives:

- Provide background and history information about Tower Fire, much of which is taken from an "ecosystem analysis" effort completed in 1997[2].
- Provide a coarse characterization of prefire vegetation conditions, largely as a way to better understand postfire effects and put them in a meaningful context.
- Describe concepts and principles associated with camera points, a long-established system with high applicability for monitoring changes and trends following wildfire, insect defoliation, and other broad-scale disturbance processes.
- Describe location and characteristics for 18 camera points installed immediately after Tower Fire was controlled, or within 18 months of its conclusion.
  My hope is that by using this white paper to document Tower Fire camera point locations, I might facilitate their future utilization for long-term monitoring (assuming that information in this document will still be accessible in the future).
- Demonstrate the value of camera points as a methodology for monitoring and documenting postfire recovery.

PREFIRE FOREST COVER TYPES

One possible method for putting Tower Fire, and its associated fire behavior and effects, into a meaningful context is to examine and interpret prefire conditions, particularly vegetation composition (forest cover types). But prefire composition is only part of the story because characteristics of a forest cover type, such as ponderosa pine forest, can vary depending on the ecological setting in which it occurs. [Next section, Ecological Settings, provides additional information about this concept.]

[2] Unfortunately, an ecosystem analysis report for Tower Fire is not present on the Forest's website: http://www.fs.usda.gov/detail/umatilla/landmanagement/planning/?cid=fsbdev7_016111
However, a forest vegetation report for the ecosystem analysis, and a Tower Fire Forest Vegetation Burned Area Emergency Rehabilitation report, are both included on the web site.

Prefire vegetation composition in Tower Fire area was very diverse, largely in response to a relatively steep elevational gradient, ranging from 3,000 feet near North Fork of the John Day River at southwestern corner of the fire perimeter to 6,850 feet at Tower Mountain fire lookout on extreme eastern edge of Tower Fire area.

For purposes of this white paper, predominant forest cover types in the fire area were combined into four generalized vegetation zones – lower montane, upper montane, lower subalpine, and upper subalpine. Broad-scale zones were used to depict prefire vegetation composition, rather than using a map displaying individual vegetation polygons and their associated forest cover types, for two reasons:

1. I believe broad-scale zones most appropriately reflect fire behavior, and postfire vegetation response and recovery, for this landscape-scale, 'megafire' event.
2. Vegetation zonation is a way to characterize typical, or modal, vegetation conditions for a climatic and biophysical setting. For this reason, they are closely related to ecological setting, potential vegetation, and biophysical environment concepts – see table 2 and fig. 3 later in this report. Ecological setting provides a useful context for understanding fire behavior and effects, and variability in prefire vegetation composition and its influence on postfire vegetation response.

Selected characteristics of vegetation zones are provided in table 1. A coarse vegetation map (fig. 1) shows geographical distribution of vegetation zones.

Table 1: Characterization of vegetation zones for Tower Fire area.

VEGETATION ZONES	PREDOMINANT COVER TYPES	ECOLOGICAL SETTINGS	PERCENT OF FIRE AREA
Lower montane	PP, DF	PP, WD	23%
Upper montane	GF, Mixed, WL, WP	WD, CM	44%
Lower subalpine	LP	CM, LP, CD	27%
Upper subalpine	AF, ES	CD	6%

Sources/Notes: Taken from Powell (1997). Vegetation zones are described in figure 2 (but in figure 2, the subalpine zone is not separated into lower and upper portions). Predominant cover type codes are: PP: ponderosa pine; DF: Douglas-fir; GF: grand fir; Mixed: mixed species; WL: western larch; WP: western white pine; LP: lodgepole pine; AF: subalpine fir; ES: Engelmann spruce. Ecological settings are described in table 2 and figure 3. 'Percent of fire area' values were derived from figure 1.

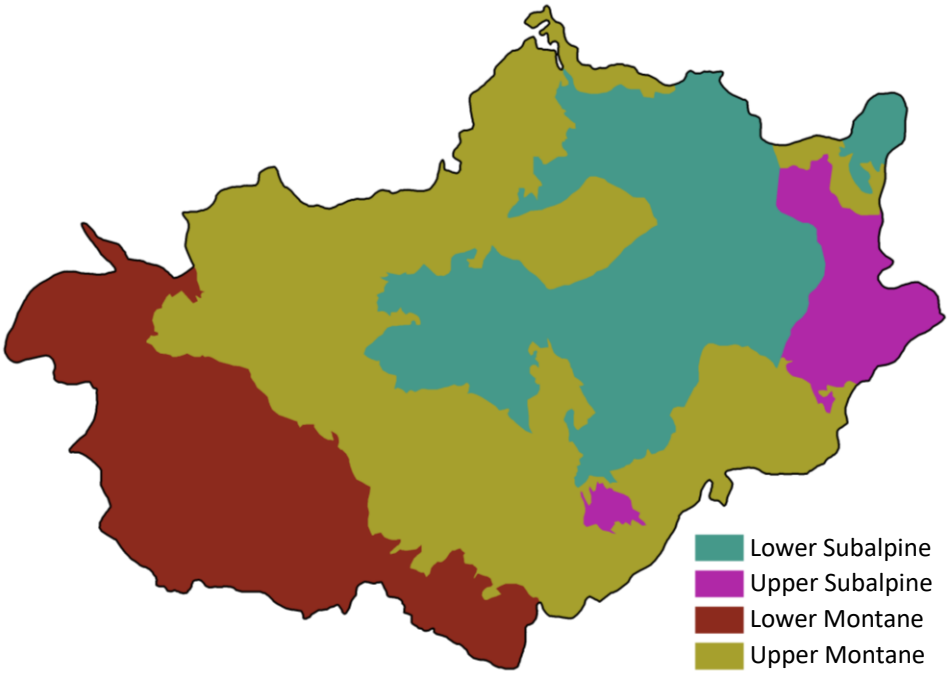

Figure 1 – Vegetation zones of Tower Fire area (Powell 1997). Table 1 provides information about the tree species composition typically associated with the four zones shown here. Figure 2 provides a diagram showing conceptual elevational relationships between the vegetation zones, and it also describes them in some detail.

Note that figure 2 does not split a subalpine zone into upper and lower portions, as is done here – a subalpine zone is described as one unit in figure 2. Note also that figure 2 includes some vegetation zones that do not occur in Tower Fire area, or at least they don't occur to any significant extent – the plains, foothills, and alpine zones.

This map (fig. 1) portrays geographical distribution of generalized vegetation zones prior to Tower Fire in 1996. Prefire forest cover types at a stand scale were used to help determine location and extent of vegetation zones depicted here. But because this vegetation-zone concept relates closely to potential vegetation – an enduring quality of forest sites, I expect postfire vegetation development to exhibit characteristics consistent with generalized zones shown here.

This figure is a coarse-level map (e.g., 'generalized') because small inclusions of one zone occurring within another were ignored. The map is not intended to depict absolute acreage and location of pre-fire vegetation zones; rather, it was designed to show the relative abundance, juxtaposition, and geographical distribution of four vegetation zones within Tower Fire.

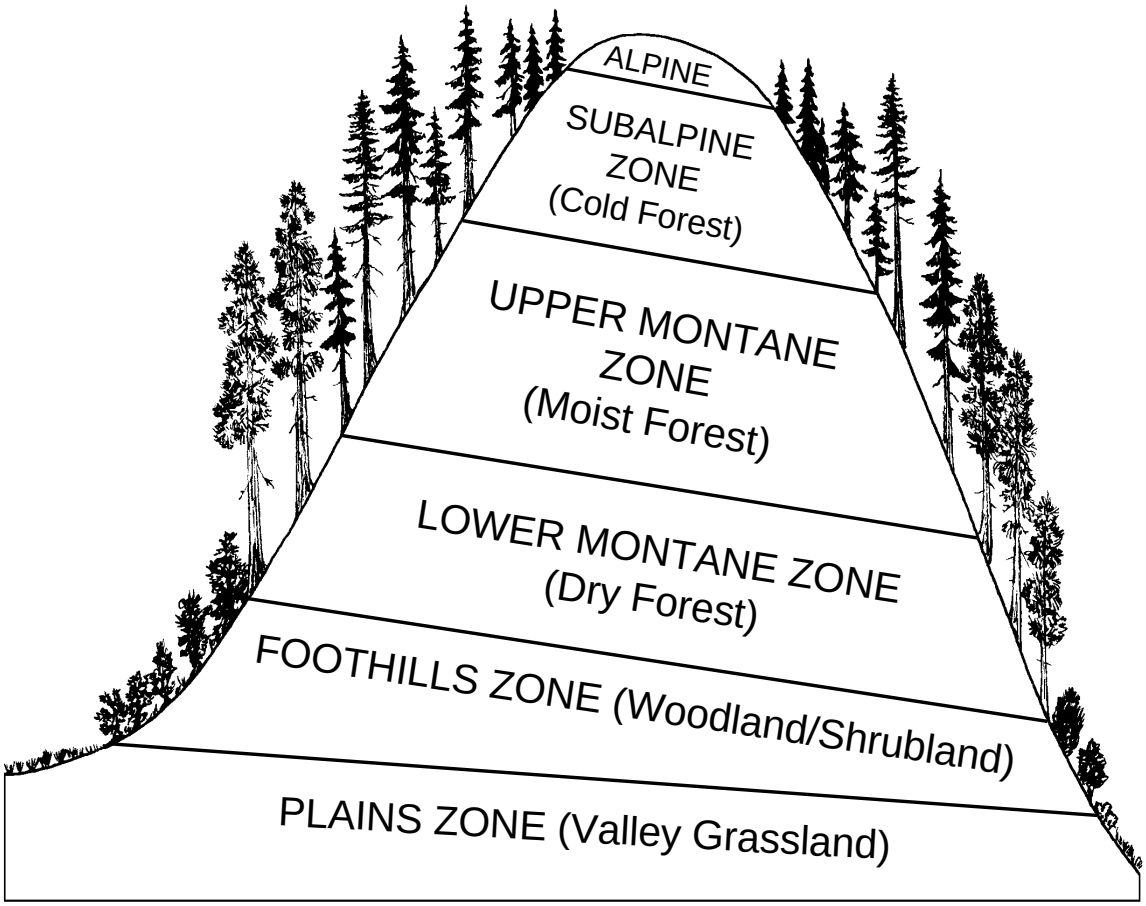

Figure 2 – Vegetation zones of the central Blue Mountains (Powell 1997). Vegetation tends to occur in zones as one moves up or down in elevation. In the Northern Hemisphere, a south-facing slope receives more insolation (incoming solar radiation) than a flat surface, and a north-facing slope receives less (south slope is to the left and north slope is to the right). Thus, the same temperature conditions found on a plateau or bench may occur at a higher elevation on an adjacent south-facing slope, and at a lower one on a north slope. Because of this, a vegetation zone will be found above its ordinary elevational range on south slopes and below it on north slopes (Bailey 1996). An end result is shown above: vegetation zones arranged vertically in response to elevation (moisture), and slanting downward from south to north in response to aspect (temperature).

Note that effects described here can be modified locally by direction of moisture-bearing winds, by variations in fog or cloud cover, and by latitude, particularly since a marine (maritime) influence gradually deteriorates from north to south in the Blues (Caraher et al. 1992).

Plains zone occurs at low elevations; it contains grasslands and shrublands because moisture is too low to support forests except along waterways. Foothills zone may be dominated by western juniper, although shrublands occupy this zone in northern Blues where a marine climate prevails.

Located above a foothills zone is lower montane zone, which contains warm, dry forests of ponderosa pine and Douglas-fir. Low elevations within a lower montane zone are usually too dry to support grand fir forests except in riparian zones. High elevations within a lower montane zone, especially as it begins to transition to an upper montane zone, often include grand fir in the composition of upland-forest stands. An upper montane zone is widespread in the Blue Mountains. It includes cool, moist forests of Douglas-fir, grand fir, western larch, lodgepole pine and, occasionally, western white pine.

Cold sites at high elevations support a subalpine zone with forests of lodgepole pine, Engelmann spruce, and subalpine fir, or a treeless alpine zone near mountain summits. An alpine zone is uncommon in the relatively low-elevation Blue Mountains.

ECOLOGICAL SETTINGS

For Tower Fire, ecological settings are characterized by using potential vegetation, which is defined as a community of plants that would become established under existing environmental conditions *and in the absence of disturbance* (Powell et al. 2007).

Since disturbance is pervasive in the interior Pacific Northwest, it may seem unrealistic to use a classification system (potential vegetation) based on an absence of disturbance. But since disturbance is inherently variable, and because it would be difficult to include an inherently variable range of disturbance effects in a classification system, potential vegetation represents a good compromise – it characterizes 'climax' (end-point) vegetation resulting from existing climatic and environmental conditions, while ignoring variable disturbance effects.

Note that variation between successional and climax types involves an important difference in their vegetation dynamics: successional types are dynamic in terms of their total character – they change from one distinct community to another (from a lodgepole pine stand to a grand fir stand), whereas total character of climax communities changes little from one century to the next (if undisturbed, a climax spruce-fir stand will stay spruce-fir for a long period, although relative proportions of spruce and fir will fluctuate across a long timeframe).

Vegetation dynamics affecting climax stands fluctuate within a range of variation (RV) that remains relatively constant – a range remains constant, but any state within a range does not remain constant. RV for successional types differ from those for climax types, even though the trajectory of plant succession is relentlessly trending in one direction (herbaceous community ➔ lodgepole pine community ➔ grand fir community, for example). A successional type often has an RV that differs by climax type – herbaceous community RV, for example, will not have the same range for climax grand fir sites as it does for climax subalpine fir sites.

For two examples given above, potential vegetation type (PVT) for the climax stand is spruce-fir (co-dominance by Engelmann spruce and subalpine fir), but PVT for the successional example is grand fir – transitory, successional stages dominated by herbs (1st stage) and then by lodgepole pine (2nd stage) are ignored when determining a PVT for the grand-fir sere.

This classification system allows potential plant composition of varying environmental settings to be compared from one area to another. And, it also functions as a 'calibration' factor: by subtracting variable effects of disturbance (e.g., succession), potential vegetation provides a consistent basis for estimating ecological site potential. Research shows that sites with similar ecological potential share similar characteristics, including inherent productivity.

Potential vegetation types sharing a similar temperature and moisture regime (such as warm temperature and dry moisture conditions) can be assigned to the same ecological setting – 'warm dry forest,' for example (table 2 and fig. 3).

An ecological setting provides useful context for a forest cover type – ponderosa pine forest growing on a warm dry setting functions differently than ponderosa pine forest growing on a cool moist setting. And, disturbance processes affecting ponderosa pine forest (fire, insects, disease, etc.) also change from one setting to another – new processes may appear, or the same process (wildfire, for example) may function differently between settings.

Table 2: Forest plant associations and ecological settings of Tower Fire area.

PLANT ASSOCIATION	PLANT ASSOCIATION NAME	ECOCLASS CODE
Cold Dry Forest *Ecological Setting* (7% of Tower Fire Area)		
ABGR/VASC	grand fir/grouse huckleberry	CWS811
ABGR/VASC-LIBO2	grand fir/grouse huckleberry-twinflower	CWS812
ABLA2/VASC	subalpine fir/grouse huckleberry	CES411
Cool Moist Forest *Ecological Setting* (21% of Tower Fire Area)		
ABGR/CLUN	grand fir/queencup beadlily	CWF421
ABGR/LIBO2	grand fir/twinflower	CWF311, CWF312
ABGR/VAME	grand fir/big huckleberry	CWS211, CWS212
ABLA2/LIBO2	subalpine fir/twinflower	CES414
ABLA2/VAME	subalpine fir/big huckleberry	CES311, CES315
Warm Dry Forest *Ecological Setting* (33% of Tower Fire Area)		
ABGR/CAGE	grand fir/elk sedge	CWG111
ABGR/CARU	grand fir/pinegrass	CWG112, CWG113
PSME/CAGE	Douglas-fir/elk sedge	CDG111
PSME/CARU	Douglas-fir/pinegrass	CDG112, CDG121
PSME/HODI	Douglas-fir/creambush oceanspray	CDS611
PSME/PHMA	Douglas-fir/mallow ninebark	CDS711
PSME/SYAL	Douglas-fir/common snowberry	CDS622, CDS624
PSME/VAME	Douglas-fir/big huckleberry	CDS821
Ponderosa Pine *Ecological Setting* (14% of Tower Fire Area)		
PIPO/AGSP	ponderosa pine/bluebunch wheatgrass	CPG111
PIPO/CAGE	ponderosa pine/elk sedge	CPG222
PIPO/CARU	ponderosa pine/pinegrass	CPG221
PIPO/ELGL	ponderosa pine/blue wildrye	CPM111
PIPO/FEID	ponderosa pine/Idaho fescue	CPG112
PIPO/SYAL	ponderosa pine/common snowberry	CPS522
Lodgepole Pine *Ecological Setting* (18% of Tower Fire Area)		
PICO(ABGR)/ARNE*	lodgepole pine/pinemat manzanita	CLS5
PICO(ABGR)/CARU*	lodgepole pine/pinegrass	CLG2
PICO(ABGR)/VAME*	lodgepole pine/big huckleberry	CLS511
PICO(ABLA2)/VASC*	lodgepole pine/grouse huckleberry	CLS411
PICO/CARU/VASC*	lodgepole pine/pinegrass/grouse huckleberry	CLG211

***** These are successional (seral) plant community types rather than plant associations.

Sources/Notes: Taken from Powell (1997). Includes plant associations and plant community types recorded on stand examinations and current vegetation survey (CVS) plots for Tower Fire area.

Ecoclass codes are used to record plant associations on field forms and in databases. They are described in Hall (1998).

Percentage values shown for these ecological settings do not sum to 100% because this table does not include nonforest (meadow and scabland) and riparian settings depicted in figure 3.

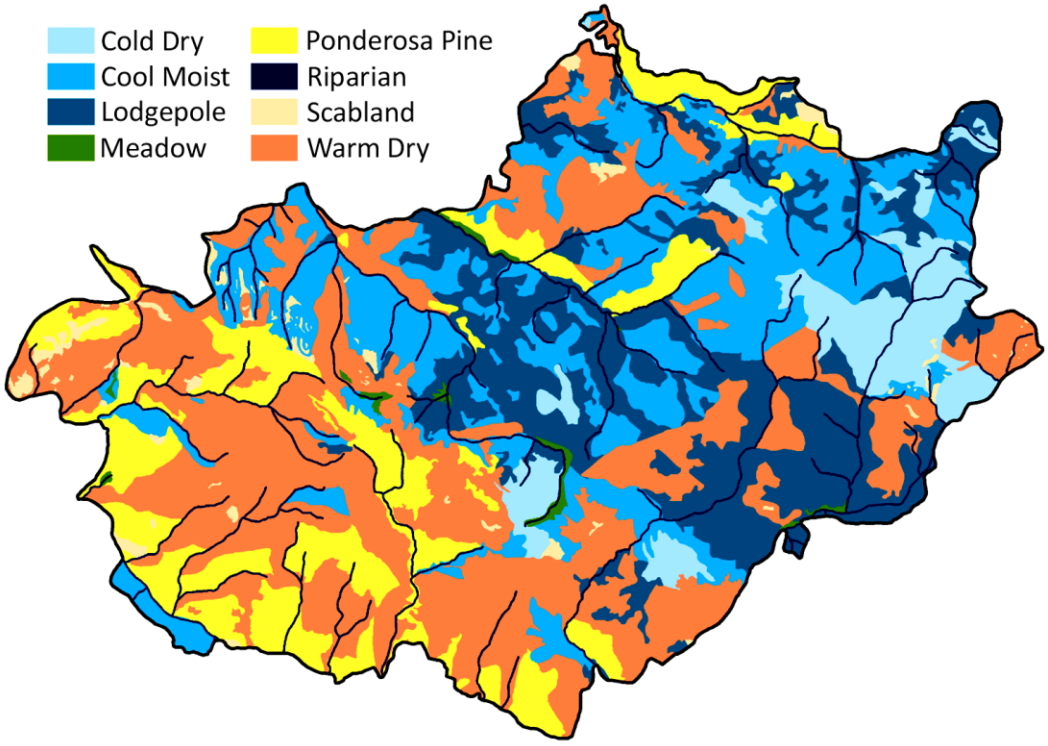

Figure 3 – Potential vegetation (PV) of Tower Fire area (from Powell 1997). This map shows a geographical distribution for eight ecological settings found in Tower Fire area (it was prepared by Karl Urban, Forest Botanist for Umatilla National Forest). Table 2 describes potential vegetation composition for each forest setting (e.g., it shows the plant associations and plant community types associated with each setting).

Ecological settings, as used in this white paper, are referred to as biophysical environments in other documents. 'Biophysical environment' can be an apt term because characteristics of an ecological setting are controlled largely by biophysical (abiotic) factors such as elevation, slope direction (aspect), geological substrate, and soil texture and drainage. When these factors change from one location to another, the biophysical template of floristic environments has also changed – hence a different ecological setting (or biophysical environment) is present.

Five forest ecological settings are defined for Tower Fire (table 2 and fig. 3). Three settings are similar to plant association groups (of the same name) described in Powell et al. (2007). Plant association group, one level in a hierarchical system of potential vegetation (Powell et al. 2007), is named for a dominant temperature-moisture influence, such as warm dry upland shrubland or cool moist upland forest. Two other settings established for Tower Fire (ponderosa pine and lodgepole pine upland forest) are analogous to plant association groups, but they were not named for temperature-moisture regimes.

Ecological settings help us understand Tower Fire because they are strongly related to fire regime, and fire regime helps us interpret whether fire behavior and fire effects exhibited by Tower Fire are typical or atypical (e.g., characteristic or uncharacteristic). Table 3, presented and discussed on page 18, relates ecological settings to fire regimes – *it describes whether existing amounts of postfire tree mortality are similar to, or deviate from, amounts we would expect by fire regime* (Was postfire tree mortality characteristic or uncharacteristic?).

CROWN FIRE BEHAVIOR

Much of Tower Fire area provides a good example of crown fire effects. A crown fire is one that spreads through the forest canopy. Crowning is one of the most spectacular fire behavior phenomena that wildland fires exhibit. Crown fires are fast spreading and release a tremendous amount of heat energy in a relatively short period of time. Spread rates exceeding 7 miles per hour and flame lengths over 150 feet have been recorded (Pyne et al. 1996).

A running crown fire may spread for several hours, burning out entire drainages and crossing mountain ridges that would normally serve as topographic barriers. Fully developed crown fires are of two types: wind-driven, or convection (convection crown fires are also referred to as plume-dominated fires). Tower Fire was an instance in which a strong convection column (a plume) built vertically above the fire, particularly during a major blow-up event of August 25-26, 1996, when about 40% of the fire's acreage burned in a single 24-hour burn period.

Velocity of air rushing upward in a convection crown fire causes air near the ground to be sucked into a column, promoting rapid fuel combustion. Resulting in-drafts increase fire intensity and accelerate fire spread. This process results in a towering smoke column, along with exceptionally fast spread rates for prevailing winds – a fire expands at a speed much greater than would be expected from ambient wind conditions (Pyne et al. 1996).

It is also believed that Tower Fire exhibited a dangerous condition called a downburst or microburst, where winds blow outward near the ground as a convection column collapses. These winds can be very strong and greatly accelerate fire spread rates. Much of a 20,000-acre increase in fire size experienced on August 25-26 was related to fire runs associated with local, down-drafting (and horizontal) winds from collapsing convection columns (Diaz and Swetnam 2013, Potter 2011). Downburst conditions are initiated by evaporative cooling of adjacent air, causing it to descend rapidly and spread horizontally at the ground surface (Pyne et al. 1996).

A convection crown fire is one of the most intense disturbance events that wildland forests ever experience. They cause enduring changes to stand structure, species composition, and other ecosystem components. Occasionally, even the forest floor is consumed by a very intense fire, which can then affect nutrient cycling (Tiedemann and Klock 1973), soil wettability (Dyrness 1976), and other ecological processes influencing site productivity and postfire recovery.

What were results of a convection crown fire in Tower Fire area? Figure 4 shows that 45% of forests in Tower Fire experienced what was obviously complete, or near-complete, mortality (high severity in fig. 4). Remainder of the area (55%) sustained what was believed to be partial mortality – seldom was every tree killed (initially) in partial-mortality stands (low/moderate severity in fig. 4). Figure 4 also provides a geographical distribution for both stand mortality categories in Tower Fire area. Figures 5 (low/moderate severity) and 6 (high mortality) provide examples for each stand mortality category.

Longer term monitoring, however, including camera point comparisons presented in this white paper, suggest that initial expectations for reasonable levels of postfire tree survival in low or moderate severity areas (fig. 5) were largely unrealized – many more trees in low/moderate severity areas eventually died from fire-caused damage than was anticipated.

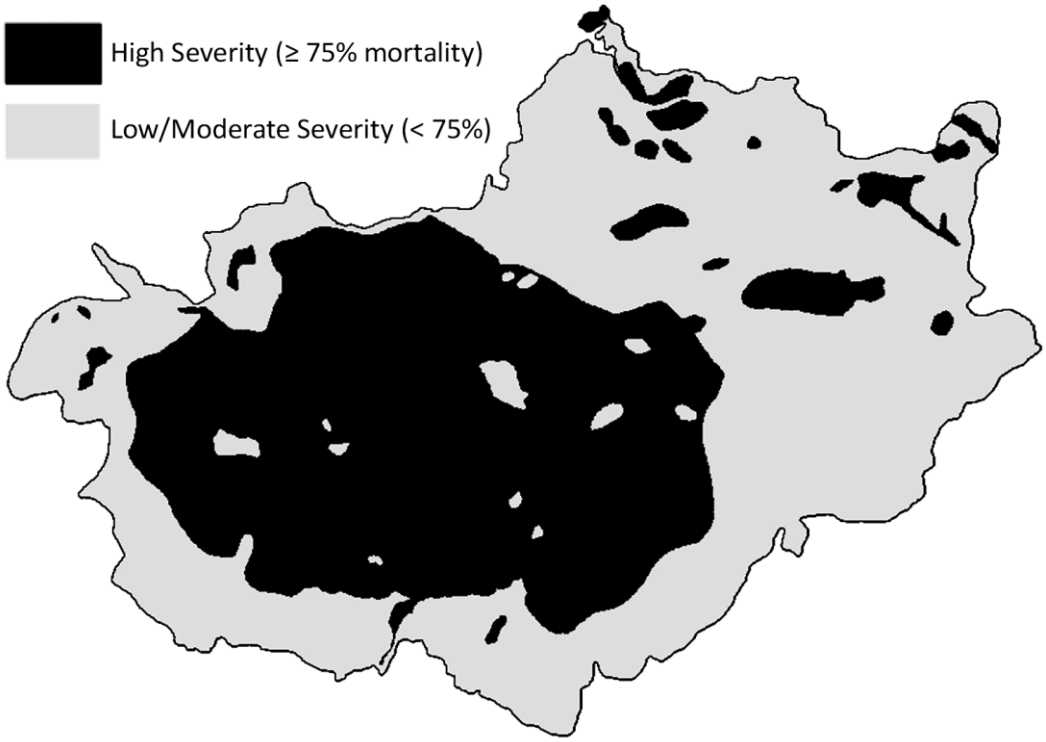

Figure 4 – Predicted levels of fire-caused tree mortality for Tower Fire (Powell 1997). A convection crown fire resulted in stands with complete, or near-complete, tree mortality in Tower Fire. Areas where low/moderate severity are mapped were **predicted** to sustain less than full levels of tree mortality – theoretically, some trees survived in these areas. Large areas of predicted high severity (complete overstory mortality) in western half of Tower Fire resulted from 'blow up' wildfire conditions occurring from late afternoon of August 25th to about 5 PM on August 26th, 1996. Tower fire burned approximately 20,000 acres during this 24-hour blow-up period.

Why did low/moderate severity mapping depicted in figure 4 turn out to be overly optimistic? Many factors are likely involved, including prefire circumstances (such as high stand density levels putting trees under chronic stress) and postfire conditions. For example, I believe that a relatively strong drought episode in late 1990s, within a few years of Tower Fire, contributed to fewer trees recovering from fire-caused damage than was initially expected.

But, an important reason that mapping in figure 4 could be inaccurate involves differences in mapping concepts. Mapping compiled during a Burned Area Emergency Rehabilitation (BAER) process is produced by using Burned Area Reflectance Classification (BARC) procedures. BARC mapping utilizes satellite imagery, and it embodies fire effects on soil, not on vegetation (Safford et al. 2008). BARC maps depict a postfire characteristic referred to as *burn severity*.

Conversely, *fire intensity* relates to energy released by a fire front (quantified as btu/feet/second and estimated qualitatively as flame length). *Fire severity* refers to fire effects on vegetation, particularly when expressed as tree mortality. Fire intensity featuring a 2-foot flame length would typically cause nonlethal tree mortality (low severity) in forests of thick-barked ponderosa pines or western larches; the same 2-foot flame length causes lethal tree mortality (high severity) in stands of thin-barked firs and lodgepole pines. This means that burn severity, fire intensity, and fire severity are not synonymous terms and should not be used interchangeably.

Figure 5 – Example of low/moderate tree mortality area (Powell 1997). Fifty-five percent of Tower Fire area had mapped fire severity suggesting that some proportion of prefire trees survived. This view, taken in North Fork John Day Wilderness Area near upper Winom Creek (north of 52 road), shows a mosaic burn pattern in which wildfire crept around and caused intermittent forest-floor consumption.

Center of this image shows small lodgepole pine seedlings (about one-foot tall) that are apparently undamaged. If these seedlings survive, then small fire-escape areas like this one can provide a valuable ecosystem service by helping to reestablish a future forest.

[But the scenario described here involves lodgepole pine, so if serotinous seed was dispersed from dead overstory pines, then a concern about prefire seedling survival is largely moot – a dense lodgepole pine stand will develop anyway. If prefire seedlings in center of this view had been western larch or something other than lodgepole pine, and if they survived, then they might have functioned as an especially valuable seed source for future tree species diversity.]

We fully expected that partial-mortality areas with a high proportion of thin-barked species, such as lodgepole pine, would experience significant mortality because a small amount of bole scorch is almost always lethal for these species. But for Tower Fire, tree species with moderate to high bark thickness also sustained surprisingly high levels of mortality in areas mapped with low to moderate predicted fire severity.

Fire effects are often characterized as primary (direct, fire-caused damage to crown, bole, and root tissues) and secondary (damage from indirect, postfire stressors such as bark beetles, root disease, etc.). In some instances, postfire mortality for thicker-barked species was attributable to secondary agents such as bark beetles (particularly Douglas-fir beetle), an expected outcome. However, a surprising number of thicker-barked species died with no obvious evidence of attack from a secondary agent such as bark beetles or root disease.

Perhaps this outcome – mature, thick-barked species dying from no obvious cause – reflects high levels of predisposing stress caused by overstocking or similar factors, or possibly high levels of postfire stress caused by drought occurring relatively soon after the fire.

Figure 6 – Examples of high tree mortality areas (high fire severity) (Powell 1997). Forty-five percent of Tower Fire area was burned severely enough to kill all, or nearly all, of the trees. These views show examples of dead stands (left, near lower Winom Creek south of the 52 road) and forest floor conditions (right) in areas sustaining complete tree mortality. Research shows that high amounts of 'white ash' on a soil surface, as shown in both photographs, is a good indicator of complete (overly intense) combustion of surface fuels. Note that white-ash levels can also function as a physical indicator of fire severity for BAER and other postfire assessments (Hudak et al. 2013).

FIRE ECOLOGY

Forests in northern third of Tower Fire primarily consisted of dense, almost impenetrable stands of lodgepole pine. In predominantly pure lodgepole pine forests, crown fire tends to be a typical disturbance process for these ecosystems. One sign that lodgepole evolved with crown fires is its serotinous cone habit – instead of cones opening when mature, releasing their seed, and then falling off the tree (as occurs for non-serotinous conifers) – many lodgepole cones remain tightly closed in the tree canopy, for decades in some cases, waiting for another fire to come along and melt resinous bonds sealing their cone scales (Bates 1917, Clements 1910).

Since lodgepole pine is a prolific seed producer and produces cone crops more frequently than many other pines (Mason 1915, Trappe and Harris 1958), an end result of this serotinous fire adaptation is that a million or more seeds, per acre, can be dispersed after heat from a fire melts resin bonds sealing cone scales and allows them to open. After a crown fire affects a lodgepole pine forest, burned forest floor is carpeted with pine seeds and, before long, the seeds germinate and a dense new forest of lodgepole pine seedlings gets established.

Serotiny varies across the western range of lodgepole pine – populations at northern latitudes tend to have more serotiny than populations at southern latitudes. Blue Mountain populations occur at a latitude where the proportion of serotinous and non-serotinous cones in any lodgepole pine stand are just about even (Powell 2000: fig. 2). But regardless of serotiny, lodgepole pine produces good seed crops almost every year (Trappe and Harris 1958), and lodgepole pine produces cones and seed (20,000 to 50,000 seed per tree) at young ages (fig. 7).

But in southern portion of Tower Fire, a different fire regime is present. Rather than a crown fire regime resulting in lodgepole pine forests whose serotinous cones stockpile many thousands of viable seeds per acre over long periods, dry mixed-conifer forests found in Texas Bar Creek and Oriental Creek portions of Tower Fire support tree species whose cones typically release their seeds promptly after reaching maturity.

Figure 7 – Lodgepole pine sapling with abundant male and female cones. This tree is about 10 years old (it regenerated after Tower Fire), and yet it is already producing cones and seed. Lodgepole pine is well-known for a life-history trait called serotiny, allowing it to produce tightly-sealed cones held on a tree for many years (even decades) – seeds are released after a fire melts resin bonds sealing cone scales. But another lodgepole pine life-history trait is especially helpful for allowing this species to deal with reburns (subsequent fire occurring relatively soon after an initial fire) – lodgepole pine produces cones and seed at a young age, so a reburn occurring quickly after an initial fire won't wipe out a local population.

For dry-forest ecosystems, a non-serotiny fire regime is reasonable because fire was a frequent and relatively low-severity process on these sites. Although fire may have consumed tree seeds, depending on when they were dispersed in relation to burn seasonality, fires were not severe enough to destroy the seed source – overstory trees themselves – so replacement seeds were generally produced somewhat soon after a burn.

But when crown fire rips through a dry mixed-conifer forest, as occurred in southern two-thirds of Tower Fire, trees and seeds are both killed, leaving few alternatives for natural tree regeneration. Historically, crown fire was uncommon in dry mixed-conifer forest of Blue Mountains (Agee 1993, 1996), although crown fire did occasionally occur at multi-century temporal scales, especially in conjunction with drought cycles (Heyerdahl 1997, Pierce et al. 2004).

This summary describes how moist mixed-conifer and cold lodgepole pine forests have similar fire ecology in that a physical deterioration over time eventually induces high flammability. Most often, physical deterioration is caused by defoliating insects (western spruce budworm or Douglas-fir tussock moth), bark beetles (mountain pine beetle), root diseases, and other insect or disease organisms attracted to dense, overstocked stand conditions. Once highly flammable conditions exist, a stand-replacement fire often occurs (Habeck and Mutch 1973).

Table 3 summarizes burned area by ecological setting and stand mortality. It shows that:

- Ponderosa pine and warm dry ecological settings had a higher percentage of complete (stand-replacing) mortality than would have been expected from an historical fire regime.
- Cold dry and lodgepole pine settings had a lower percentage of complete (stand-replacing) mortality than would have been expected historically.
- Cool moist ecological setting had a balanced mix of partial and complete mortality, similar to what would have been expected historically for this biophysical environment.

Table 3: Burn summary by ecological setting and stand mortality category.

	ACRES (PERCENT) BY STAND MORTALITY CATEGORY				
Ecological Setting	**Partial Mortality**	**Expected**	**Complete Mortality**	**Expected**	**Total**
Cold dry	2,315 (69%)	20%	1,036 (31%)	80%	3,351
Lodgepole pine	5,409 (58%)	20%	3,977 (42%)	80%	9,386
Cool moist	5,464 (50%)	40%	5,364 (50%)	60%	10,828
Warm dry	8,538 (50%)	80%	8,402 (50%)	20%	16,940
Ponderosa pine	4,317 (61%)	90%	2,798 (39%)	10%	7,115
Meadows	99 (41%)		143 (59%)		242
Riparian	1,212 (57%)		921 (43%)		2,133
Scabland	608 (74%)		213 (26%)		821
Total	27,962 (55%)		22,854 (45%)		50,816

Sources/Notes: Taken from Powell (1997). Based on potential vegetation and stand mortality maps (figures 3 and 4). Forest 'ecological settings' are described in table 2 and figure 3. Percentage values are percentages of a total by ecological setting. 'Expected' values are percentages that would have been expected based on historical (presettlement) fire regimes (Agee 1996).

Note: Partial and complete mortality were estimated by interpreting color infrared imagery, and from other sources (including surveys completed during a Burned Area Emergency Rehabilitation process). Subsequent experience, and camera-point monitoring documented in this white paper, show that partial mortality estimates were optimistic because many more trees died in those areas than was predicted.

CAMERA POINTS AS A MONITORING TOOL

From its earliest days, United States Forest Service has relied on photographic documentation for telling its story in support of progressive resource management and protection on the national forests (Pinchot 1987).

Gifford Pinchot, the first Chief of the U.S. Forest Service, was also the first American forester to use photography to help describe effects of land management practices. He saw photography as a valuable public educational tool, an instrument to help evaluate changes in American landscapes, and an aid to managers in documenting their activities for research and administrative purposes (Bergoffen 1976).

Photographs produced by Pinchot, along with those made by subsequent chiefs such as Richard McArdle and Edward Cliff, are included in Forest Service's permanent image collection. More than one-half million Forest Service photographs make up this collection.[3]

While valuable historically, older photographs also document forestland and rangeland changes occurring with time. Old photographs tell this story far more effectively than words can. For example, Forest Service's extensive photograph collection has provided an invaluable chronicle of federal forestry in the United States (Bergoffen 1976, Fedkiw 1999).

Of particular value are a planned series of photographs on national forests and grasslands, designed to be made at prescribed intervals and from designated places, in the same direction, and with the same field of view. This is camera point photography – a controlled system of photographic documentation through time.

Camera points can also be used as a reproducible data collection process to provide easy and inexpensive assessments for project areas (Jain et al. 2007a, 2007b), although it is traditionally not used as much for this purpose. Fuels managers are often leaders in use of camera photography as a resource assessment tool (good examples are provided by any of the numerous stereo photo series quantifying natural or activity fuels, such as Ottmar et al. 1998).

Comparing camera photographs taken during different time periods, a process called repeat photography, has been done throughout western United States (these sources provide examples: Bergoffen 1976; Bradford et al. No date; Bright and Powell 2008; Brock and Brock 1993; Gary and Currie 1977; Gruell 1980a, 1980b, 1983, 2001; Gruell et al. 1982; Kay 2003; Klement et al. 2001; Magill 1989; Manier and Laven 2002; Rhemtulla et al. 2002; Skovlin and Thomas 1995; Skovlin et al. 2001; Smith and Arno 1999; USDA Forest Service 1992; Veblen and Lorenz 1991).

Repeat photography documents, and repeat photography photo-pairs (fig. 8), have consistently shown that wildland ecosystems of western United States experienced substantial changes in vegetation composition and structure during twentieth century (Fedkiw 1999, and other sources cited in paragraph above).

[3] USFS would not have an impressively large collection of historical photographs if it had not been emphasized by early FS chiefs. Most of a Forest Service photograph collection is now housed at National Agricultural Library (Beltsville, Maryland), an audio-visual branch of National Archives and Records Administration (College Park, Maryland), and at the Forest History Society (Durham, North Carolina).

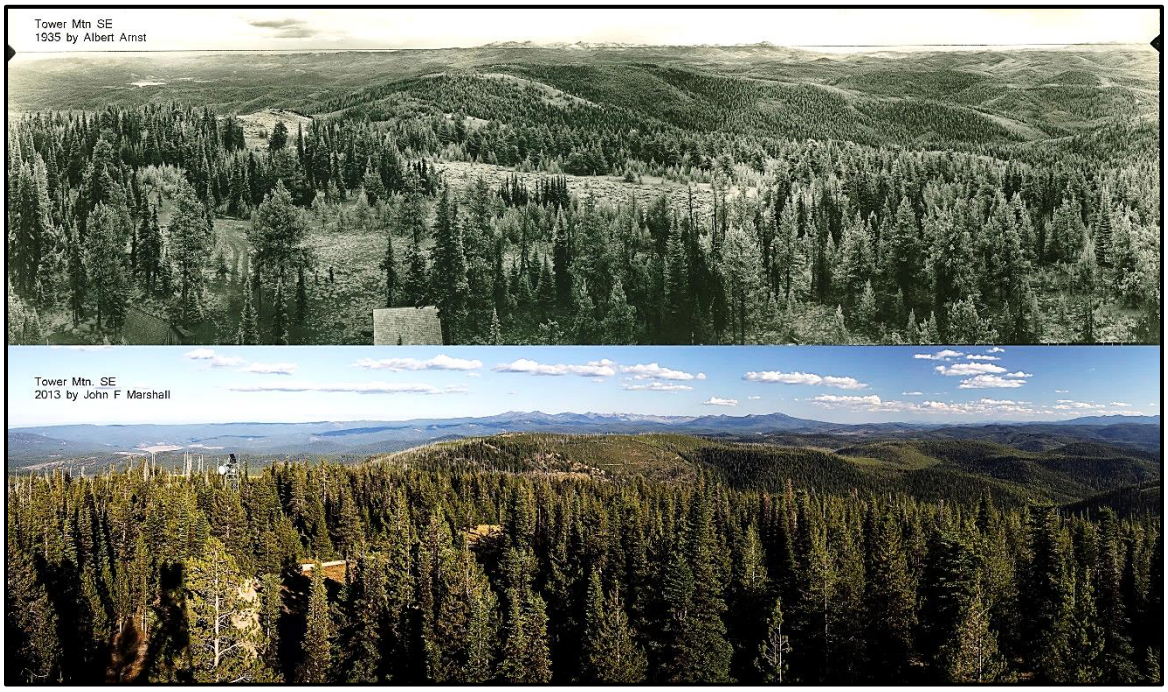

Figure 8 – Repeat photography photo-pair from Tower Mountain fire lookout location. This photo-pair was compiled by John Marshall, of John Marshall Photography, while completing contractual work for Umatilla NF. Upper photograph was acquired by Albert Arnst in 1935 while using an Osborne panoramic camera. [An Osborne photo-recording transit camera was used to acquire three panoramic strips, each spanning 120 degrees of width (one-third of a circle), so combining all three strips from a lookout location provides a full, 360-degree perspective.] John Marshall acquired lower photograph in 2013 from approximately the same location used by Arnst almost 80 years before.

Note that Tower Mountain fire lookout is located on northeast boundary of Tower Fire, and is responsible for name of Tower Fire. Tower Mountain lookout was threatened early in the fire and had to be evacuated quickly (see introduction, page 5).

In my view, today's Forest Service men and women have an obligation to carry on camera point photography. This responsibility gained renewed emphasis as a result of monitoring requirements established by National Forest Management Act of 1976 (NFMA, P.L. 94-588), and it continues to be emphasized in contemporary planning rules implementing NFMA.

Camera points already exist on most national forests and grasslands. These sites only need to be relocated and re-photographed to serve once again as a monitoring tool, while new points should be established to keep pace with contemporary resource monitoring needs. In addition to postfire monitoring, camera points have been established for many purposes, including: (1) monitor recovery after a major outbreak of western spruce budworm (1980-1992); (2) monitor aspen persistence and vigor; and (3) monitor big huckleberry vigor and condition.

It is unknown if camera points described in this white paper will have lasting monitoring value. All 18 points were established by following Pacific Northwest Region's protocol for permanent camera point systems, as documented in Powell (2008). And, all 18 points are stored in a GIS theme in a Blue Mountains national forests GIS system (typically, they were recorded on a 'permanent ecology plots' layer). Note that some cameras now include capability to record GPS coordinates when a photo is taken, which makes resulting photos even more GIS-compatible.

Since Tower Fire camera points can have long-term value as a monitoring resource, they were monumented on the ground by using aluminum camera point stakes and caps, as illustrated and described in figures 1 and 2 of Powell (2008, page 6). In addition, all reference trees were designated and marked by using bright orange camera point location posters, as illustrated and described in figure 3 of Powell (2008, page 8) and in figure 27 of this white paper (page 43).

Forms documenting camera point locations also describe the views established from each point, and the characteristics of each photograph (camera, film, f-stop, speed, focal distance, date, time, photographer's name, camera height, camera angle/orientation, etc.). These initial-take and retake forms are described in Powell (2008, exhibits 1-4, pages 19-22). Initial-take and retake forms for Tower Fire camera points are provided as appendix 1 of this white paper.

The photographs provided in this paper span more than 10 years of time. The pace of vegetation changes over this time period made it surprisingly difficult for some of the aluminum camera-point caps to be relocated when completing the 10-year retakes. For safety reasons and to minimize vandalism, the stakes and caps were installed flush to the ground surface whenever possible (rather than having some portion of the stake stick out of the ground). This approach, however, made it more difficult to relocate some caps, particularly when they were obscured with lush, postfire vegetation growth. If future retakes are desired, then perhaps a metal detector could help relocate the camera-point caps.

Note: Several retakes are available for the camera points described in this white paper. For the sake of brevity, only the initial take and the last retake are included here, since they provide the strongest visual contrast between initial postfire conditions, and postfire response after 10 or more years of recovery.

For some camera points, however, 5-year retakes are also interesting because they indicate when a change may have occurred (5-year retakes are not included in this white paper). When viewing a 10- to 12-year time span showing dramatic changes in snag numbers, for example, it would not be possible to know (from the photo-pair) if snag attrition (or accretion) occurred during the first five years, or more recently. Five-year retakes could help address such questions.

DESCRIPTION OF TOWER FIRE CAMERA POINTS

Eighteen camera points were established in Tower Fire from the fall of 1996 (immediately after Tower Fire was controlled) to the spring of 1998. Camera points are an efficient and effective tool for monitoring the response of natural resources (forests, weeds, soils, etc.) to anthropogenic and natural disturbance events, including timber sales, forest fires, and insect outbreaks (Hall 2001, 2002a, 2002b, 2005; Powell 2008).

A broad-scale map denoting location of the 18 camera points is provided as figure 9.

1. **Camera point T-96-1.** This point is located just off the 52 road and near the southeast corner of the fire. The point location itself was not burned, but it was established because it might afford a nice background perspective for the fire area depending on how the foreground trees developed (or if they were periodically thinned out, or pruned, to allow better sight lines). Two views were established from this camera point location.

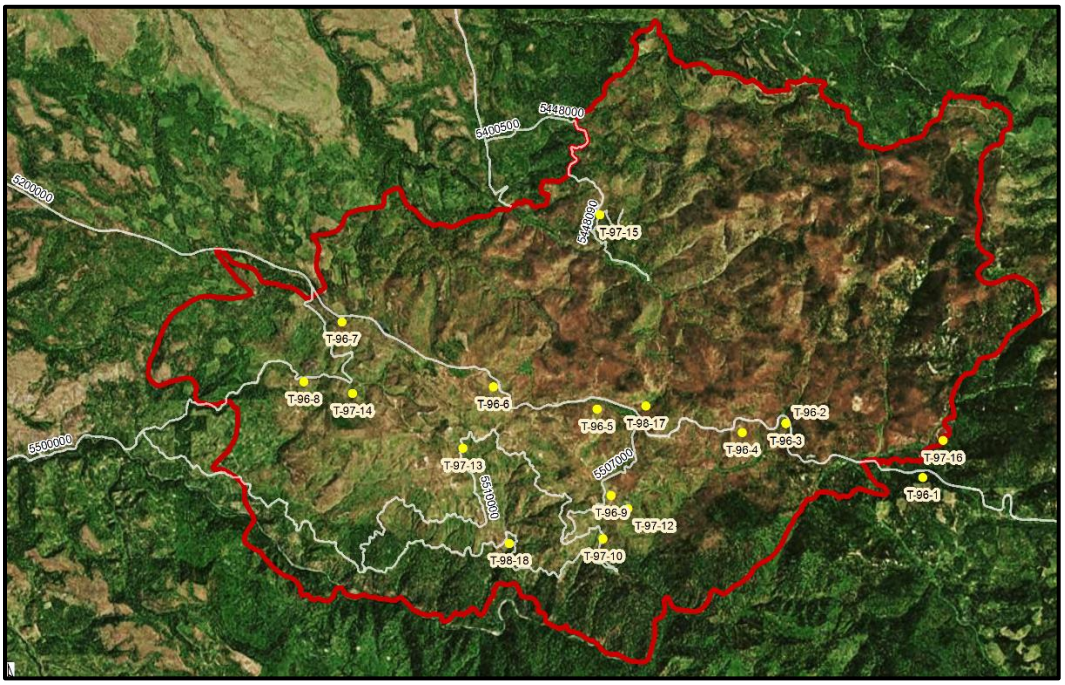

Figure 9 – Location of 18 camera points in Tower Fire (figure prepared by Don Justice). This broad-scale perspective shows the distribution of 18 camera points installed in Tower Fire shortly after it was declared controlled in the autumn of 1996. The remainder of this white paper interprets vegetation change visible from the camera points, with photo comparisons generally spanning at least 10 years.

2. **Camera point T-96-2.** This point is located on the north edge (shoulder) of the 52 road where Winom Creek passes beneath the road. The primary focus of this point is to monitor post-fire response of a lodgepole pine-western larch forest located just beyond a moist meadow largely unaffected by the fire. Three views were established from this camera point location.
3. **Camera point T-96-3.** This point is located on the south edge (shoulder) of the 52 road where Winom Creek passes beneath the road. The primary focus of this point is to monitor post-fire response of a mixed-conifer forest located in the riparian zone, and the lodgepole pine-western larch forest growing on adjacent side slopes. Two views were established from this camera point location.
4. **Camera point T-96-4.** This point is located on top of a rock knob approximately ¼ mile from the 52 road in the south-central portion of the fire. The primary focus of this point is to provide broad-scale, panoramic views of the south-central and southeastern portions of Tower Fire. Three views were established from this camera point location.
5. **Camera point T-96-5.** This point is located near a popular motorized trail called Cut-Across (trail number 3158); the actual point location is about 450 feet south of a small trailhead or pull-out on the 52 road. The focus of this point is to monitor post-fire response of lodgepole pine-western larch forest located in the south-central portion of the fire. Six views were established from this camera point location.

   Vegetation Characteristics: Don Justice and Dave Powell established a fixed-area plot (1/100th acre plot), by using the camera point cap as a plot center, on July 27, 2000. The

plant association in the vicinity of the camera point is grand fir/grouse huckleberry (ABGR/VASC). Aspect is 338° (northwest to north); slope gradient is 13%. Only one tree species was present: lodgepole pine, with 55 lodgepole seedlings greater than 1-foot in height recorded (resulting in a tree density of 5,500 stems per acre). Vascular plant cover was sparse, and dominated by fireweed (*Epilobium angustifolium*), tailcup lupine (*Lupinus caudatus*), grouse huckleberry (*Vaccinium scoparium*), Bebb willow (*Salix bebbiana*), pinegrass (*Calamagrostis rubescens*), and common yarrow (*Achillea millefolium*). None of the undergrowth plants had more than 5% canopy cover.

6. **Camera point T-96-6.** This point is located on a ridgeline above the 52 road and slightly east of the Pearson guard station. The primary focus of this point is to monitor post-fire response for a very dry site with abundant surface rock exposed, and to provide broad-scale, panoramic views from a high point (almost 5,600 feet elevation) in the south-central portion of the fire. Three views were established from this camera point location.
7. **Camera point T-96-7.** This point is located north of the 52 road in a Junewood timber sale unit where about ⅓ of the plantation was affected by fire. Although the other ⅔ of the plantation was not burned directly, it may have been affected to a certain extent by secondary heat. The primary focus of this point is to monitor post-fire vegetation recovery for an active management (timber sale) unit affected by the fire. Three views were established from this camera point location.
8. **Camera point T-96-8.** This point is located east of the 55 road near a minor side ridge, and in the far western portion of the fire not far from Texas Bar Creek. The primary focus of this point is to monitor post-fire recovery for dry-forest sites, including a dry-forest riparian area. Four views were established from this camera point location.
9. **Camera point T-97-9.** This point is located south of the 52 road and east of the 5507 road in a Junewood timber sale unit. The primary focus of this point is to monitor postfire vegetation recovery for a timber sale plantation affected by the fire. Unlike camera point T-96-7, which is established in a Junewood plantation where trees were sapling size (6-8 feet) at the time of Tower Fire, this camera point is located in a unit where prefire trees were smaller. Two views were established from this camera point location.
   Vegetation Characteristics: Don Justice and Dave Powell established a fixed-area plot (1/100th acre plot), by using the camera point cap as a plot center, on July 7, 2000. Only one tree species was present: ponderosa pine, with 3 planted seedlings about 1-foot in height recorded (resulting in a tree density of 300 stems per acre). Vascular plant cover was sparse but diverse, and dominated by elk sedge, orchardgrass (*Dactylis glomerata*), houndstongue hawkweed (*Hieracium cynoglossoides*), common yarrow, and 10 other species occurring in trace amounts. None of the undergrowth plants had more than 5% canopy cover.
10. **Camera point T-97-10.** This point is located near the edge of the 5507 road and relatively close to the headwaters area of Oriental Creek. The objective of this point is to monitor post-fire vegetation response in a dry-forest watershed with coarse-textured granitic soils. Five views were established from this camera point location.
11. **Camera point T-97-11.** This point is located near the 5507 road, and southwest of camera point T-97-10 at a significantly lower elevation in Oriental Creek (camera point T-97-10 is located near the headwaters at about 5,100 feet elevation; camera point T-97-11 is situated in

the lower watershed at about 4,000 feet elevation). The focus of this point is to monitor post-fire vegetation recovery for some of the driest terrain in Tower Fire area. Two views were established from this camera point location.

12. **Camera point T-97-12.** This point is located in the Winom Creek portion of the North Fork John Day Wilderness (south-central portion of the fire). It is located on an open, gravelly, steep slope beneath a large rock outcrop formation. The focus of this point is to monitor post-fire vegetation recovery in an area where native seed was applied (by hand) during the post-fire BAER (Burned Area Emergency Rehabilitation) process. Six views were established from this camera point location.

    Vegetation Characteristics: Don Justice and Dave Powell established a fixed-area plot (1/100th acre plot), by using the camera point cap as a plot center, on July 7, 2000. No trees were present in the plot area! Vascular plant cover was sparse but diverse, and dominated by spreading dogbane (*Apocynum androsaemifolium*), California brome (*Bromus carinatus*), elk sedge, common yarrow, narrowleaf scullcap (*Scutellaria angustifolia*), wormleaf stonecrop (*Sedum stenopetalum*), arrowleaf balsamroot (*Balsamorhiza sagittata*), wax currant (*Ribes cereum*), sticky cinquefoil (*Potentilla glandulosa*), and seven other species occurring in trace amounts. Only spreading dogbane occurred with more than 5% canopy cover.
13. **Camera point T-97-13.** This point is located near the 5510 road (much of which was obliterated by the U.S. Forest Service in August 2007), and in a large plantation area where tree seedlings were out-planted in May of 1997. The objective of this point is to monitor near-term survival of fire-damaged trees, and long-term vegetation recovery, for dry-forest sites affected by Tower Fire. Four views were established from this camera point location.
14. **Camera point T-97-14.** This point is located high on a steep slope above the 55 road, and on the edge of a burned plantation that was replanted in May of 1997. The focus of this point is to monitor post-fire response in a previously managed portion of Tower Fire, including the effects of replanting on forest recovery. Four views were established from this camera point location.
15. **Camera point T-97-15.** This point is located in the extreme northern portion of Tower Fire, not far from the 5448 road south of Neeves Creek and north of Cable Creek. The objective of this point is to monitor near-term survival of fire-damaged trees, and long-term vegetation recovery for dry-forest sites, within Tower Fire perimeter. Four views were established from this camera point location.

    Vegetation Characteristics: Don Justice and Dave Powell established a fixed-area plot (1/100th acre plot), by using the camera point cap as a plot center, on July 27, 2000. Two tree species were present, each with 2 seedlings about 1-foot in height: ponderosa pine and lodgepole pine (resulting in a tree density of 400 stems per acre). Vascular plant cover was sparse but very diverse, and dominated by pinegrass, cheatgrass (*Bromus tectorum*), elk sedge, snowbrush ceanothus, common yarrow, spreading dogbane, birchleaf spiraea (*Spiraea betulifolia*), woodland strawberry (*Fragaria vesca*), sticky cinquefoil, pearly everlasting (*Anaphalis margaritacea*), blue wildrye (*Elymus glaucus*), and eight other species occurring in trace amounts. None of the undergrowth plants had more than 5% canopy cover.
16. **Camera point T-97-16.** This point is located in the extreme southeastern portion of the fire, but unlike camera point T-96-1 situated about 1 mile south, this point is actually located

within the burned area. The objective of this point is to monitor postfire vegetation response for an area where the predominant prefire vegetation type was small lodgepole pine trees (but with a scattered overstory of larger lodgepole pine). Four views were established from this camera point location.

Vegetation Characteristics: Don Justice and Dave Powell established a fixed-area plot (1/100th acre plot), by using the camera point cap as a plot center, on July 27, 2000. The plant association is subalpine fir/grouse huckleberry (ABLA2/VASC). Two tree species were recorded: lodgepole pine, with 34 naturally regenerated seedlings about 1-foot in height, and western larch, with 16 naturally regenerated seedlings about 1-foot in height (resulting in a total tree density of 5,000 stems per acre). Vascular plant cover was moderate but not overly diverse, and dominated by grouse huckleberry (*Vaccinium scoparium*), Bebb willow, northwestern sedge (*Carex concinnoides*), pinemat manzanita (*Arctostaphylos nevadensis*), and four other species occurring in trace amounts. Only grouse huckleberry occurred with more than 5% canopy cover.

17. **Camera point T-98-17.** This point is located about ¼ mile north of the 52 road in the footprint of the 1986 Long Meadows Fire, which was reburned by Tower Fire in 1996. The focus of this point is to monitor post-fire response for a reburn situation – in this instance, Tower Fire reburned an area that initially burned 10 years previously. Three views were established from this camera point location.

    Vegetation Characteristics: Don Justice and Dave Powell established a fixed-area plot (1/100th acre plot), by using the camera point cap as a plot center, on July 7, 2000. Only one tree species was recorded: lodgepole pine, with 2 seedlings about 2-feet in height, and 8 seedlings about 1-foot in height (resulting in a total tree density of 1,000 stems per acre). Vascular plant cover was relatively sparse but somewhat diverse, and dominated by snowbrush ceanothus, Scouler willow (*Salix scouleriana*), birchleaf spiraea, fireweed (*Epilobium angustifolium*), and eight other species occurring in trace amounts. Only snowbrush ceanothus occurred with more than 5% canopy cover.

18. **Camera point T-98-18.** This point is located near the 5510 road where Oriental Creek passes beneath it (note that 5510 is now closed with a barricade approximately 0.7 miles from the camera point location). The primary objective of this point is to monitor effects of a massive wash-out event occurring as a result of a torrential thunderstorm in May of 1998. Two views were established from this camera point location.

Note: When Tower Fire camera points were installed, all initial photographs were acquired by using a standard, 35mm SLR camera and a wide-angle (28mm) or standard (50mm) lens. This was equipment in common use at the time (1996). As retakes progressed, however, it became increasingly difficult to get 35mm slide film processed, and eventually our photographic equipment transitioned to digital SLR cameras and comparable lens types. These changes resulted in differences in perspective (scene) for some camera points or views (as described for certain photo-pair descriptions later in this paper). This was certainly an important 'lesson learned' for us – whenever possible, it is wise to standardize on camera type and lens, and work hard to maintain their continuity through time!

Figure 10 – Camera point 1, view 1 (upper image June 1997; lower image August 2008). This camera point is located just beyond the southeast perimeter of Tower Fire. It was established in an unburned stand, and it was designed to provide distant (background) views of fire recovery.

As it currently exists, view 1 has limited utility because the foreground stand has grown to such an extent that a background perspective is largely obscured.

If seedlings and saplings in the foreground area were removed, then this view might have long-term value because boles of mature trees do not block much of a background scene.

Figure 11 – Camera point 1, view 2 (upper image June 1997; lower image August 2008). This view was designed to obtain background perspectives of what appeared to be mixed-severity fire effects in a mosaic pattern (as it appeared in autumn of 1996).

As it currently exists, this view has limited utility because the foreground stand has grown to such an extent that a background scene is largely obscured.

If seedlings and saplings in the foreground area were removed, then the view might have long-term value because boles of mature trees do not block much of a background scene.

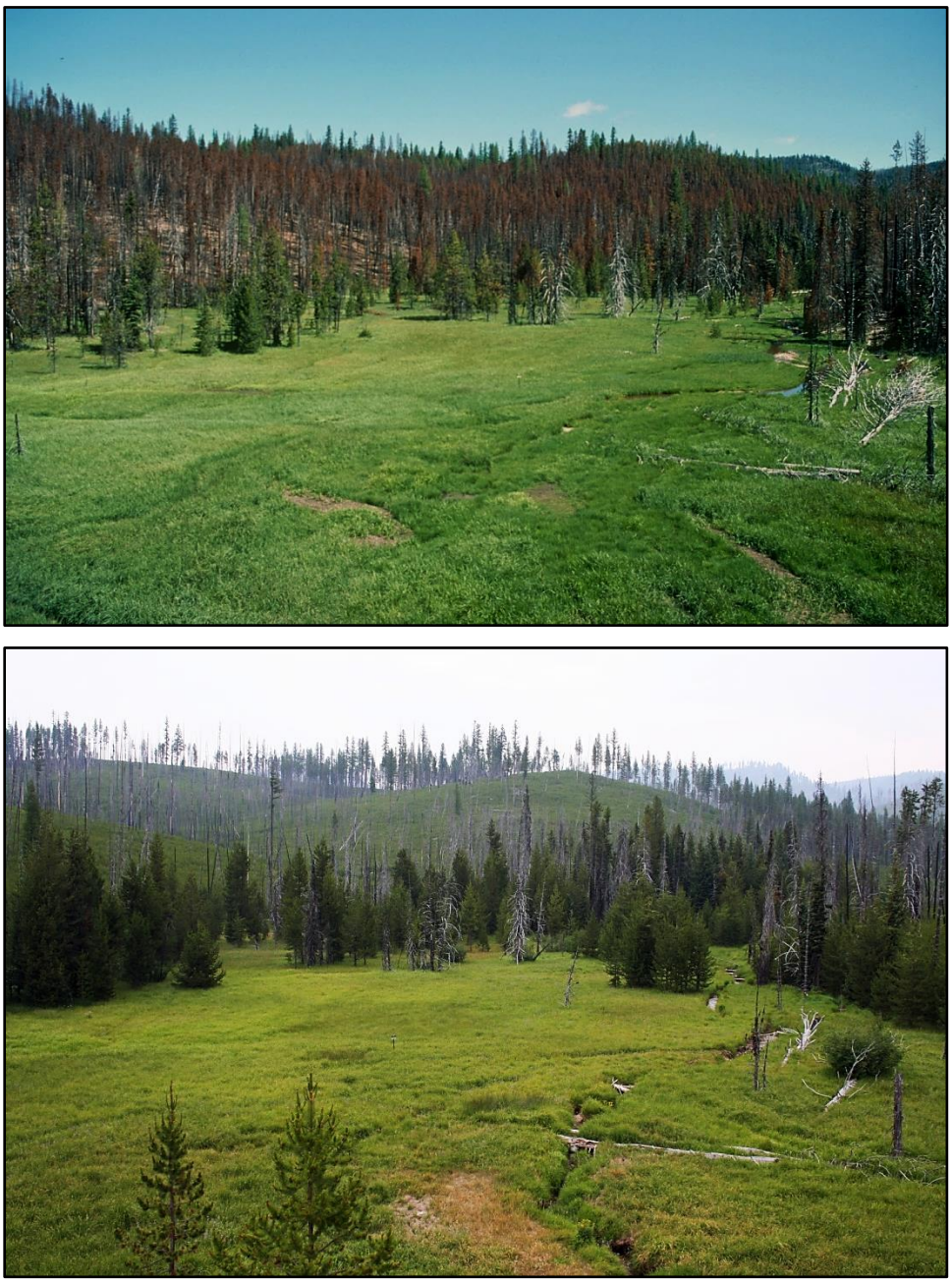

Figure 12 – Camera point 2, view 1 (upper image June 1997; lower image July 2008). This view was designed to monitor post-fire response of a moist-meadow ecosystem, and of a lodgepole pine forest in a background scene.

Note relatively high tree survival and rapid tree growth along a meadow margin, the open character of a background scene following high levels of tree mortality, and relatively rapid toppling of resulting snags.

It also appears that the stream channel for Winom Creek may have meandered a little bit during this 11-year period, and that it is more incised now than before.

A background scene appears to be dominated now (lower image) by snowbrush ceanothus rather than young lodgepole pine trees (but I suspect it actually consists of very dense lodgepole pine regeneration lacking much height differentiation).

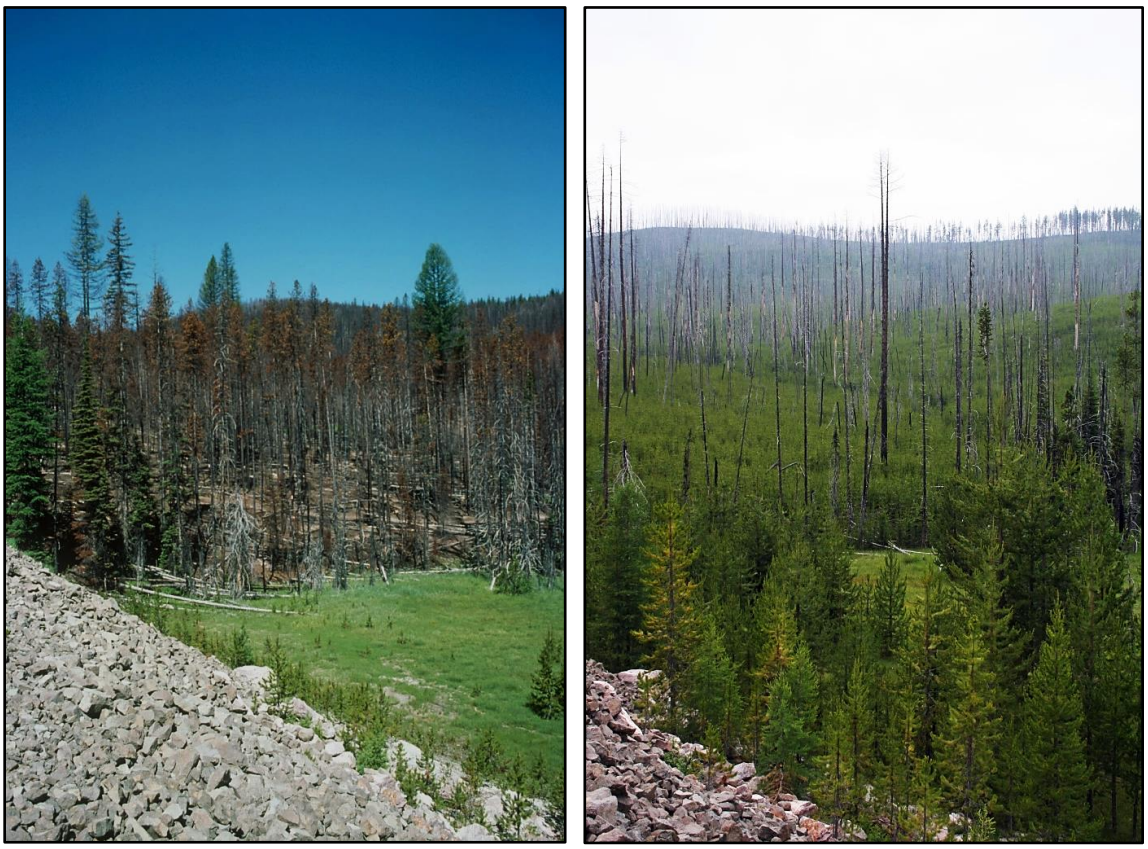

Figure 13 – Camera point 2, view 2 (left image June 1997; right image July 2008). This view is taken left of a middle meadow perspective (a perspective looking into the middle of a meadow is view 1 for camera point 2) – in other words, most of a moist meadow is located right of this view.

View 2 shows rapid development of lodgepole pine trees on a rubble fill slope (this camera point is located on north shoulder of 52 road), high levels of tree mortality in a background scene (including western larch trees in left image that I expected to survive), and lodgepole pine development along the left edge of a meadow margin.

Note that more snags are still standing in the 2008 retake image (right) than was noted for the retake for view 1, camera point 2.

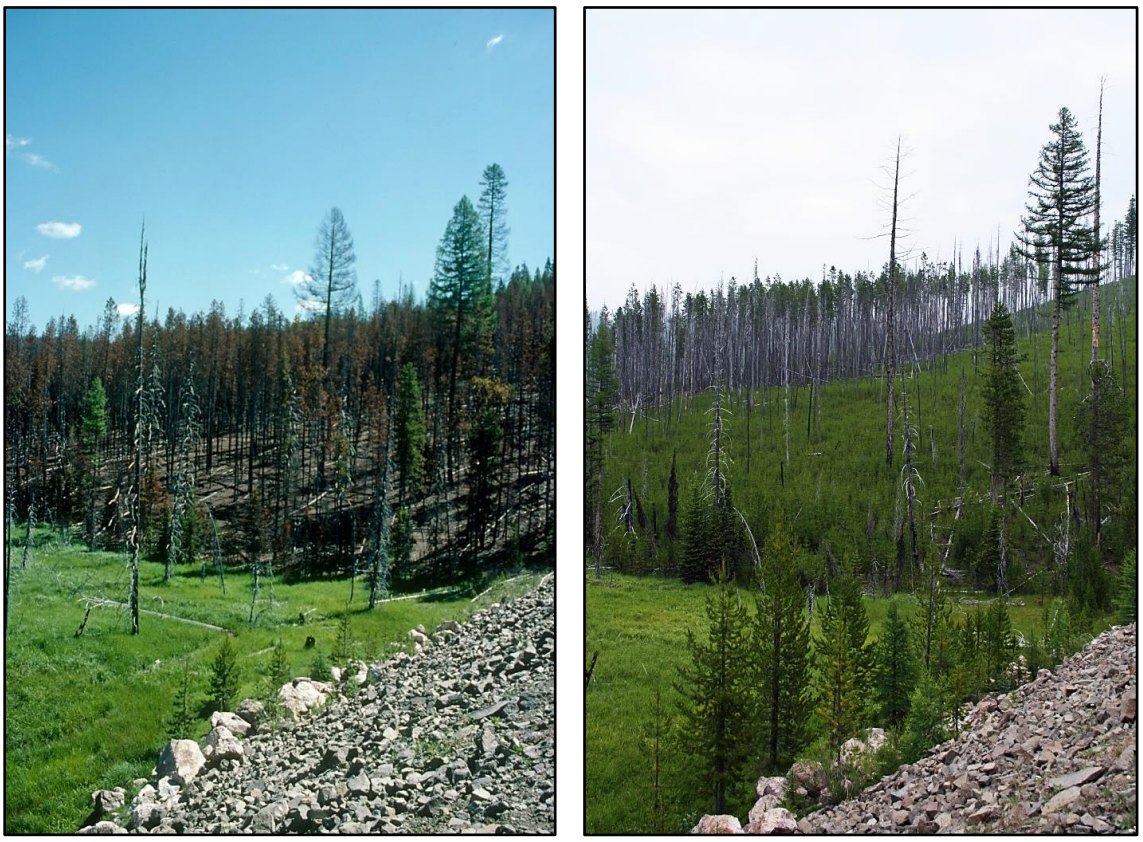

Figure 14 – Camera point 2, view 3 (left image June 1997; right image July 2008). This view is taken right of a middle meadow perspective (a perspective looking into the middle of a meadow is view 1 for camera point 2) – in other words, most of a moist meadow is located left of this view.

View 3 shows a background perspective where high levels of tree mortality occurred (far background stand was not burned by Tower Fire), and a relatively sparse cohort of existing snags.

Very dense lodgepole pine reproduction is present in the burned area. One large, old larch survived the fire, as did an intermediate-sized larch (with a forked top) at a meadow margin.

As noted for view 2, tree regeneration is getting established on a rubble fill slope, but not to a similar extent as was observed for the retake photograph for view 2.

Figure 15 – Panoramic photograph of Winom Creek from an area very near the location of camera point 2.

Note that much of what is depicted in the middle third of this image corresponds to view 1 of camera point 2; much of what is shown in the left third of this image corresponds with view 2 of camera point 2; and much of what is shown in the right third of this image corresponds with view 3 of camera point 2.

This image was acquired by John Marshall, of Wenatchee, Washington. Refer to the Cover Photograph description, page 2, for more information about John Marshall and his photographic services.

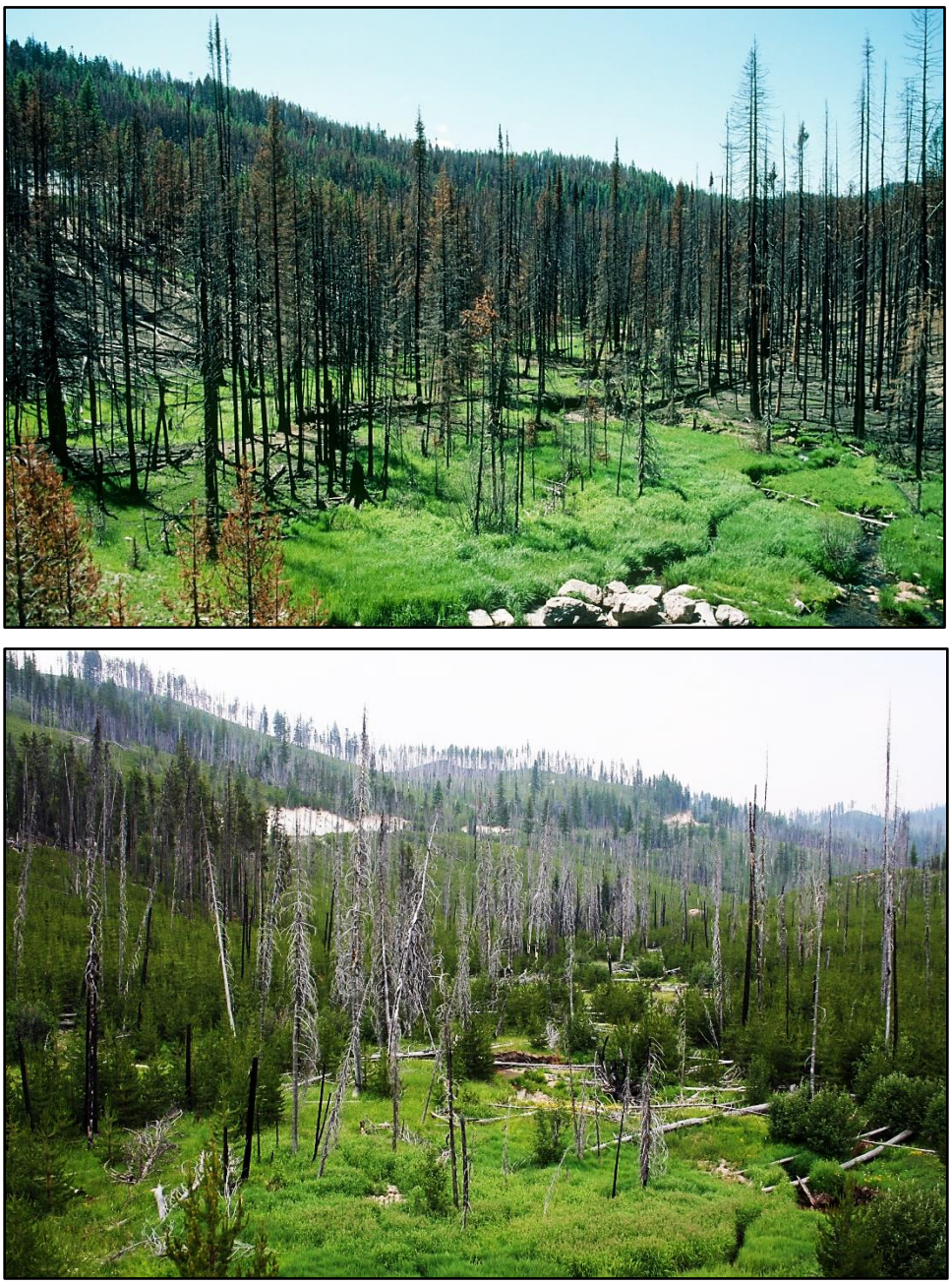

Figure 16 – Camera point 3, view 1 (upper image June 1997; lower image July 2008). This camera point is located opposite of camera point 2, on south shoulder of 52 road. View 1 is oriented with the center of a forested meadow in center of the image.

When using height and density of sedge, woodrush, and other wet-site plants as indicators, this portion of a meadow adjoining Winom Creek has more soil moisture than sections below the 52 road (camera point 2 shows Winom Creek and meadow below 52 road; camera point 3 shows these elements above 52 road).

Upper image from spring 1997 suggests that Tower Fire might have 'knocked back' trees to an extent where a meadow could reclaim area apparently invaded by trees. But, lower image shows tree regeneration getting established promptly, perhaps indicating that this site has always existed as a forested wet meadow.

Figure 17 – Camera point 3, view 2 (left image June 1997; right image July 2008). This view is taken to right of a middle meadow perspective (a perspective looking into the middle of a meadow is view 1 for camera point 3) – in other words, quite a bit of a moist meadow is located to left of this view.

View 2 shows that one large larch tree survived in a middleground scene, and that very dense lodgepole pine regeneration has gotten established in burned areas.

Left image shows what appear to be shrub clump 'skeletons', but right image shows that shrub clumps survived and appear to be dense and vigorous.

A fair number of snags are still standing in the 2008 image.

Figure 18 – Camera point 4, view 1 (left image, June 1997; right image, July 2008). This view looks mostly south from summit of a rock knob about ¼ mile southeast of a sweeping curve in 52 road.

Left image shows few (if any) trees whose fire injuries seem benign enough to suggest they will survive for any length of time; right image corroborates this interpretation because all left-image trees with off-color foliage did, in fact, die.

For right image, foreground and middleground views show prolific lodgepole pine regeneration in most areas.

Due to inclement weather, background views in right image are not particularly clear, but they seem to suggest that young lodgepole pine stands (or perhaps ceanothus shrublands?) cover areas that were somewhat open (indicated by gray patterns) immediately after Tower Fire, as shown in background portion of left image.

Figure 19 – Camera point 4, view 2 (upper image, June 1997; lower image, July 2008). This view is like view 1 except it has a horizontal, instead of vertical, orientation.

As was true for view 1, some trees in upper image have variable amounts of scorched foliage – lower image suggests that none of them survived for even 10 years.

Foreground and middleground areas in lower image show a landscape dominated by young, dense stands of lodgepole pine. Due to an apparent lack of surviving larch seed source, I assume that most of these stands are pure lodgepole pine, rather than lodgepole-larch mixes, as was apparently common after extensive burning associated with 1910 fires (stands along the Western Route, for example, developed as mixed lodgepole-larch stands after 1910, and early forest inventory reports and maps suggest this was a common developmental pattern on Umatilla NF).

Figure 20 – Camera point 4, view 3 (upper image, June 1997; lower image, July 2008). This view looks almost due north from summit of a rock knob about ¼ mile southeast of a sweeping curve in 52 road.

Note that upper image shows extensive postfire tree mortality in foreground, but green crowns exist on a background ridgeline, portending some tree survival to provide a seed source and vegetation diversity.

Lower image shows prolific lodgepole pine regeneration (including enough to cover foreground rock outcrop in upper image), and total mortality of background ridgeline trees that offered promise of longer-term survival.

Note that the cover photo, acquired by John Marshall, may show an area that is relatively close to camera point 4.

Figure 21 – Replacement camera point marker (aluminum cap) for camera point 4.

Camera point monuments (e.g., stakes, caps, reference location posters) located near roads or in areas of heavy dispersed recreation use may be subject to vandalism.

A camera point cap for point #4 disappeared at some point, so it was replaced by affixing a new cap to a rock formation (by using construction adhesive).

It is unknown if this approach – using adhesive to attach a camera-point cap to a large rock outcrop – will contribute to a longer lifespan for this camera-point monument, but it was viewed as a better option than just continuing the initial approach by hammering a new cap onto an existing aluminum stake (because an initial approach was obviously not effective at preventing the first cap's removal by vandals).

Figure 22 – Camera point 5, view 1 (upper image, June 1997; lower image, July 2008). This view looks northeast from an area close to Cut-Across OHV trail (#3158), which crosses 52 road about 0.9 miles west of its junction with the 5507 road.

Upper image shows surface ash indicating intense combustion (foreground), a wet meadow that greened up well by June of first postfire year (middleground), and examples of what appear to be complete tree mortality (background).

Lower image shows dense lodgepole pine regeneration and reasonably good tree growth (as based on internode lengths).

Lower image also demonstrates that some views, particularly for camera points established within stands rather than from high vantage points, will eventually become unusable as regenerating trees gradually block the viewing angles.

Figure 23 – Camera point 5, view 2 (left image, June 1997; right image, July 2008). This view looks northwest from an area close to Cut-Across OHV trail (#3158), which crosses 52 road about 0.9 miles west of its junction with the 5507 road.

Left image is centered on a gently-sloping hill on far side of 52 road (background), along with near-view examples of intense postfire combustion effects.

Right image shows that dense lodgepole pine regeneration developed in foreground areas, and that a background hill scene is not covered with dense lodgepole pine (in fact, it appears that a background scene has areas where vegetation recovery is sparse and dominated primarily by graminoids).

In right image, areas adjacent to sparsely vegetated portions appear to support either slow-growing lodgepole pine regeneration, or snowbrush ceanothus shrublands.

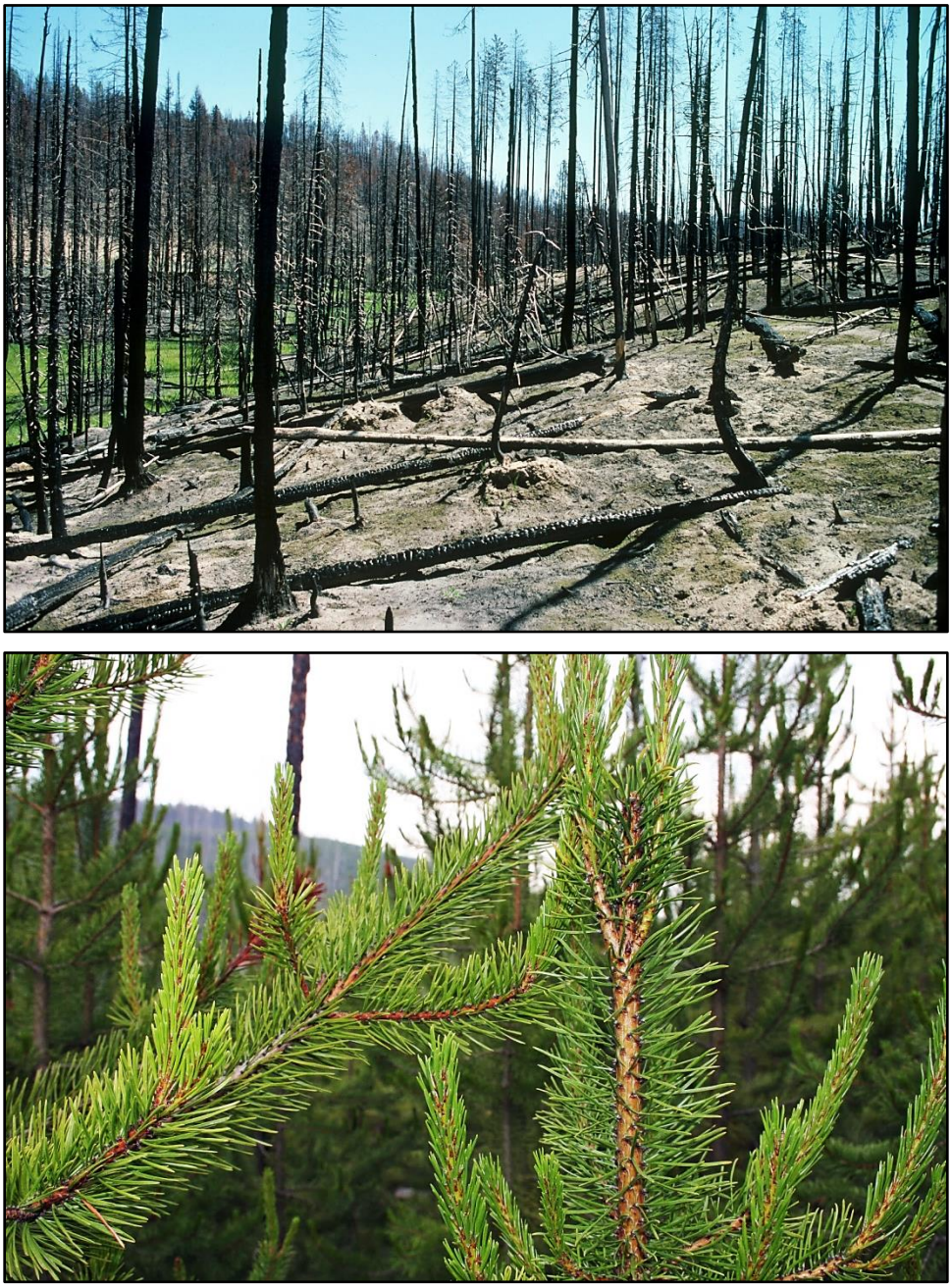

Figure 24 – Camera point 5, view 3 (left image, June 1997; right image, July 2008). This view looks due east from an area close to Cut-Across OHV trail (#3158), which crosses 52 road about 0.9 miles west of its junction with the 5507 road.

As mentioned for view 1 for this camera point, lower image demonstrates that views for camera points established within stands, rather than from high vantage points, may eventually become unusable when regenerating trees eventually block the viewing angles.

And for camera points established in areas supporting lodgepole pine forest, it is clear that regenerating trees may result in blocked views sooner, rather than later.

Figure 25 – Camera point 5, view 4 (upper image, June 1997; lower image, July 2008). This view looks due south from an area close to Cut-Across OHV trail (#3158), which crosses 52 road about 0.9 miles west of its junction with the 5507 road.

Upper images for views 2-4 for camera point 5 clearly show presence of biological soil crusts (probably consisting of bacteria, algae, lichen, liverworts, and mosses; Evans and Johansen 1999), which consistently formed on surface of deep ash (or loess) deposits in Tower Fire. Soil crusts are most commonly described for arid and semiarid environments (West 1990), but they are also common for moist and cold environments with ash-influenced soils, particularly for lodgepole pine sites. Although administrative study plots were not installed in Tower Fire to experimentally examine their influence on post-fire vegetation development, it was noted that sites with biological soil crusts did not develop a competing vegetation component inhibiting reforestation success.

Figure 26 – Camera point 5, view 5 (upper image, June 1997; lower image, July 2008). This view looks due west from an area close to Cut-Across OHV trail (#3158), which crosses 52 road about 0.9 miles west of its junction with the 5507 road.

As mentioned for previous views for this camera point, note biological soil crusts evident in upper image, and how this view is currently unusable for most purposes due to lodgepole pine saplings established immediately adjacent to the camera point stake, which puts them in front of a camera location (lower image).

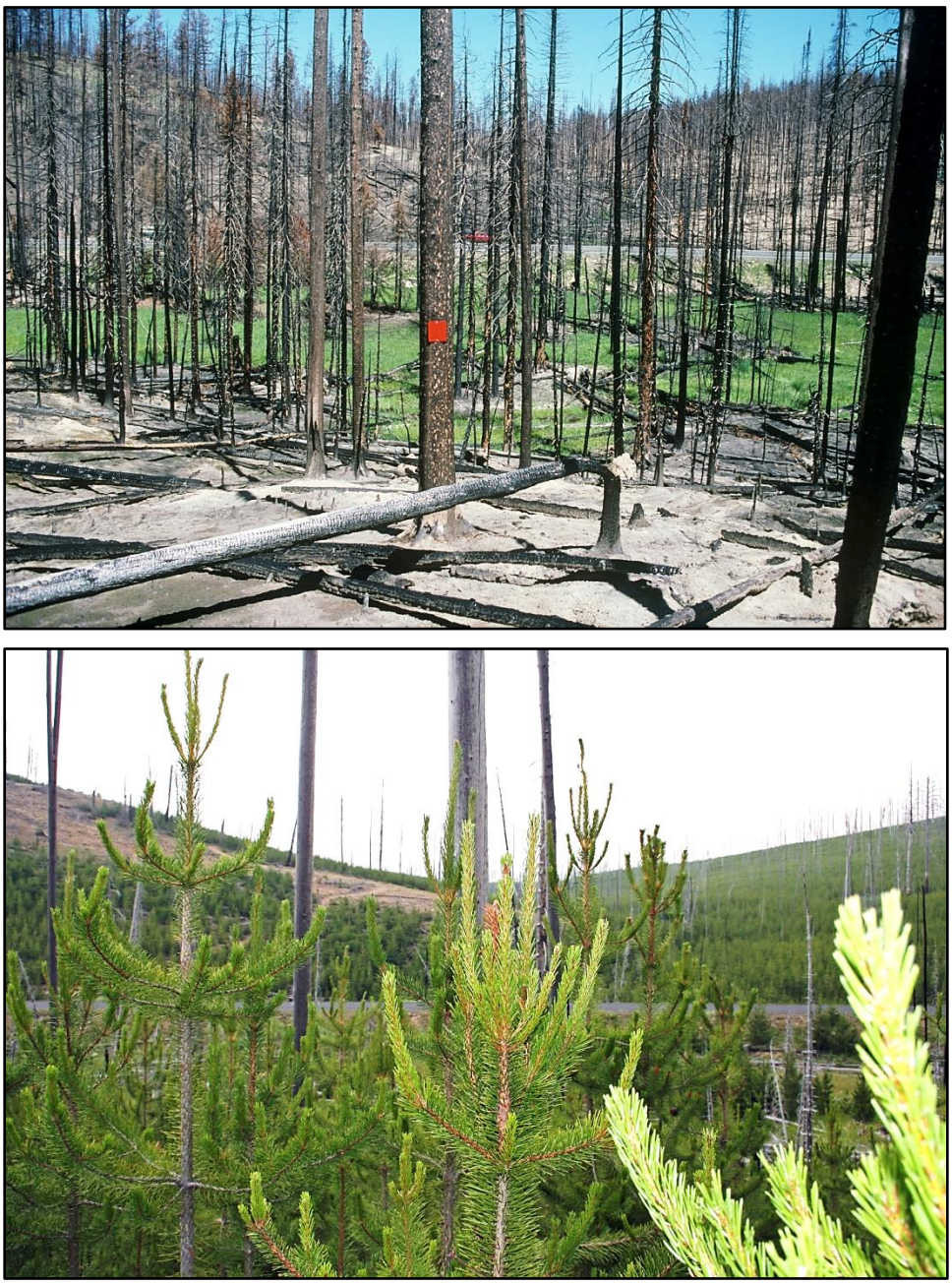

Figure 27 – Camera point 5, view 6 (upper image, June 1997; lower image, July 2008). This view looks due north from an area close to Cut-Across OHV trail (#3158), which crosses 52 road about 0.9 miles west of its junction with the 5507 road.

Upper image shows an orange reference tree poster mounted on a dead lodgepole pine tree in relatively close proximity to the camera point stake. Reference trees are helpful when trying to relocate a camera point, but using a dead tree for this purpose is not recommended because they tend to fall over in a short period of time. But for many portions of Tower Fire, no live trees or other acceptable references were available, so dead trees were used anyway.

Lodgepole pine regeneration in the lower image is not quite large enough, yet, to make this camera point totally unusable, but that outcome will likely occur soon.

Figure 28 – Camera point 6, view 1 (upper image, June 1997; lower image, July 2008). This view looks mostly east from a high vantage point (rocky ridgeline) located above (south) of 52 road, about 0.7 miles east of its junction with the 340 road (Pearson summer home tract).

Upper image shows a 'ragged' looking postfire landscape with some bare slopes, a few large trees that apparently survived, and a large patch of young regeneration unaffected by Tower Fire (in background, slightly right of center).

Lower image shows Round Meadow clearly, along with regenerated forests on adjoining areas in South Fork of Cable Creek. A surviving patch of regeneration shows up more clearly in the lower image. Once again, it does not seem like trees with partially-scorched foliage in upper image survived for at least 10 years.

Why did the patch of tree regeneration shown in view 1 survive? Hard to say which factors were primarily responsible for Tower Fire burning around this patch, but this situation has been observed for other fires in northeastern Oregon, as demonstrated by this account for Canal Fire on Wallowa-Whitman National Forest:

> "Two years after the Canal Fire burned in the Wallowa-Whitman National Forest of northeastern Oregon, the landscape was an eerie study in contrasts. A previously rich, productive, mature forest dominated by Engelmann spruce and lodgepole pine has been completely killed by a high-intensity wildfire, probably not unlike fires in past centuries. The trees still stood, their branches sticking out as partially consumed stubs. Light splotches where woodpeckers in search of bark beetles had hammered off the bark punctuated the blackened trunks. But on the ground, a luxuriant growth of grasses and flowering herbs had risen literally from the ashes. In the midst of this thoroughly charred forest landscape, a small square patch of surviving living forest stood incongruously. The conflagration had passed by this stand of young 30-foot trees. In fact, there was scarcely any sign of burning at all. No doubt firefighters could have taken refuge here while the spectacular crown fire roared through the surrounding forest. Why did these trees escape? The small island of green was a former clearcut where the logging slash had been piled and burned. Its trees were not crowded together, and there was only sparse fuel on the ground. This patch of fuel-deficient forest surrounded by a stand-replacement fire testifies to how remarkably effective mechanical treatment of fuels can be" (Arno and Allison-Bunnell 2002: 137).

I am unaware if a surviving patch of regeneration shown in view 1 for camera point 6 has a similar history to what is described above for Canal Fire (i.e., is an unburned patch shown in fig. 28 a former clearcut where logging slash had been thoroughly treated, and fuels were sparse and tree regeneration occurred at a relatively low density?).

Figure 29 – Camera point 6, view 2 (upper image, June 1997; lower image, July 2008). This view looks northeast from a high vantage point (rocky ridgeline) located above (south) of 52 road, about 0.7 miles east of its junction with the 340 road (Pearson summer home tract). This portion of Tower Fire is out of a high 'ash' zone (an area with a predominance of ash-dominated, surficial soil deposits), and this is reflected by a lack of lodgepole pine regeneration in lower image, and relatively high coverage of shrubland. [It has long been known that in the Blue Mountains, lodgepole pine has an affinity for ash- or loess-influenced soils (Geist and Strickler 1978), and it is less commonly encountered on residual soils lacking an ash-cap layer.] Most shrub cover in lower image includes a mixed stand of snowbrush ceanothus (*Ceanothus velutinus*) and short-stature willow (probably Scouler willow, *Salix scouleriana*). Although it may not be apparent in lower image, tree regeneration is apt to be slow in this portion of Tower Fire.

Figure 30 – Camera point 6, view 3 (upper image, June 1997; lower image, July 2008). This view looks northwest from a high vantage point (rocky ridgeline) located above (south) of 52 road, about 0.7 miles east of its junction with the 340 road (Pearson summer home tract). Lower image shows slow vegetation recovery on foreground areas with poor soil development and surface bedrock, and short-stature lodgepole pine regeneration in middleground and background areas that supported lodgepole forest before the fire.

This view illustrates circumstances where prefire conditions will be perpetuated after Tower Fire, unless another stand-replacing disturbance event (such as a severe reburn) occurs before lodgepole pine regeneration has enough time to mature and start producing seed. For a reburn scenario, lodgepole pine regeneration would likely be killed, and area it formerly occupied would then support nonforest vegetation.

Figure 31 – Camera point 7, view 1 (upper image, June 1997; lower image, July 2008). This view looks north into a Junewood timber sale plantation located below (north) of 52 road, about ¾ miles east of its junction with the 55 road. I am unsure as to whether this plantation had fill-in planting following Tower Fire (I suspect it did).

Lower image shows relatively impressive plantation growth, regardless of whether the seedlings were of prefire or postfire origin.

This site is relatively dry, as evidenced by several examples of wax currant (*Ribes cereum*) shrubs in a middleground portion of lower image.

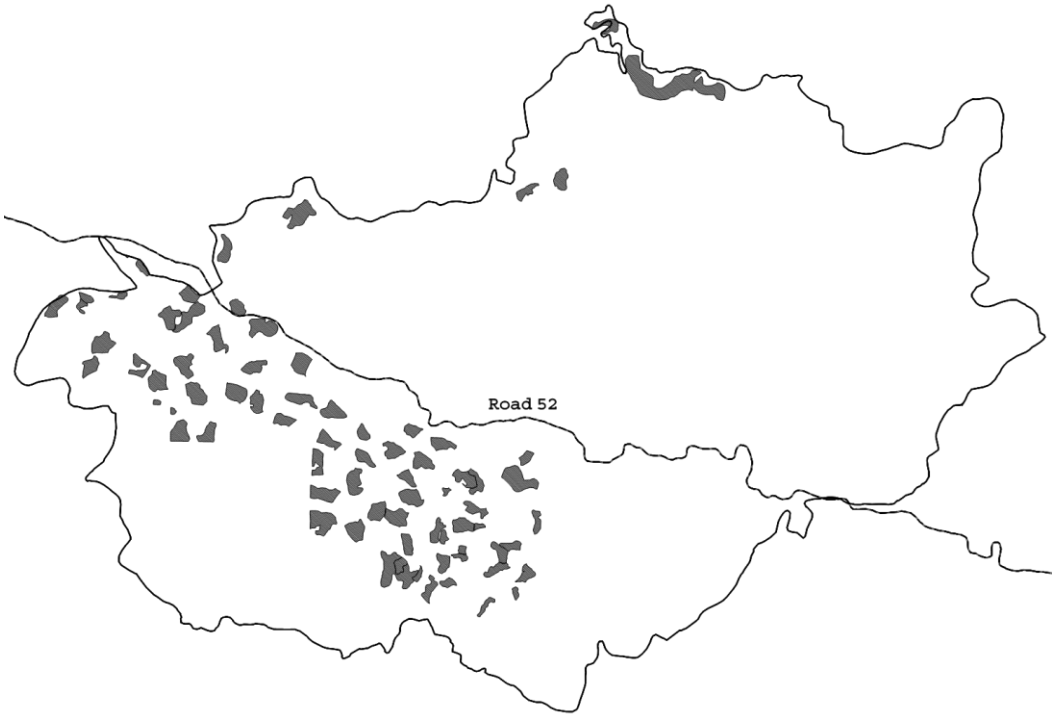

Figure 32 – Tower Fire's impact on established plantations (from Powell 1997). Tower Fire burned about 2,240 acres of long-established and recently completed plantations. When considering the financial investment to establish these plantations, their destruction represents a loss exceeding $1,000,000. For this reason, several camera points were specifically established in burned plantations to monitor their response to fire effects, even though most of these plantations were burned severely enough to require replanting – most of them were basically 'starting over from scratch.'

Most plantations shown below 52 road are in Junewood or Placer timber sale areas. As described in an introductory section of this white paper, relatively high amounts of historical active management activity in several portions of Tower Fire caused employees to wonder why fire effects were apparently as severe in managed areas as they were in unmanaged areas. After all, shouldn't we expect managed-stand conditions to temper fire behavior and lead to reduced fire effects in comparison to unmanaged conditions? In some instances, severe fire effects were apparently dampened for managed stands, but in other circumstances, there seems to be little or no difference in fire effects when comparing adjoining managed and unmanaged areas.

Almost 19,000 acres of Tower Fire were planted, including replants for areas where initial planting was not fully successful. Some planting was used to reestablish tree cover for burned plantations located in Junewood and Placer timber-sale areas, while the remainder occurred in general-forest areas where too few seed trees survived to allow establishment of natural regeneration. 'Whole-area' planting was emphasized for dry-forest sites that experienced crown fire, an uncharacteristic fire behavior reflecting atypical amounts of pre-fire canopy and ladder fuels for these warm, dry ecological settings. Fill-in, 'spot' planting also occurred for areas where it was recognized that lodgepole pine regeneration would be abundant, especially along the Blue Mountains Scenic Byway, to compensate for lack of a western larch seed source. Management area A3 from 1990 Forest Plan, 'Viewshed 1,' designated Ukiah-Granite Road 52 as a Sensitivity Level 1 travel route, and tree-species and tree-height diversity is emphasized for these routes.

Figure 33 – Camera point 7, view 2 (upper image, June 1997; lower image, July 2008). This view looks northeast into a Junewood timber sale plantation located below (north) of 52 road, about ¾ miles east of its junction with the 55 road. Once again, relatively impressive postfire plantation growth, for a dry site, is evident in lower image.

Upper image shows that not all portions of this plantation burned – it is estimated that about ⅓ of total plantation area burned – a small patch of fire ash and blackened soil is apparent in left-center portion of foreground scene, behind a downed log.

For lower image, a tree crown evident in right portion of foreground scene is a western larch, and it was experiencing larch casebearer feeding activity in summer of 2008 when lower image was acquired.

Figure 34 – Camera point 7, view 3 (upper image, June 1997; lower image, July 2008). This view looks northeast into a Junewood timber sale plantation located below (north) of 52 road, about ¾ miles east of its junction with the 55 road.

Views 2 and 3 for camera point 7 were designed not just to monitor postfire development of a Junewood plantation (foreground and middleground scenes), but also to track how an unmanaged stand in background develops through time. But, plantation performance was robust enough to reduce long-term value of these views for monitoring development of the background unmanaged stand.

Note that western larch in lower image has obvious evidence of feeding by larch casebearer (*Coleophora laricella*), a non-native defoliator especially active throughout Umatilla National Forest in 2008 (and adjacent years).

Figure 35 – Camera point 8, view 1 (left image, October 1997; right image, July 2008). This view looks east into an area near Texas Bar Creek, about 250 feet from a point where Texas Bar Creek passes beneath the 55 road (which is near a switchback in the 55 road in section 19).

This camera point is clearly in the 'dry' portion of Tower Fire, an area where tree regeneration is apt to be slow and perhaps ineffective, depending on success of artificial regeneration (planting) efforts.

Left image shows complete tree mortality (an uncharacteristic fire severity for dry-forest sites historically), whereas right image shows that some snags are still standing at least 10 years after the left image was acquired.

Note a large amount of brush in the right image, consisting primarily of snowbrush ceanothus and small willow clumps.

Right image also demonstrates the strong effect of slope exposure (aspect) on tree regeneration – since this view looks east, left-side slope is south-facing and right-side slope is north-facing. What tree regeneration may be present in the right image is located near the foot of the north-facing slope, a physiographic slope position providing subsurface soil water accumulation and relatively high amounts of afternoon shading.

Note that riparian planting occurred along several stretches of Texas Bar Creek soon after Tower Fire. Figure 36 illustrates and describes riparian planting operations in more detail.

Figure 36 – Riparian planting near Texas Bar Creek in Tower Fire, North Fork John Day Ranger District. Riparian areas are known for their capability to recover following disturbance, but their resilience is not limitless, so planting and other post-disturbance activities are often completed to help boost recovery processes.

For Texas Bar Creek portion of Tower Fire, uplands were planted with a traditional mixture of trees involving 3-4 species for most sites, and riparian areas were planted with a mix of thinleaf alder (*Alnus incana tenuifolia*), water birch (*Betula occidentalis*), red-osier dogwood (*Cornus sericea*), black hawthorn (*Crataegus douglasii*), black cottonwood (*Populus balsamifera trichocarpa*), alderleaf buckthorn (*Rhamnus alnifolia*), and either coyote (*Salix exigua*) or dusky (*Salix melanopsis*) willow.

Many of the riparian species were established by using nursery-produced seedlings (either bare-root or containerized), whereas some of the black cottonwood and willow plantings were established by using rooted cuttings or freshly harvested whips – cottonwood tended to use autumn cuttings that were overwintered and then rooted during the following spring (i.e., cuttings collected in November 1997, overwintered as cuttings, rooted in the spring of 1998, matured through the summer and autumn of 1998, placed into winter dormancy or cold storage, and then out-planted in the spring of 1999 as containerized stock); willows tended to use whips (branch cuttings) harvested from local, adjacent sources and then out-planted immediately into suitable microsites within an identified stream reach.

The species mixture used for riparian plantings varied by stream reach as based on each reach's specific characteristics (elevation, floodplain width and gradient, etc.). This reach-specific approach requires quite a bit of preparatory work to be successful.

Plastic mesh (Vexar©) tubing was installed around most seedlings to prevent or limit browsing damage from large, native ungulates (deer and elk primarily). Similar riparian planting occurred in portions of Oriental Creek drainage in Tower Fire (see fig. 50), and in Alder Creek drainage of Wheeler Point wildfire, another large fire (app. 22,670 acres total, of which app. 7,500 acres occur in Umatilla NF) occurring during the summer of 1996 (August 1996, specifically).

Figure 37 – Camera point 8, view 2 (left image, October 1997; right image, July 2008). This view looks southeast into an area near Texas Bar Creek, about 250 feet from a point where Texas Bar Creek passes beneath the 55 road (which is near a switchback in the 55 road in section 19).

Left image was acquired exactly one year after Tower fire was extinguished; it suggests that upland sites (depicted in foreground scene) experienced somewhat slow recovery of ground vegetation because relatively high amounts of what appear to be bare soil are still evident.

Right image shows that snag persistence tended to be short in many areas, and that some dry portions of Tower fire support effective levels of tree regeneration, but fortunately not at the extremely high densities experienced in a lodgepole pine zone.

In some areas, shrubs are intermixed with tree seedlings, but apparently not at levels high enough to limit conifer regeneration.

Although it is unknown if tree planting occurred on sites included in the middleground and background portions of the right image, it is likely that artificial reforestation did occur in those areas because almost 19,000 acres of Tower Fire were planted (counting replants for some areas where an initial planting was not fully successful).

Figure 38 – Camera point 8, view 3 (left image, October 1997; right image, July 2008). This view looks north into an area near Texas Bar Creek, about 250 feet from a point where Texas Bar Creek passes beneath the 55 road (which is near a switchback in the 55 road in section 19).

Left image was acquired exactly one year after the fire was extinguished; it suggests that recovery of effective ground vegetation cover is slow on these dry sites. A large thistle is present in the center foreground, along with much area of bare soil just behind it.

A middleground scene shows a mix of grass tussocks (perhaps a seeded species?), along with locally endemic species such as common yarrow (*Achillea millefolium*).

The right image depicts differing conditions from those portrayed in view 2 for this camera point. More snags persisted than was evident for view 2, although many of them snapped off and no longer exist at their full height (as would be expected for an 11-year comparison period).

Foreground portion of right image shows a vigorous clump of snowbrush ceanothus, and the middleground scene shows robust willow clumps and very sparse levels of conifer regeneration.

The right image suggests that conifer regeneration decreases in direct proportion to distance up the slope, with sparse regeneration present on low slope positions and little or no regeneration on middle and upper positions.

Figure 39 – Camera point 8, view 4 (upper image, October 1997; lower image, July 2008). This view looks southwest into an area near Texas Bar Creek, about 250 feet from a point where Texas Bar Creek passes beneath the 55 road (e.g., near a switchback in the 55 road in section 19).

As was described for view 2, the prefire forest was relatively dense in this area, which resulted in abundant snags after the fire (upper image). And the same postfire situation occurred here as was described previously – most of the snags fell over during this 11-year comparison period, and tree regeneration seems to be ample in most portions of the lower image.

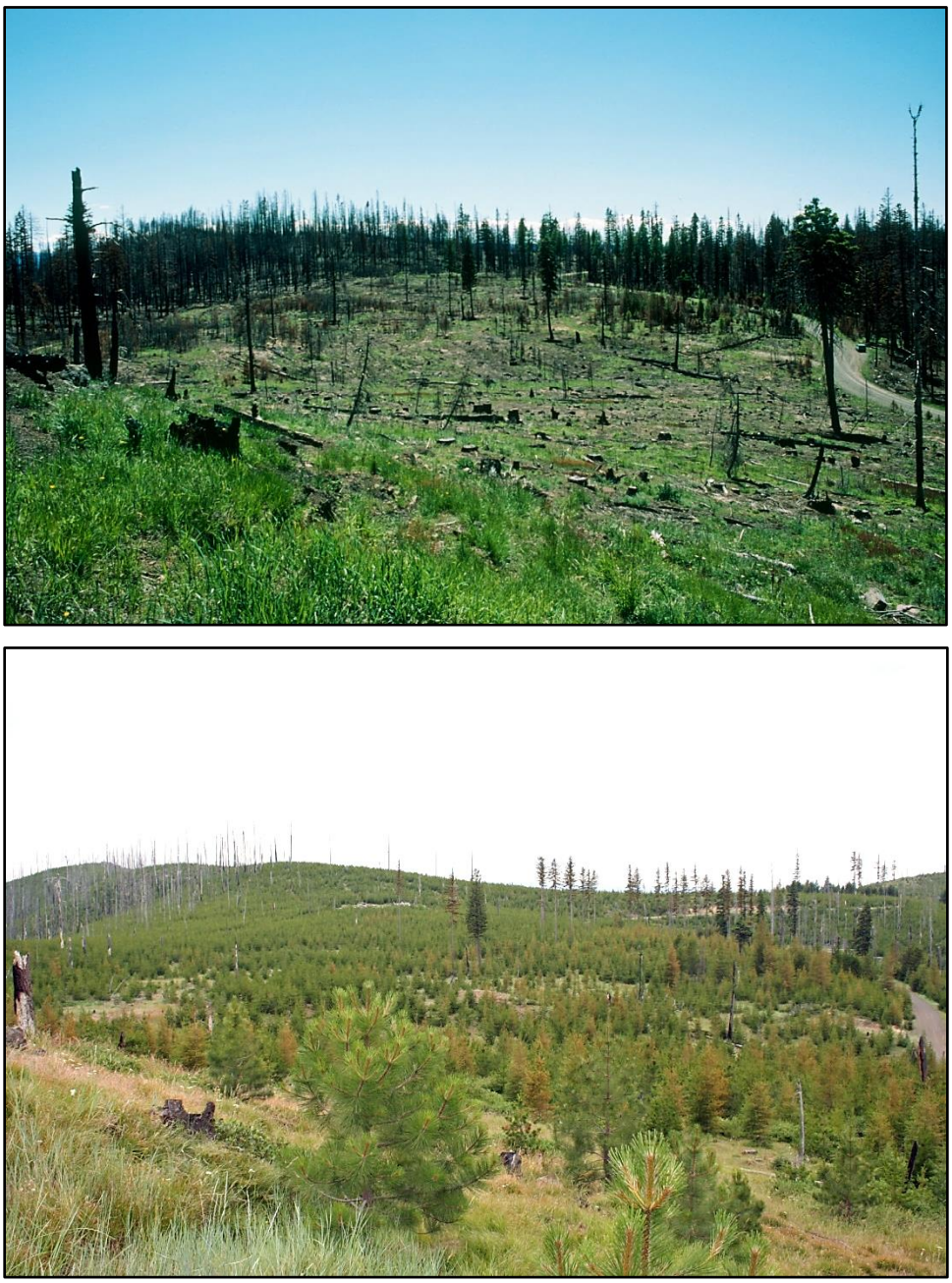

Figure 40 – Camera point 9, view 1 (upper image, June 1997; lower image, July 2008). This view looks south into an old Junewood timber sale plantation from a broad, gently undulating ridge system located above (east) of the Oriental Basin. As might be expected following a fire of Tower's intensity, the plantation suffered total mortality in response to high-severity fire effects (upper image). This site is at higher elevations than for camera point 8 in Texas Bar Creek, and it has deeper, ash-influenced soils. This results in a more robust and complete herbaceous response in the first spring after the fire (June; upper image).

Lower image shows good tree regeneration, reflecting results of tree planting along with natural regeneration of lodgepole pine. Trees with a brown cast are western larch seedlings and saplings being fed upon by larch casebearer, a non-native insect defoliator especially active in this portion of North Fork John Day Ranger District during 2008.

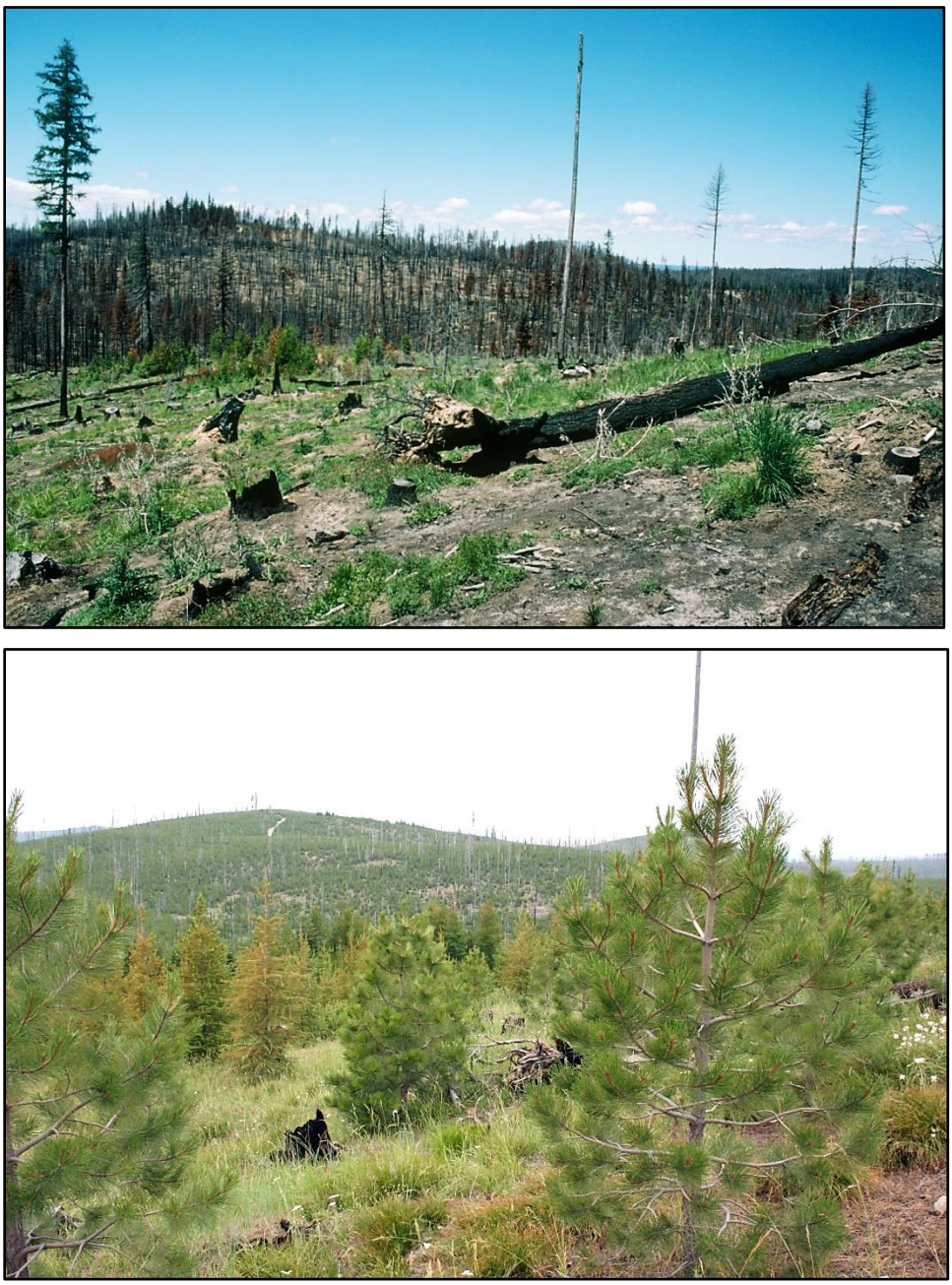

Figure 41 – Camera point 9, view 2 (upper image, June 1997; lower image, July 2008). This view looks northwest into a Junewood timber sale plantation from a broad, gently undulating ridge system located above (east) of Oriental Basin. Upper image suggests that at least one overstory tree might be predicted to survive; lower image shows that it did not survive (reflecting a common situation in Tower Fire). Bottom image shows tree seedlings and small saplings resulting primarily from tree planting activity.

[Note that all burned plantations in Tower Fire were replanted as quickly as possible to capitalize on impressive 'site preparation' benefits provided by an intense August wildfire. This late-summer wildfire was effective at curtailing postfire graminoid response; since graminoids compete intensely with tree seedlings, this outcome greatly increased seedling survival.] Once again, larch casebearer feeding damage is evident on western larch trees in the lower image.

Figure 42 – Planted western white pine tree near camera point 9. Tower Fire adversely affected native stands of western white pine on North Fork John Day Ranger District (NFJD), including stands at Hidaway Meadows, Winom Butte, Pearson Ridge, and Texas Bar Creek. Estimates suggest that up to 70% of native white pine on NFJD was extirpated by Tower Fire (Powell 1997), so western white pine seedlings were planted on all sites deemed suitable for survival and persistence of this tree species. This figure shows a planted white pine tree in a plantation containing camera point 9. Note excellent growth of a planted western larch tree behind and to the right of the white pine.

Figure 43 – Camera point 10, view 1 (upper image, June 1997; lower image, July 2008). This view looks north into headwaters of Lick Creek from 5507 road, about ¾ miles below its upper junction with 5510 road. In upper image, many trees have scorched foliage, suggesting that perhaps a few of the ponderosa pines might survive their fire effects (depending on time-of-burn, prefire moisture conditions, and other factors, ponderosa pines are known to occasionally survive very high amounts of crown scorch because their terminal branch buds are well protected). As has been consistently noted in this report, however, lower image shows that none of these trees survived.

Lick Creek is adjacent to Oriental Basin, and this portion of NFJD District has granitic rock types rather than basalt flows or ash-dominated surficial deposits. These dry, harsh, granitic sites support little postfire tree regeneration, and a predominant vegetation component in lower image is snowbrush ceanothus shrubland communities.

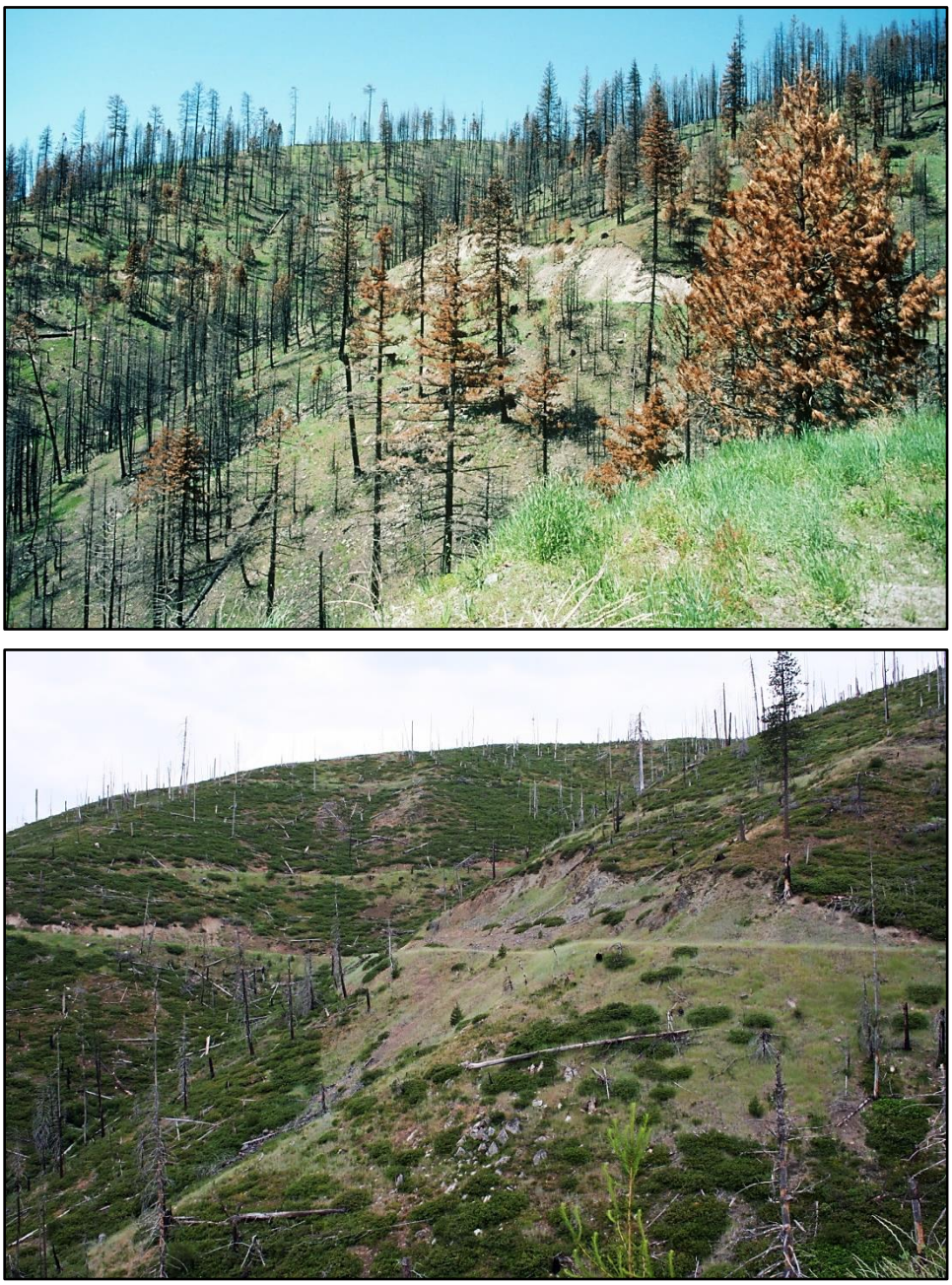

Figure 44 – Camera point 10, view 2 (upper image, June 1997; lower image, July 2008). This view looks northwest from a turnout on 5507 road near Lick Creek drainage, about ¾ miles below the upper 5507/5510 road junction. As was noted for view 1, none of the trees with scorched foliage in upper image survived and are evident in lower image. And as was also noted for view 1, predominant postfire vegetation in lower image is snow-brush ceanothus, which seems to do well on these coarse-textured granitic soils with relatively low water-holding capacity.

These areas in a 'granitic zone' of North Fork John Day Ranger District may require very long periods to recover to a tree-dominated ecosystem, if future effects of climate change (Kerns et al. 2018) allow a forest to become reestablished. It is possible that stand-replacing fire (which qualifies as an uncharacteristic fire effect for these areas) may cause these sites to transition to a permanent shrub type.

Figure 45 – Camera point 10, view 3 (upper image, June 1997; lower image, July 2008). This view looks southwest from a turnout on 5507 road near Lick Creek drainage, about ¾ miles below the upper 5507/5510 road junction – North Fork of the John Day River is in a deep canyon in the background. Once again, a primary impression when comparing these two images is that no tree survival occurred within the burned area, and much snag attrition occurred during this 11-year period (although many snags just snapped off, leaving at least a tall stob to provide some cavity-nesting habitat).

As has been noted for other views associated with this camera point, a primary postfire vegetation type features snowbrush ceanothus, with intermingled willow clumps on toe-slope areas or similar water-accumulation landforms.

Little or no conifer tree regeneration is apparent in the lower image, although some may be established beneath the ceanothus.

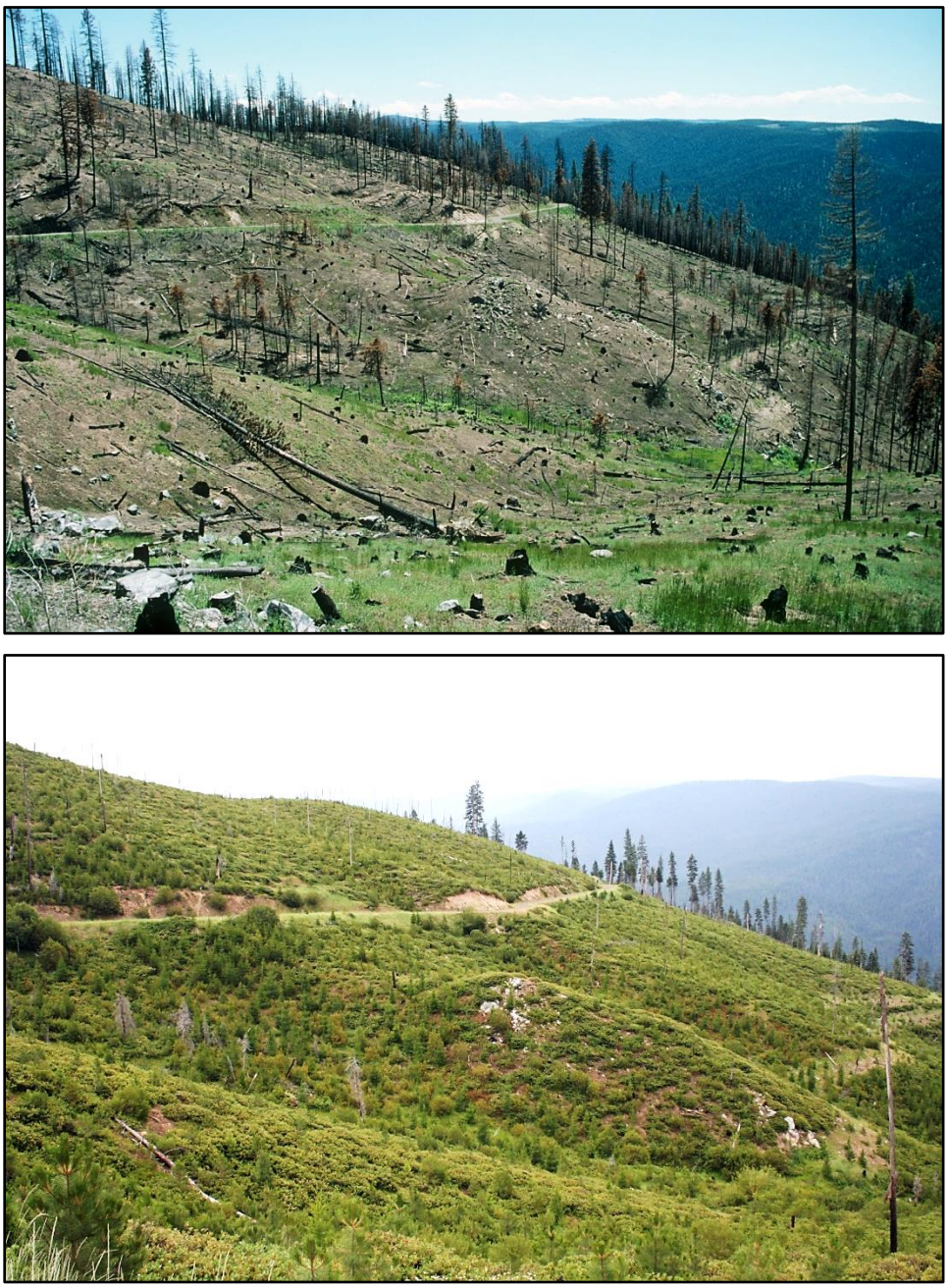

Figure 46 – Camera point 10, view 4 (upper image, June 1997; lower image, July 2008). This view looks south from a turnout on 5507 road near Lick Creek drainage, about ¾ miles below the upper 5507/5510 road junction. Comparing the two images in this figure suggests that vegetation recovery has been effective, and that soils are well protected at this point.

Lower image shows that snowbrush ceanothus is still prominent in the vegetation community, although conifer regeneration is evident in a few places (unlike several other views for this camera point). Snags were not abundant immediately postfire (upper image), and are even less obvious eleven years later (lower image).

Once again, the overall impression imparted by this photo pair is that forest recovery in this portion of Tower Fire will be a long and slow process.

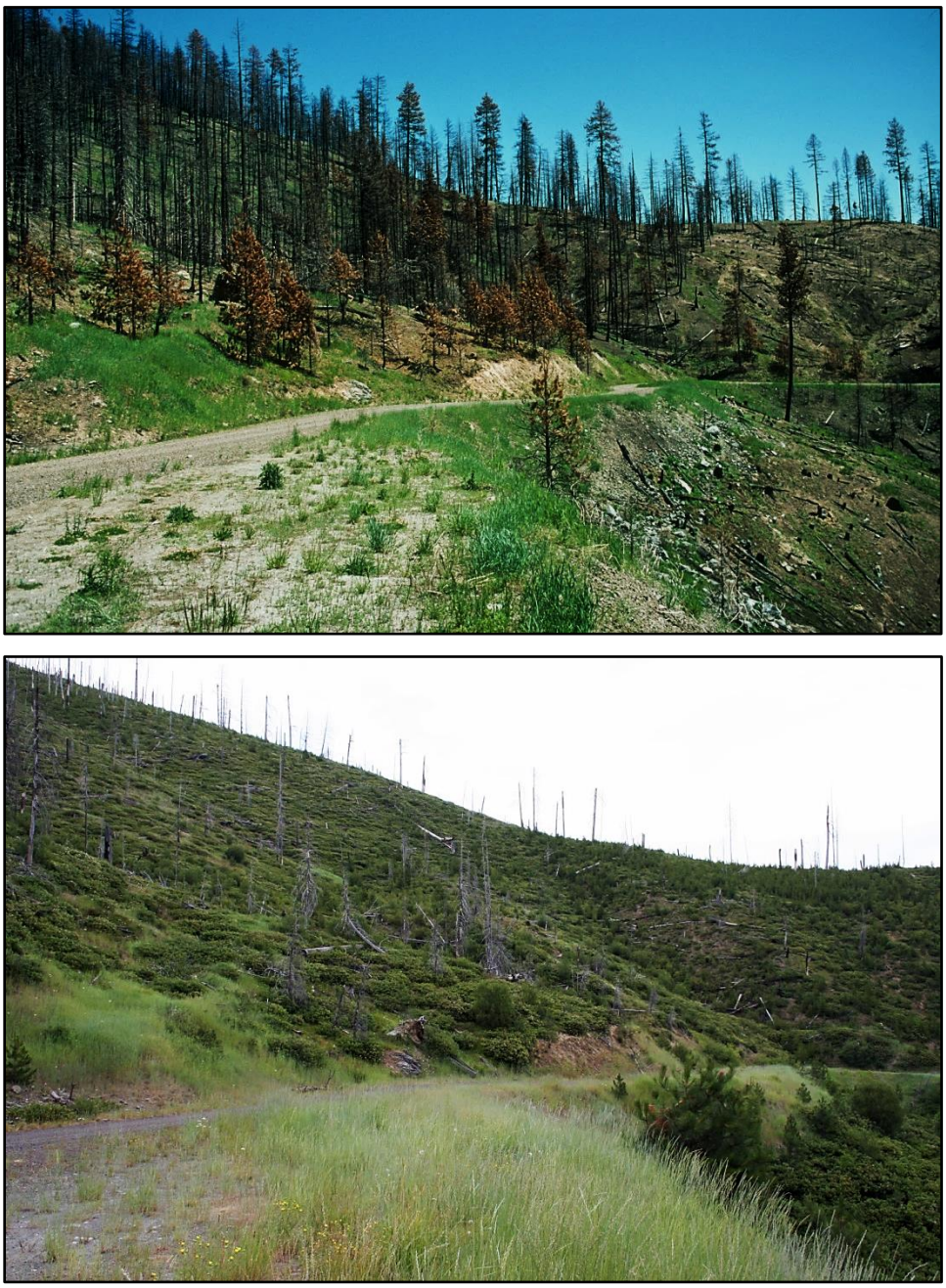

Figure 47 – Camera point 10, view 5 (upper image, June 1997; lower image, July 2008). This view looks southeast from a turnout on 5507 road near Lick Creek drainage, about ¾ miles below the upper 5507/5510 road junction.

Upper image suggests that a few prefire trees might survive their fire-caused injuries, but lower image shows that no tree survival actually occurred. Lower image shows that some snags persisted across an 11-year comparison period, and that snowbrush ceanothus is a primary postfire vegetative component.

Foreground portion of lower image shows a dense stand of exotic grass established to inhibit erosion of the road shoulder and adjoining fill slope.

Figure 48 – Camera point 11, view 1 (upper image, June 1997; lower image, July 2008). This view looks north from a turnout on 5507 road near Oriental Creek drainage, about 4.3 miles below an upper 5507/5510 road junction. Oriental Creek, a small perennial stream, occurs in a drainage shown in center of this view (above and below a road).

Upper image suggests that a reasonable number of prefire trees might survive their fire-caused injuries; lower image shows that this generally did not happen (but a few trees in background did survive). Scattered conifer regeneration is evident in lower image, but a primary postfire vegetation community is snowbrush ceanothus shrubland.

Below a middleground road (5507) in lower image is a more diverse vegetation community, with shrubs other than ceanothus present, along with higher grass coverage. Few snags persisted other than those on a steep slope in lower image's foreground, immediately below the camera point.

Figure 49 – Camera point 11, view 2 (upper image, June 1997; lower image, July 2008). This view looks southeast from a turnout on 5507 road near Oriental Creek drainage, about 4.3 miles below an upper 5507/5510 road junction.

This comparison suggests that sparse amounts of conifer regeneration are becoming established, although regeneration amounts may be higher than is obvious since smaller seedlings may be present beneath some shrubs. Some snags persisted during this 11-year period, and they have a reasonably good distribution across the site.

An overall impression imparted by this photo pair is that dry portions of Tower Fire will experience a slow recovery to a forested ecosystem, and enough seedlings are now established to ensure that forested conditions will ultimately be restored (unlike other camera points suggesting that shrubs could dominate dry areas for centuries before trees reoccur, or that a site has transitioned to a permanent shrub type).

Figure 50 – Fire effects in Oriental Creek drainage of North Fork John Day Ranger District as a result of 1996 Tower Fire (photo acquired by Dave Powell, July 1998; taken from Powell 2019). Tower Fire contains at least three different fire regimes, and each regime features varying amounts (proportions) of fire severity.

Some proportion of high-severity fire effects, where much of aboveground vegetation is top-killed, is an expected (characteristic) outcome for two fire regimes (e.g., regime III, mixed-severity, and regime IV, replacement), including a large extent of mixed-severity fire regime found in Cable Creek, Winom Creek, and Big Creek portions of the fire area.

But for Texas Bar Creek and Oriental Creek portions of Tower Fire, where the prevailing fire regime is low-severity and high-frequency (e.g., fire regime I), and the biophysical environment features dry forests, we would not expect long, continuous, highly-connected portions of drainages, and their associated Riparian Habitat Conservation Areas, to experience stand-replacing fire effects.

I am unaware if riparian planting occurred in Oriental Creek portion of Tower Fire, similar to what was completed for Texas Bar Creek (see fig. 36). According to Howell (2006), approximately 99% of Oriental Creek watershed was burned in Tower Fire, including most of its riparian habitats.

Since much of the burning in Oriental Creek was replacement (high) severity, which is uncharacteristic for a watershed comprised mostly of fire regime I (low-severity), it might be beneficial to plant riparian species along many stream reaches in this drainage to augment natural recovery processes that may be functionally impaired following an uncharacteristic fire-severity event.

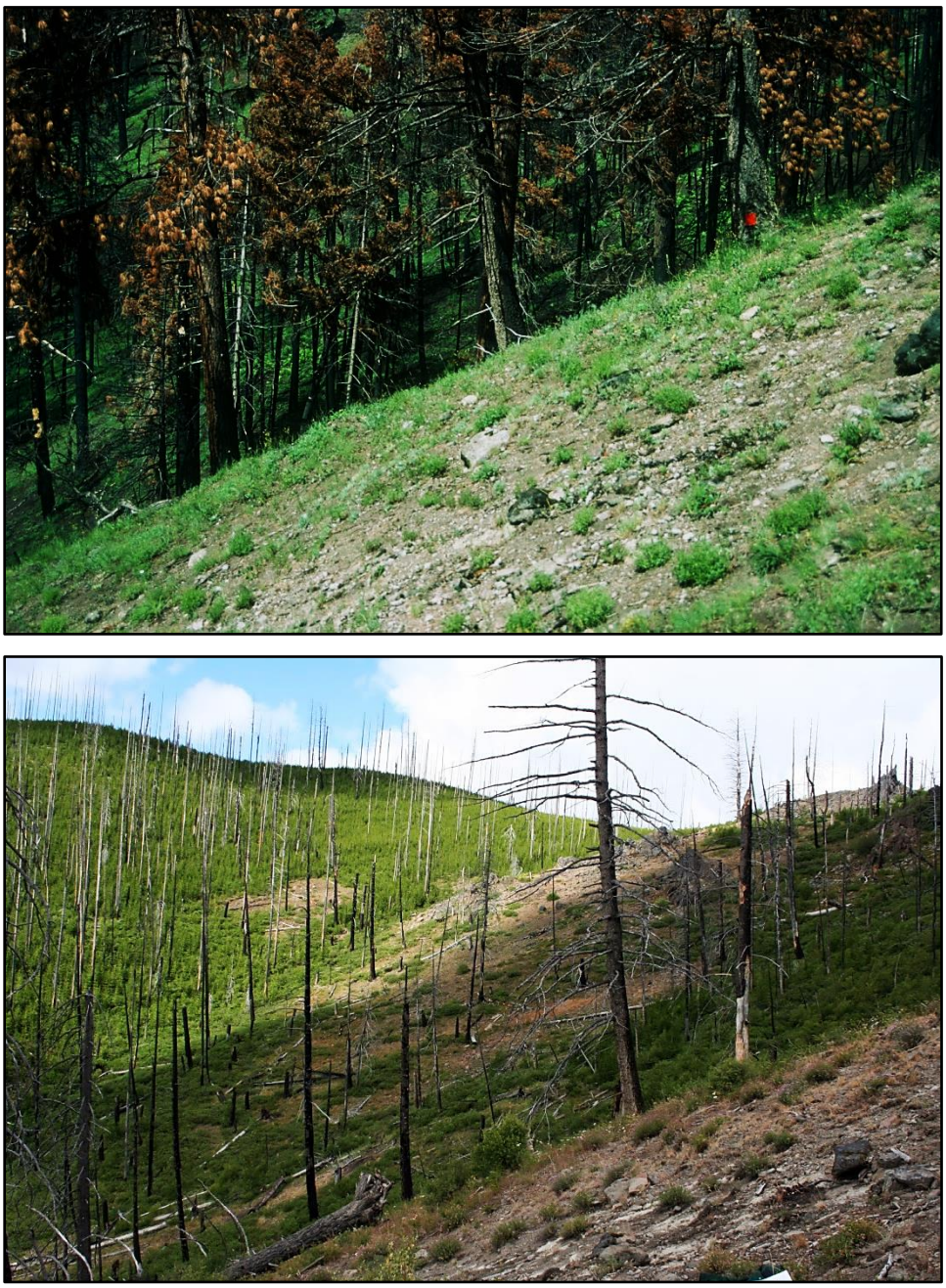

Figure 51 – Camera point 12, view 1 (upper image, June 1997; lower image, Aug. 2010). This view looks west from a mid-slope position on a steep hillside (57% slope gradient) in North Fork John Day Wilderness, about 1 mile east from 5507 road on South Winom Creek Trail #3153. This camera point, located at 5,400 feet elevation, has predominately granitic soils, with ravel moving fine particles down in the profile and leaving behind a coarse, gravelly surface. Rills and small gullies are common, especially after Tower Fire, and pedestalled plants clearly indicate high amounts of soil loss.

This comparison shows that tree survival suggested by upper image did not materialize (lower image), but snags are still abundant even 13 years after an initial take (lower image). This area was seeded (by hand) immediately after Tower Fire (a BAER project), but it was not particularly successful at inhibiting soil erosion for this highly-erosive site. Shrubs and small lodgepole pine are evident in background of lower image.

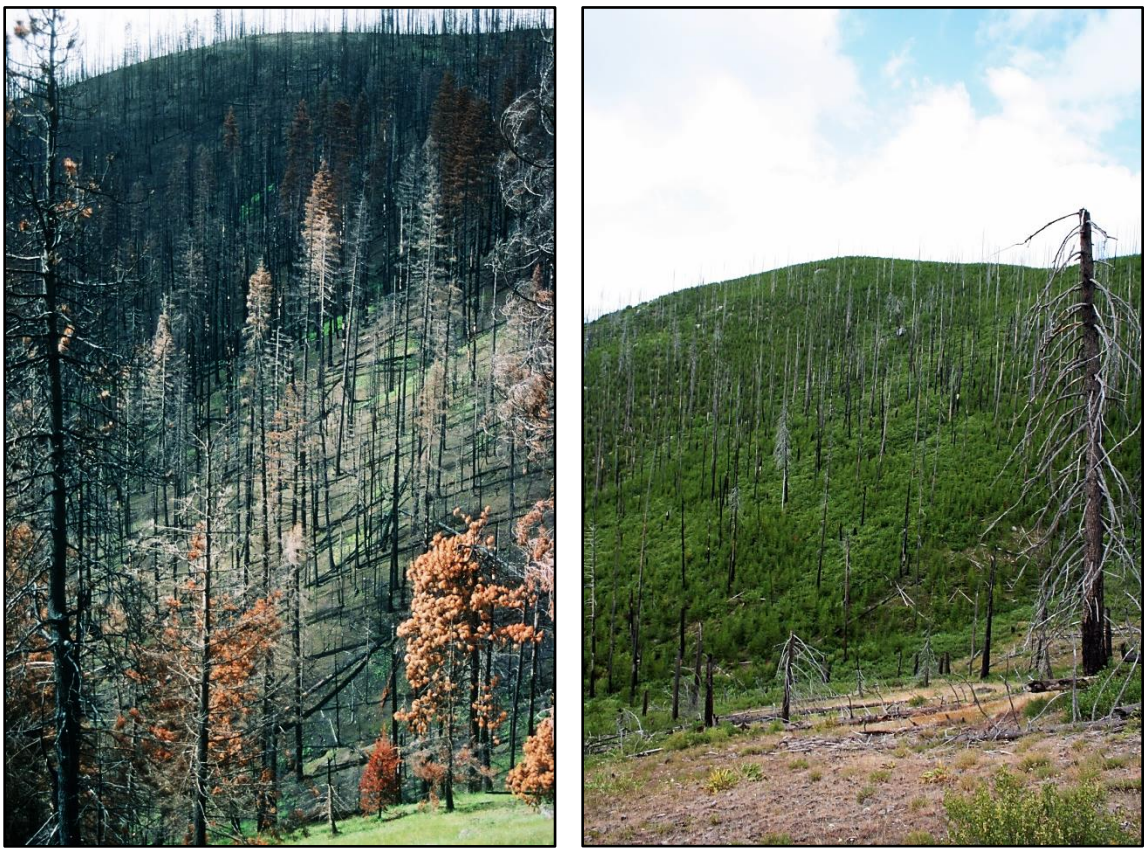

Figure 52 – Camera point 12, view 2 (left image, June 1997; right image, August 2010). This view looks southwest from a mid-slope position on a steep hillside (57% slope gradient) in North Fork John Day Wilderness, about 1 mile east from the 5507 road on South Winom Creek Trail #3153.

As was shown in the image comparison for view 1, this comparison shows that quite a few snags persisted across this 13-year period. The right image suggests that ample amounts of lodgepole pine regeneration, along with intermixed shrubs consisting of snowbrush ceanothus, Scouler willow, and russet buffaloberry (*Shepherdia canadensis*), have become established on the far hillside in a middleground portion of this scene. But note how the foreground scene in right image, which occurs on the granitic portion of this site, has little or no tree regeneration and low amounts of shrub or herb (grass/forb) coverage.

When right image was acquired in August 2010, primary ground-cover plants in the vicinity of the camera point stake consisted of mountain monardella (*Monardella odoratissima*), a yellow-flowered buckwheat (*Eriogonum* spp.), elk sedge (*Carex geyeri*), balsamroot (*Balsamorhiza* spp.), spreading dogbane (*Apocynum androsaemifolium*), a dry-site currant (probably *Ribes cereum*), and an herbaceous cinquefoil (*Potentilla* spp.). This flora, which is typically associated with dry sites, would generally not be expected for a site at 5,400-feet elevation, and this is another indicator of coarse-textured granitic soils with relatively low water-holding capacity.

Figure 53 – Camera point 12, view 3 (left image, June 1997; right image, August 2010). This view looks southeast from a mid-slope position on a steep hillside (57% slope gradient) in North Fork John Day Wilderness, about 1 mile east from the 5507 road on South Winom Creek Trail #3153.

Unlike views 1 and 2 for this camera point, the right image suggests that high levels of snag attrition occurred during this 13-year comparison period.

Relatively high canopy coverage of ground-cover vegetation in left image suggests that perhaps a postfire seeding operation (completed in late fall or early winter of 1996 as a BAER activity) was successful, but right image suggests that plant species established by seeding did not persist for the full length of this 13-year period.

[Seeded species were entirely native, as non-native plants (such as sterile wheat) were not considered appropriate for a Wilderness environment. I would have expected native species to perhaps exhibit more long-term persistence than is implied by this comparison.]

The background scene in the right image shows either dense shrub communities, or perhaps dense stands of 'doghair' lodgepole pine regeneration.

Figure 54 – Camera point 12, view 4 (left image, June 1997; right image, August 2010). This view looks northeast from a mid-slope position on a steep hillside (57% slope gradient) in North Fork John Day Wilderness, about 1 mile east from the 5507 road on South Winom Creek Trail #3153.

[Note that a basalt boulder in this image, with a charred log lying in front of it, is now being used as a reference point (RP) because the previous RP (an 18.4-inch diameter dead Douglas-fir) is down. Note that an orange location poster is still affixed to the down Douglas-fir RP, but on its downward side, so it is not visible from any vantage point.]

As was described for view 3, this photo comparison suggests that vegetation cover was more robust in June 1997, about 7 months after native ground cover species were seeded, than 13 years later in August 2010. [Due to different focal lengths and camera lenses being used in 1997 and 2010, the images unfortunately do not include identical view areas.]

As was discussed in a description for view 1, a relatively high amount of exposed soil surface for most areas close to this camera point resulted in impressive amounts of erosion, surface soil movement, creation of rills and small gullies, and pedestalled plants.

All these erosion indicators suggest that selection of this granitic portion of Tower Fire for BAER-funded seeding was a wise choice, but this postfire activity would have provided the most benefit had its initially good results been sustained across a longer timeframe.

Figure 55 – Camera point 12, view 5 (upper image, June 1997; lower image, Aug. 2010). This view looks southeast from a mid-slope position on a steep hillside (57% slope gradient) in North Fork John Day Wilderness, about 1 mile east from 5507 road on South Winom Creek Trail #3153. This view is centered on Winom Butte, a major landmark for this portion of North Fork John Day District.

Top image strongly suggests that some prefire forest on west slope of Winom Butte would survive its fire-caused damage, but lower image shows, **once again**, that this was not the case. And although the upper image reveals relatively dense stand density levels before Tower fire, lower image implies this did not result in an abundance of postfire snags, although a middleground scene shows reasonably high snag levels.

As is true for any of this camera point's views involving granitic substrates, there is little or no tree regeneration on these sites with shallow, coarse-textured, infertile soils.

Figure 56 – Camera point 12, view 6 (left image, June 1997; right image, August 2010). This view looks southeast from a mid-slope position on a steep hillside (57% slope gradient) in North Fork John Day Wilderness, about 1 mile east from 5507 road on South Winom Creek Trail #3153.

This image pair was acquired from exactly the same azimuth (direction) as for view 5 – view 5 has a horizontal camera orientation, whereas view 6 has a vertical camera orientation.

Since both views include the same scenes, no detailed comments are provided here because comments for view 5 pertain equally well for view 6.

Figure 57 – Small rock cairn built near the aluminum cap (above), and general vicinity viewpoint (below), for camera point 12. Lower image shows Don Justice recording GPS coordinates and other data relating to camera point 12.

The stake and cap for this camera point became extremely difficult to locate through time, at least partly due to issues surrounding loss of a reference point (RP). For this reason, a new RP was selected (see figure 54 for more information about an RP for this point), and a small rock cairn was constructed next to the cap to assist with its future relocation.

Note, however, that this hillside is unstable, with much erosion and rubble movement occurring (fig. 58), so it is unknown how long a cairn will retain its integrity.

Figure 58 – Evidence of active soil erosion near camera point 12. Descriptions for several views for this camera point mention indicators of active soil erosion associated primarily with granitic bedrock geology in this portion of Tower Fire.

Rills and exposed surface rock shown here do not appear to be a result of unusually severe storms, but likely reflect an impact of reduced vegetation cover for granitic sites – in other words, they represent increased water-caused soil erosion.

[Note that clumpy mounds of vegetation in this image consist primarily of mountain monardella (*Monardella odoratissima*), easily identified by its purple 'pincushion' flower clusters evident on many plants in upper left portion of the image. This plant also has a strong, pungent aroma, which is another good identification characteristic.]

During a series of sequential retake photographs for this camera point, it became clear that vegetation cover seemed to be declining through time, not increasing as might be expected for a site recovering after a severe wildfire.

In my estimation, one 'lesson learned' from this camera point is that wildfires in granitic landscapes can accelerate soil losses and associated erosional impacts (stream sedimentation, cobble embeddedness, increased culvert maintenance, etc.).

This postfire outcome has also been reported following fires in other granitic areas, including a granite batholith region of southern Idaho and decomposed granites of the central Front Range in Colorado (Pierce et al. 2004).

Figure 59 – Camera point 13, view 1 (left image, June 1997; right image, July 2008). This view looks northeast from a point about 50 feet above 5510 road in a large plantation established in May 1997; point located about 3.8 miles below upper junction of 5510 and 5507 roads.

Amount of terrain included in right image is more than what is depicted in left image, for two reasons: (1) unfortunately, camera lenses changed between an initial take (35 mm SLR film camera) and a retake (35 mm digital SLR camera); and (2) a large center section of 5510 road was obliterated in August 2007, resulting in a dramatically different foreground scene.

For visual orientation, use an unusual morel-shaped rock formation shown in both images (whitish stem of morel-shaped formation is uneroded ash; 'mushroom' cap is harder material such as basalt or andesite).

As was noted for many other camera points, this comparison shows: (1) scorched trees in left image did not survive or persist long enough to appear in right image 11 years later; and (2) a moderate number of dead trees in left image persisted as snags and are still providing cavity-nester habitat in right image.

Also note that little or no conifer regeneration is evident in this comparison, although this view may be looking out of the plantation in which the camera point stake and cap were installed.

Figure 60 – Road obliteration in Tower Fire near camera point 13. Access to camera point 13 is now more difficult because a substantial segment of road 5510 was obliterated after the camera point was installed. Top image shows an obliterated section immediately after treatment was completed.

Why was road obliteration completed for some portions of Tower Fire? Lower image shows upper Oriental Creek drainage, showing a relatively high amount of roading and reflecting a long history of active management for Texas Bar and Oriental Creeks.

Now that timber management and other active management practices are much reduced from historical levels, and now that road maintenance budgets are also reduced, many of these road segments are no longer needed, so as funding becomes available, they are being removed from the transportation system.

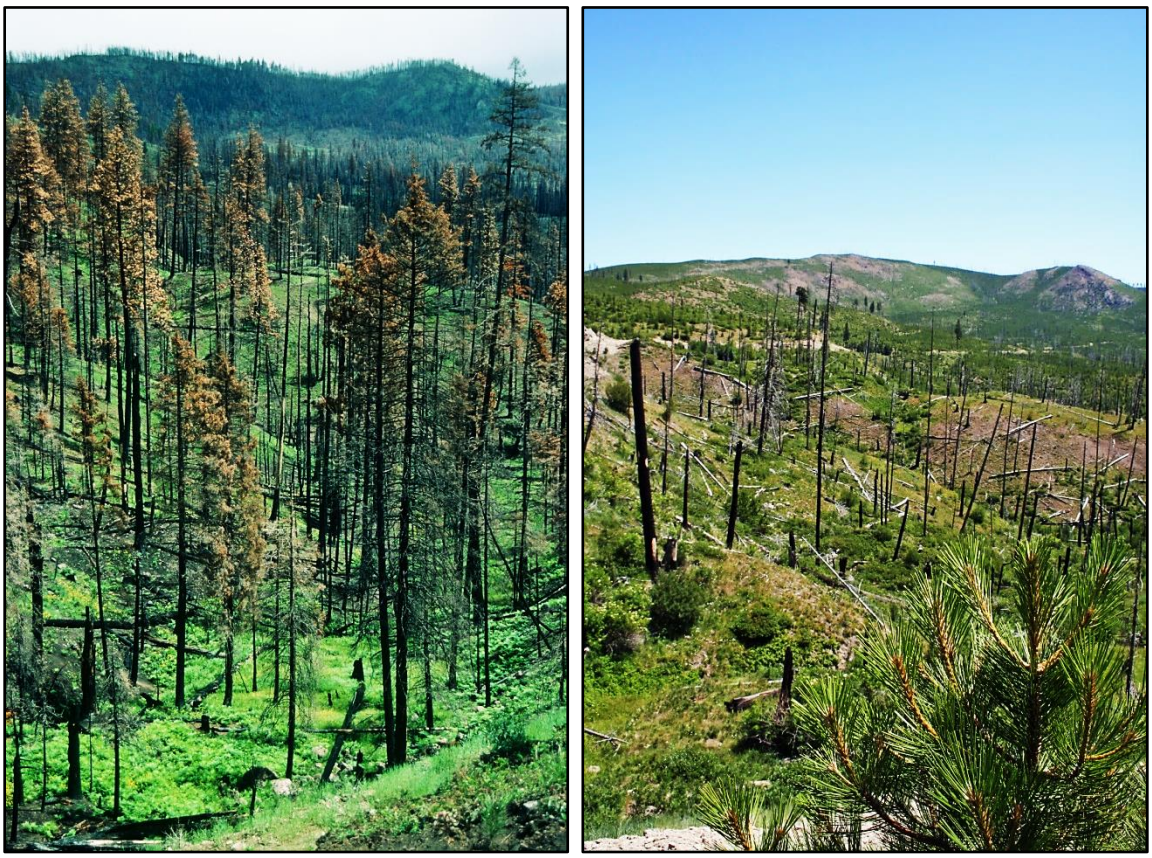

Figure 61 – Camera point 13, view 2 (left image, June 1997; right image, July 2008). This view looks east from a point about 50 feet above 5510 road in a large plantation established in May 1997; point located about 3.8 miles below upper junction of 5510 and 5507 roads.

Once again, this comparison gives a very different perspective of Tower Fire effects – left image suggests that surviving trees are probably present in foreground, middleground, and background portions of photo (clear back to a ridgeline).

Right image, however, shows that substantial and virtually complete tree mortality occurred in all portions of this landscape (a handful of surviving trees seems to be present in a middleground scene).

Although it is not definitive, the right image suggests that some new conifer regeneration has occurred, including possibly dense stands of young lodgepole pine toward large rock outcrops on background ridges.

Figure 62 – Camera point 13, view 3 (left image, June 1997; right image, July 2008). This view looks north from a point about 50 feet above 5510 road in a large plantation established in May 1997; point located about 3.8 miles below upper junction of 5510 and 5507 roads.

Once again, amount of terrain included in both these images is not identical – I suggest you use two adjoining rock outcrops for visual orientation.

This comparison shows that a few overstory trees survived on a ridgeline, and that reasonably complete conifer regeneration has become established on a foreground slope located beneath this view.

Snag abundance is not particularly high in right image, but snags that are present are relatively well-distributed across this site.

Figure 63 – Camera point 13, view 4 (upper image, June 1997; lower image, July 2008). This view looks northeast from a point about 50 feet above 5510 road in a large plantation established in May 1997; point located about 3.8 miles below upper junction of 5510 and 5507 roads.

Upper image shows that a substantial amount of impact occurred during first winter after Tower Fire, with many trees in a middleground portion snapped off by wind.

Lower image shows that none of the fire-scorched trees in a headwaters area (upper right) survived during this 11-year comparison period, but that many of them still stand as snags.

Lower image also shows that conifer regeneration is established on the aspect located closest to the camera point, but that regeneration is largely absent on far slopes near headwaters areas.

Figure 64 – Camera point 14, view 1 (left image, June 1997; right image, July 2008). This view looks north from edge of a large burned plantation replanted in May 1997.

Although it sounds tiresome by now, this view shows, once again, that trees with scorched foliage in left image's background scene did not survive and persist across this 11-year comparison period.

Some snags present on a steep, lower-slope position above the drainage did persist to provide cavity-nester habitat, but it appears that no snags on background slopes persisted.

Background slopes occur on dry aspects and are occupied primarily by snowbrush ceanothus, whereas a foreground scene features conifer tree regeneration resulting from both planted and natural seedlings.

Figure 65 – Camera point 14, view 2 (left image, June 1997; right image, July 2008). This view looks northeast from edge of a large burned plantation replanted in May 1997.

High scorch levels present on trees in left image would not imply their continued survival, and this is, in fact, what happened. Large number of snags apparent in left image had high attrition levels, although reasonable snag numbers persisted when considering the dry biophysical environment included in this view.

Background scene, which is not included in a plantation area, is now occupied by sparse ground cover and ceanothus shrubland, not by tree regeneration.

Most of a foreground scene, included in a replanted plantation, appears to have robust tree regeneration.

Figure 66 – Camera point 14, view 3 (left image, June 1997; right image, July 2008). This view looks southeast from edge of a large burned plantation replanted in May 1997.

Much of this view includes a relatively narrow leave strip retained between adjacent units during a timber sale. Both units were planted after the sale, so a leave strip also provided prefire diversity between adjacent plantations.

Left image shows that all trees were killed in a leave strip, which generated many postfire snags.

Right image shows that many of these snags persisted across this 11-year comparison period. Right image also shows that tree regeneration is getting established across most of this view, with highest tree density present in foreground scenes included in a replanted plantation.

Willow clumps (likely Scouler or Bebb willows) are also apparent in right image.

Figure 67 – Camera point 14, view 4 (upper image, June 1997; lower image, July 2008). This view looks south from edge of a large burned plantation replanted in May 1997. Upper image includes most of an unmanaged leave strip described for view 3. It shows that no tree survival occurred, and that numerous snags were created by Tower Fire.

Lower image shows sporadic conifer regeneration, along with willow clumps and scattered snowbrush ceanothus, in the regenerating forest. Relatively large numbers of snags also persisted across this 11-year period (lower image). Although regeneration may seem sparse, I suspect it will be sufficient to restore forest conditions.

Figure 68 – Camera point 15, view 1 (upper image, July 1997; lower image, July 2008). This view looks east from a slope about 100 yards above 5448 road in northern portion of Tower Fire (North Fork Cable Creek watershed). This camera point, located in northern third of Tower Fire (largely comprised of North and South Fork Cable Creek watersheds), occurs in Tower Fire's 'lodgepole pine zone.'

As is true for other camera points in a lodgepole pine zone, a primary postfire response in lower image is dense, 'doghair' regeneration of lodgepole (but lodgepole regeneration is denser in Winom Creek/Big Creek portion of Tower Fire than shown here).

North Fork John Day RD personnel found sporadic occurrences of what they believe is natural regeneration of seed-origin quaking aspen seedlings in this portion of Tower Fire (although no aspen are big enough, or dense enough, to show up in lower image).

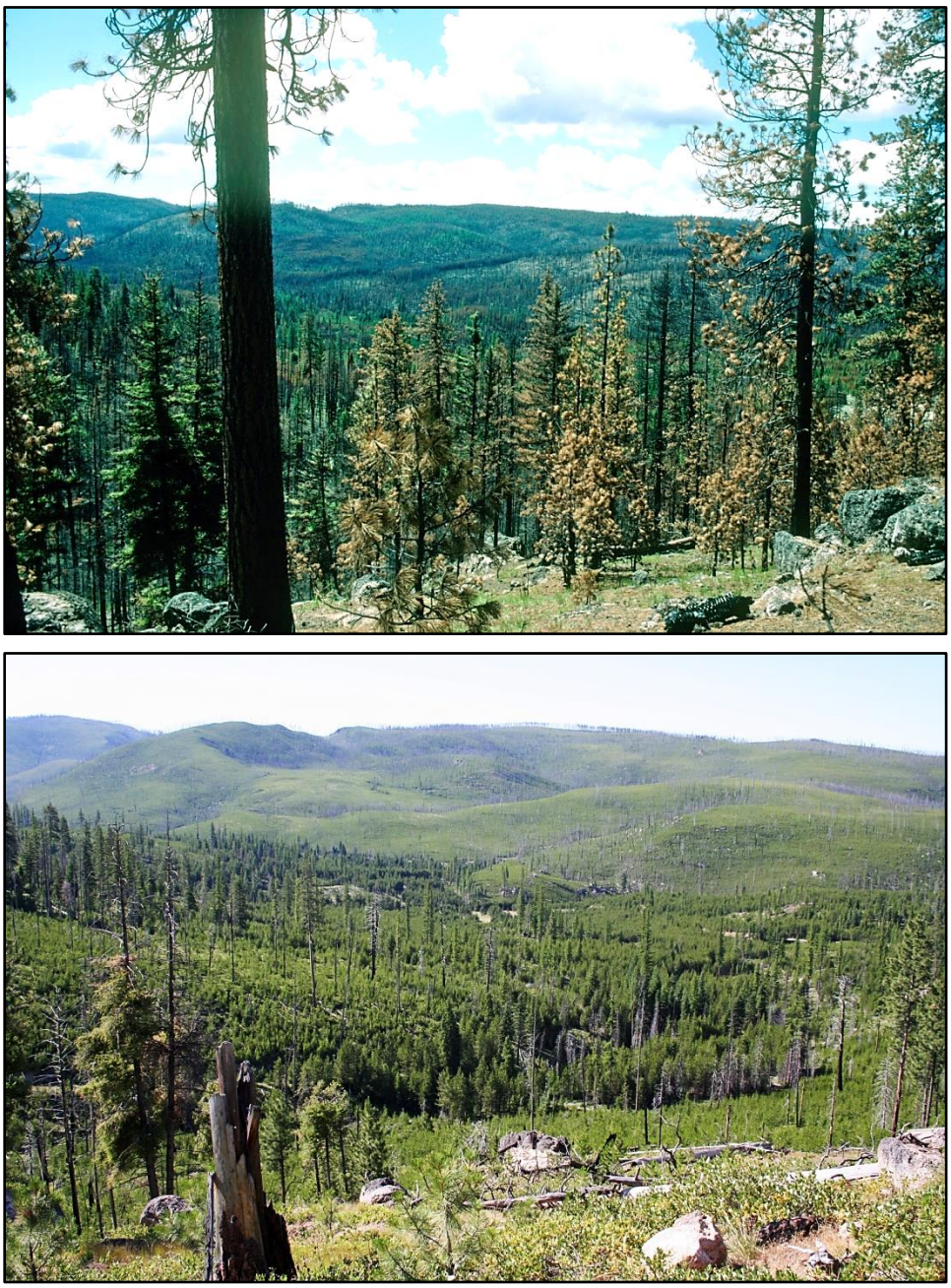

Figure 69 – Camera point 15, view 2 (upper image, July 1997; lower image, July 2008). This view looks south from a slope about 100 yards above 5448 road in northern portion of Tower Fire (North Fork Cable Creek watershed). In upper image, many scenes seem to depict areas unaffected by Tower Fire, as though the fire's boundary might be located somewhere in the foreground scene. Lower image, however, shows that all of what is included in this view was affected by Tower Fire, and except for unburned islands in left-central portion of the image, along with several toe-slope and drainage areas that survived relatively intact, almost all this view experienced stand-replacing fire severity.

But since prefire forests were dominated by lodgepole pine, it is likely that upper image depicts areas that may have been largely underburned (short flame lengths), a fire intensity virtually certain to cause high levels of tree mortality in forest types dominated by thin-barked species such as lodgepole pine.

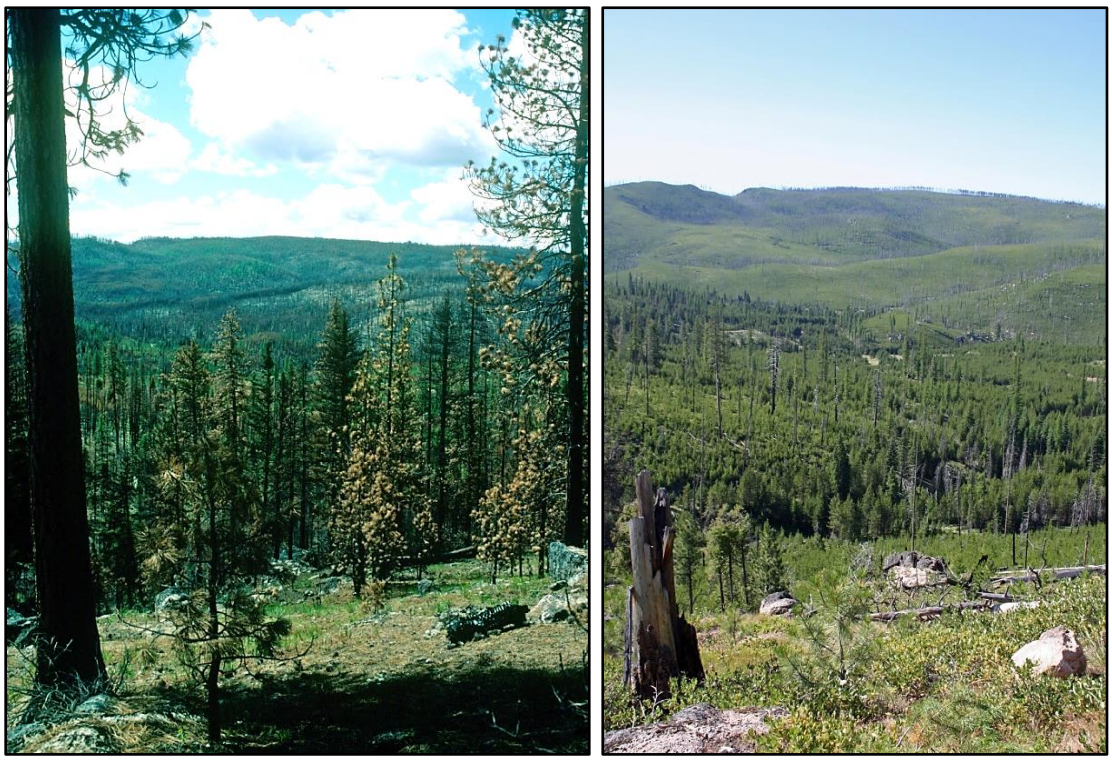

Figure 70 – Camera point 15, view 3 (left image, July 1997; right image, July 2008). This view looks south from a slope about 100 yards above 5448 road in northern portion of Tower Fire (North Fork Cable Creek watershed).

This image pair was acquired from exactly the same azimuth (direction) as for view 2 – view 2 has a horizontal camera orientation, whereas view 3 has a vertical camera orientation.

Since both views include the same scenes, no detailed comments are provided here because comments for view 2 pertain equally well for view 3.

Figure 71 – Camera point 15, view 4 (left image, July 1997; right image, July 2008). This view looks north from a slope about 100 yards above 5448 road in northern portion of Tower Fire (North Fork Cable Creek watershed).

Left image shows relatively low stand density, and some middleground trees with low levels of crown scorch. Right image shows that trees with little or no crown scorch did survive, that little tree regeneration occurred, and that snowbrush ceanothus or other shrub species occupy most areas between rock outcrop.

Not many snags shown in left image persisted across the 11-year comparison period included here.

Note that left image shows edge of a large, scorched dwarf-mistletoe broom in a Douglas-fir tree.

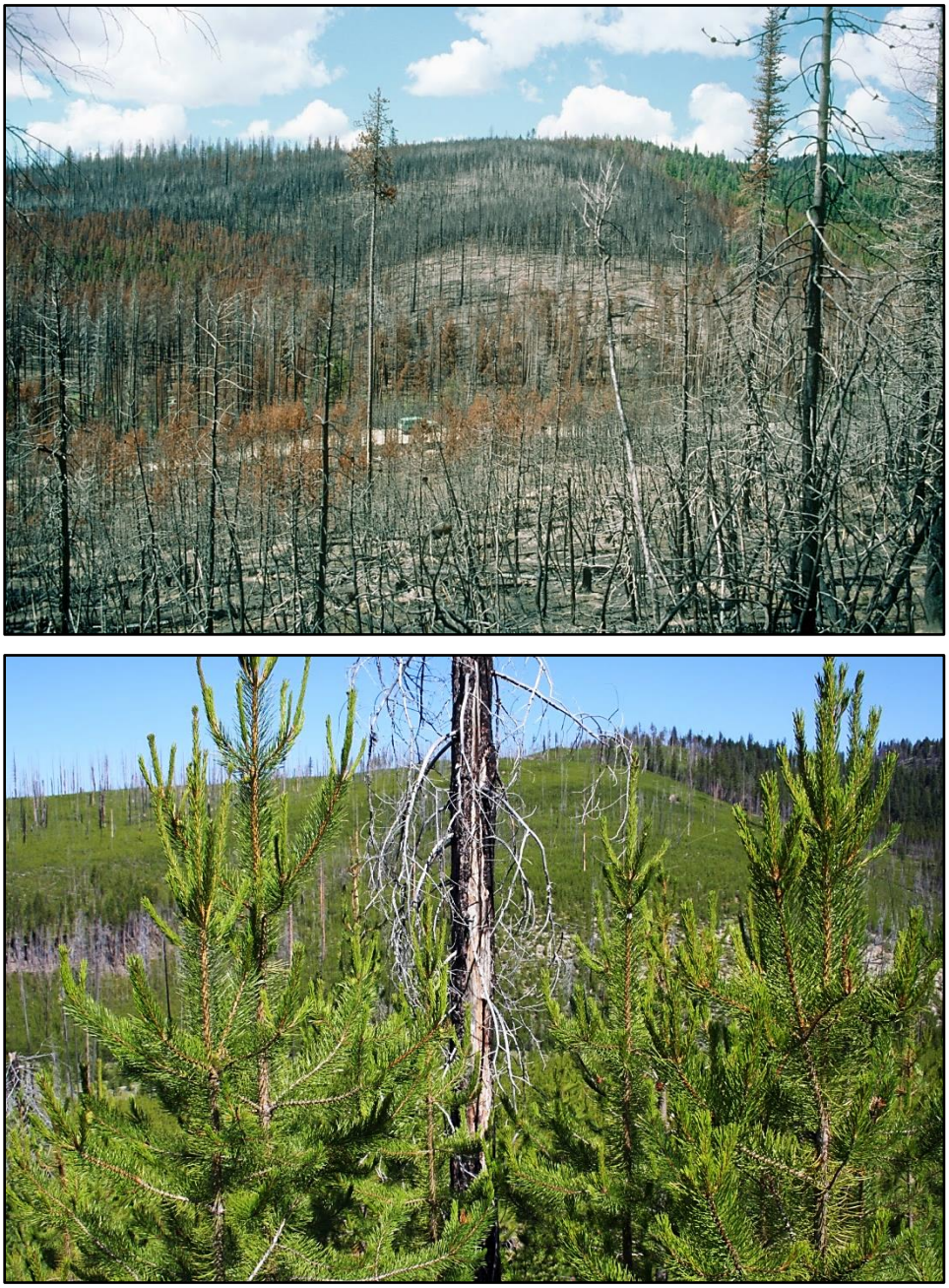

Figure 72 – Camera point 16, view 1 (upper image, July 1997; lower image, July 2008). This view looks northwest from a vantage point located about 230 feet above 300 spur road (now closed) off 5226 road, on far eastern edge of Tower Fire. This camera point is located in a lodgepole pine zone, and it shows a similar development pattern as other lodgepole camera points – there was basically no survival of any prefire trees, but copious amounts of lodgepole pine regeneration is a predominant postfire vegetation type.

Middleground and background scenes in lower image suggest that reasonable numbers of snags are still present in some areas, even though many of them are small- or medium-diameter lodgepole pine snags, a species-size combination not known for good snag longevity. As mentioned for some other lodgepole camera points, this view has dubious long-term value because lodgepole pines in the foreground will eventually grow large enough to block middleground and background scenes.

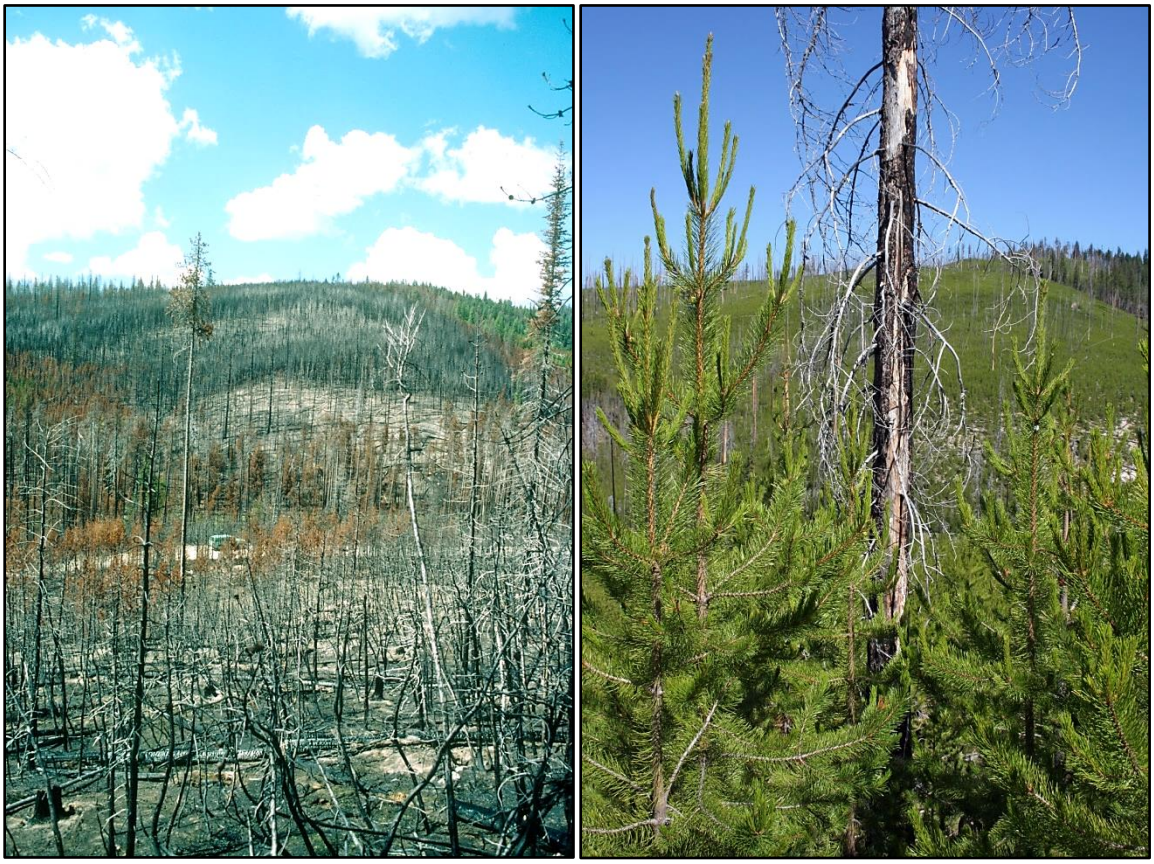

Figure 73 – Camera point 16, view 2 (left image, July 1997; right image, July 2008). This view looks northwest from a vantage point located about 230 feet above 300 spur road (now closed) off 5226 road, on far eastern edge of Tower Fire.

This image pair was acquired from exactly the same azimuth (direction) as for view 1 – view 1 has a horizontal camera orientation, whereas view 2 has a vertical camera orientation.

Since both views include the same scenes, no detailed comments are provided here because comments for view 1 pertain equally well for view 2.

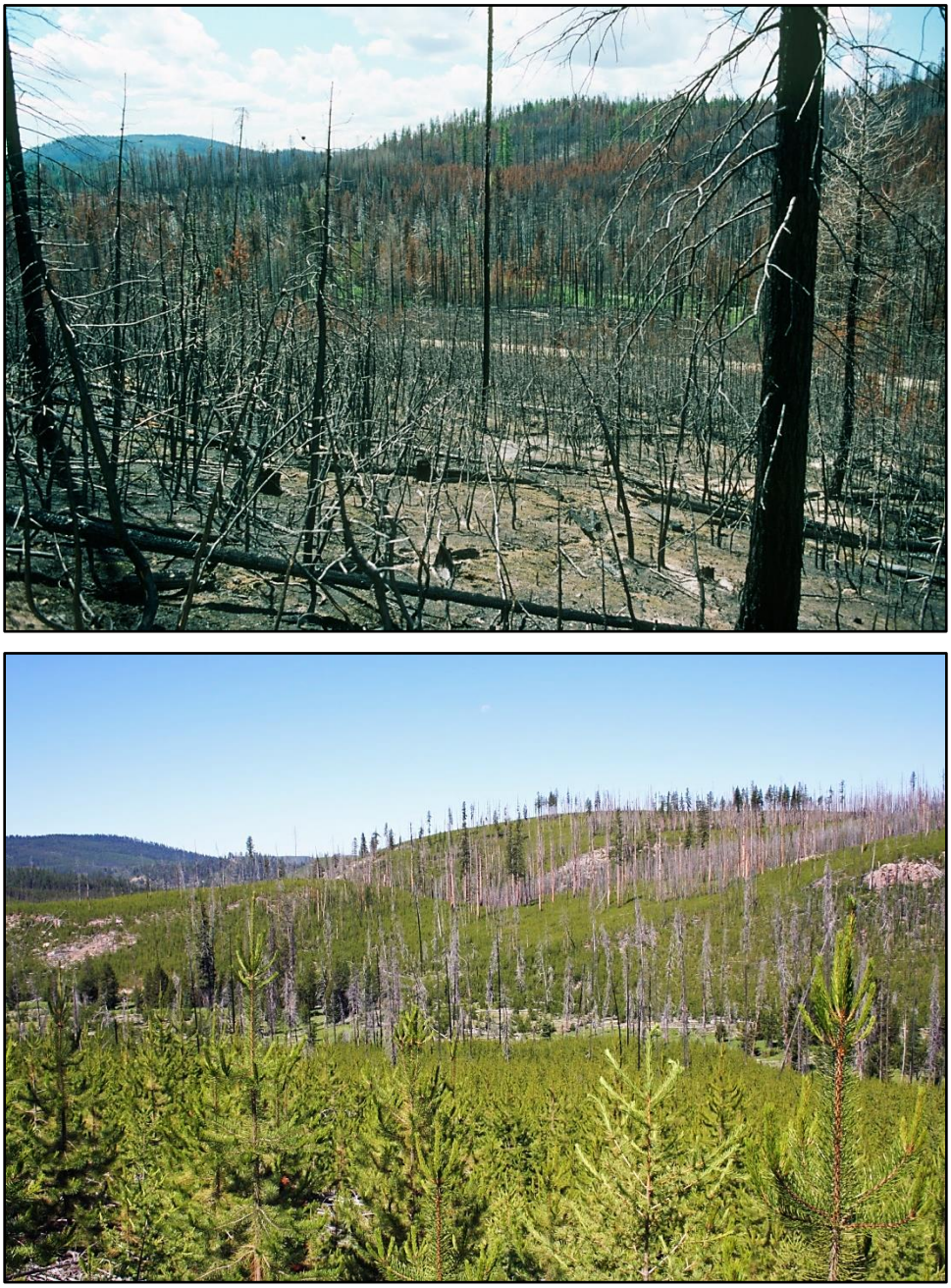

Figure 74 – Camera point 16, view 3 (upper image, July 1997; lower image, July 2008). This view looks west from a vantage point located about 230 feet above 300 spur road (now closed) off 5226 road, on far eastern edge of Tower Fire. Upper image shows green trees in a middleground scene above a meadow; lower image shows that many of these trees survived, which is a different outcome than for other camera points.

Upper image shows several scorched-tree patches, indicating where lodgepole pine stands experienced underburning instead of crown fire. Although none of those trees survived, bottom image shows that they did result in relatively dense snag patches.

In bottom image, foreground scene shows dense lodgepole pine regeneration; middleground and background scenes also seem to feature lodgepole regeneration, although a smooth texture for several areas suggests that dense ceanothus may be present there rather than lodgepole pine.

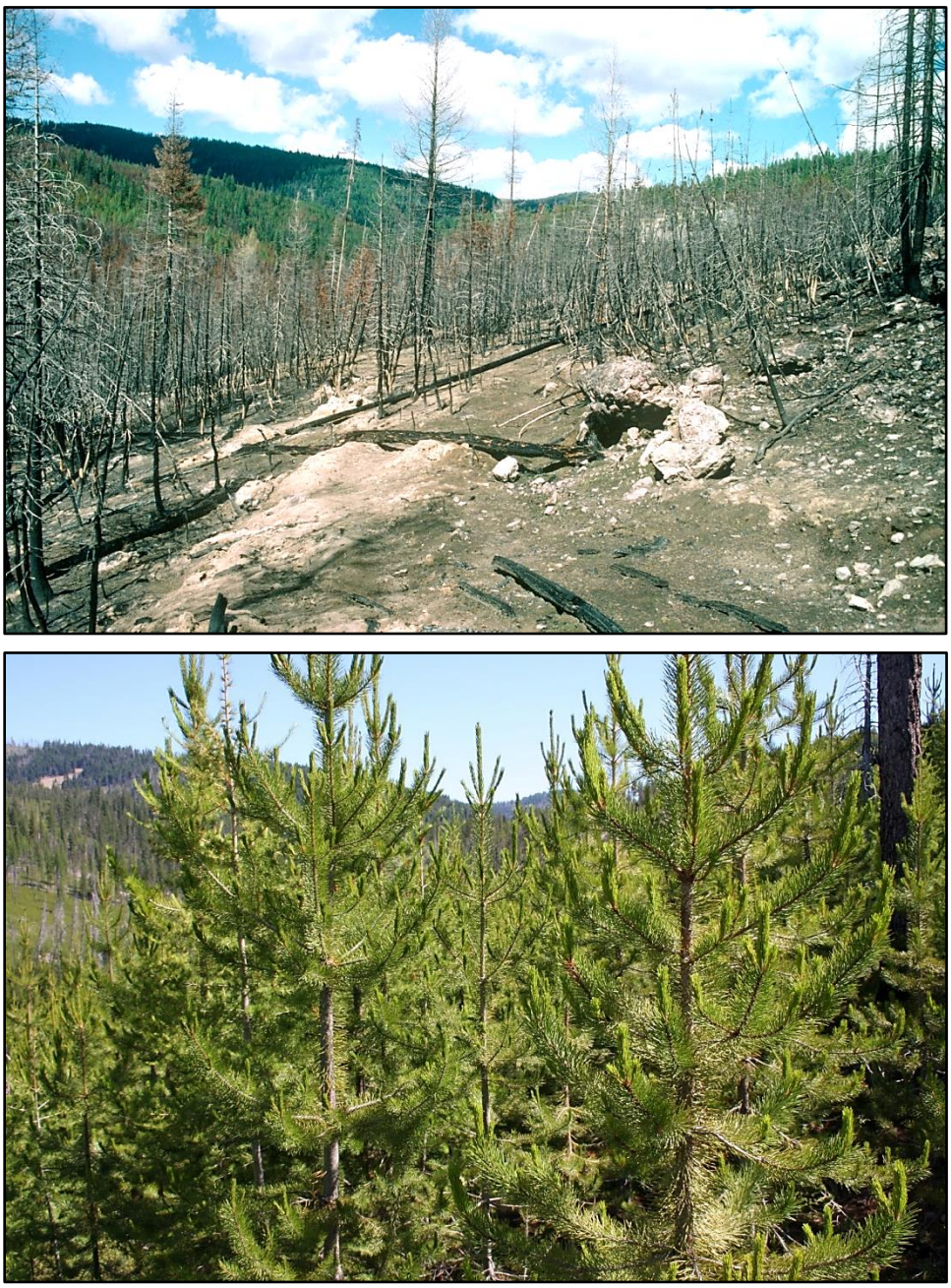

Figure 75 – Camera point 16, view 4 (upper image, July 1997; lower image, July 2008). This view looks northeast from a vantage point located about 230 feet above 300 spur road (now closed) off 5226 road, on far eastern edge of Tower Fire.

This view looks into an area near boundary of Tower Fire, with portions of background scene outside the fire's perimeter.

Burned areas support dense stands of lodgepole pine regeneration, as would be expected since this camera point occurs in the lodgepole pine zone, but in the lower image, far left portion of the middleground scene seems to show an area dominated by a dense shrubland of snowbrush ceanothus.

Figure 76 – Camera point 17, view 1 (upper image, June 1998; lower image, July 2008). This view looks east from a point in 1986 Long Meadows Fire, which was reburned by Tower Fire in 1996. Upper image shows an obvious biological soil crust on exposed ash-dominated surface soil, along with regenerating early-successional plants such as thistle (*Cirsium* spp.), flannel mullein (*Verbascum thapsus*), and snowbrush ceanothus.

Upper image also shows a lot of dead lodgepole pine regeneration, which regenerated following Long Meadows Fire 10 years earlier, and a few surviving western larch trees around the reburn's edge. Lower image shows lodgepole pine regeneration, as expected, intermixed with robust ceanothus plants (with white flower clusters) and a few naturally regenerated western larch seedlings.

But the lower image also suggests that lodgepole regeneration is not as dense in this reburn as in other Tower Fire areas. Why not? There may be several reasons for this.

Tower Fire reburned several small fires from 1986. A good example is Long Meadows fire, a small area (app. 200 acres) that burned in 1986 and was burned again (by Tower) in 1996. This is what I believe happened in Long Meadows: the 1986 fire in this lodgepole pine forest was flashy, moving through the stands quickly and often occurring as a crown fire, perhaps without an accompanying surface fire.

Usually crown fires have a surface fire and an associated crown fire, both moving together, but lodgepole pine forest floors can be very sparse (other than litter and duff), so sometimes these forests support an 'independent' crown fire without an accompanying surface fire.

The initial fire was flashy enough to kill pines (lodgepole has low fire resistance), but the heat pulse into the soil was probably not strong enough (perhaps because of a relatively weak surface fire) to elicit a strong response from ceanothus and willow, two shrubs that responded vigorously in certain portions of Tower Fire.

Killed lodgepoles fell over in 5-10 years, creating an elevated fuelbed referred to as 'jackstraw.' Then, copious lodgepole regeneration (from serotinous cones and that year's cone crop) germinated and began to work its way up through the jackstraw. [Temporary plots we installed in Tower Fire commonly show up to 20,000 lodgepole pine seedlings per acre, demonstrating the effectiveness of a serotinous seed source.]

Then, the 1986 burn was reburned by Tower 10 years later. A combination of heavy jackstraw fuel and dense regeneration created a much different fuelbed than was present in 1986. The 1996 reburn was very intense, had longer on-site residence time than the original burn (due to jackstraw fuels), and is closer to the ground because the 1986 fire occurred mostly in tall canopy fuels (e.g., canopy fuels in a mature stand, not in a seedling-size stand).

These conditions allowed the reburn to generate a significant heat pulse into the ground, thereby stimulating germination of ceanothus and willow seed. [High temperatures (80 to 95° C) are necessary to break the seed coat and allow ceanothus to germinate, which explains why this shrub often proliferates after severe fires (Lotan 1986).]

Research describes how ceanothus seed remains viable in upper soil layers for several centuries (Lotan 1986). It is not uncommon for an area to experience one or more relatively benign fires and produce no ceanothus or willow response, followed by a severe fire – and all of a sudden, ceanothus shows up like gangbusters (fig. 77), and then everyone wonders where it came from because it was not present in the prefire stand.

When wildfire spawns a strong ceanothus response (fig. 77), there are often concerns about its effect on conifer regeneration. For this reason, managers may consider treatments to reduce ceanothus cover and abundance, particularly for situations where conifer seedlings will be planted (Uebler 2000). Once ceanothus becomes established, it can rapidly overtop seedlings, growing five feet or more within five years of a disturbance (Conard and others 1985, Lotan 1986).

One study found that ponderosa pine survival was reduced by 60%, and growth by 50%, when seedlings were growing under a ceanothus canopy (Zavitkowski et al. 1969). In another study, a treatment that reduced ceanothus cover by 44-79% resulted in a two- to three-fold increase in ponderosa pine survival, and a two-fold increase in growth (Ross et al. 1986).

But Lopushinsky and Klock (1990) found that "From the soil surface to a depth of 24 inches, soil water content in snowbrush plots was similar to that in bare plots during most of the summer, thereby suggesting that snowbrush may not be a serious competitor for soil moisture during the initial establishment of conifer seedlings."

Figure 77 – Snowbrush ceanothus in Tower Fire area. Snowbrush ceanothus (*Ceanothus velutinus*) is a classic example of a postfire plant species exhibiting many adaptations to a fire environment. As a nitrogen-fixing plant species, ceanothus may offer benefits for regenerating tree stands in a severe burn where much of the prefire nutrient pool was volatized by the fire.

Ceanothus is often handled as 'competing vegetation' by foresters, but its nitrogen-fixing ability may help increase postfire tree growth, as described by Kelty (2006):

"The greatest use of facilitation in forest plantations has been through the combination of an N-fixing tree [or shrub] species (those with root symbionts that fix atmospheric N2) and a non-N-fixing, valuable timber tree species that shows substantial growth responses to increased N availability. The species are grown in mixture to allow N to be transferred from the N-fixing species to the companion species. The transfer mechanism is: the N-fixing species produces leaf and root tissues with high N content; decomposition of dead leaves and roots increases the N soil pool (compared to that in a stand without the N-fixing species); the N in soils is then available to both species for root uptake."

Figure 78 – Camera point 17, view 2 (upper image, June 1998; lower image, July 2008). This view looks south from a point in 1986 Long Meadows Fire, which was reburned by Tower Fire in 1996. Upper image shows downed, burned boles derived from snags and jackstraw resulting from the 1986 fire, along with a dense patch of short gray stobs that had been lodgepole pine saplings before Tower Fire. Lower image shows rapidly growing lodgepole pine saplings intermixed with ceanothus shrubs.

Note how density of postfire lodgepole regeneration shown here (lower image) is much lower than for fire areas not located in reburns (in particular, see camera points 4 and 5, both of which are located in the dense, lodgepole pine zone). I believe this is a primary benefit of a strong ceanothus response in this reburn – instead of 5,500 lodgepole pine seedlings per acre (camera point 5), there are only 1,000 per acre here (based on plot measurements taken in July 2000 at the camera point location).

Figure 79 – Camera point 17, view 3 (upper image, June 1998; lower image, July 2008). This view looks southwest from a point in the 1986 Long Meadows Fire, which was re-burned by Tower Fire in 1996.

This photo pair provides pretty much the same story as for view 2 – upper image shows intense fire effects (even though it was acquired more than 18 months after Tower Fire was extinguished – notice an obvious lack of vegetation cover), while lower image shows a well-stocked (but not excessively stocked) stand of lodgepole pine regeneration growing intermixed with snowbrush ceanothus shrubs.

Internodes on lodgepole pine trees suggest they are growing well, and that stagnation is not a possibility on this site. Once again, I am convinced that ceanothus did us a 'favor' here – it suppressed lodgepole pine regeneration just enough to prevent excessive stocking, but not so well that a postfire stand is understocked.

Figure 80 – Camera point 18, view 1 (upper image, June 1998; lower image, July 2008). This view looks north from a point near 5507 road where it crosses Oriental Creek. This camera point shows effects from a massive road washout event occurring in conjunction with an intense thunderstorm in May 1998.

Upper image shows substantial deposition occurring above a large culvert, which plugged and then washed out the road surface when a debris dam behind the culvert eventually burst. Figure 82 shows a debris deposit and flood effects on a floodplain.

Lower image shows that a new culvert was installed, a road surface was restored, impressive persistence of snags in a drainage above a road bend, and a dense stand of snowbrush ceanothus shrubs on what had been forested sites prior to Tower Fire. Scattered conifer regeneration is apparent near the road (foreground) and at a few spots near the creek, but upland sites seem largely devoid of tree seedlings (lower image).

Figure 81 – Camera point 18, view 2 (upper image, June 1998; lower image, July 2008). This view looks northeast from a point near the 5507 road where it crosses Oriental Creek. This camera point shows effects from a massive road washout event occurring in conjunction with an intense thunderstorm in May 1998.

Due to changes in cameras and lenses through time, upper image portrays a slightly different perspective than lower image.

Upper image shows dense snags and good vegetation ground cover following Tower Fire; lower image shows surprisingly little snag persistence, and a plant community dominated by snowbrush ceanothus, particularly above a road. Below a road in lower image, conifer regeneration is present on this lower slope position.

Although changes in camera perspective do not necessarily demonstrate it here, a foreground scene in upper image, illustrating channel and floodplain impacts from a May 1998 flood event, has largely recovered.

Figure 82 – Results of a debris torrent episode following a thunderstorm event in May 1988. Upper image shows aftereffects of a debris torrent spawned by an intense thunderstorm in May 1988. Not only did a debris torrent wash out the road, but it also inundated much of the floodplain, depositing large amounts of coarse woody debris and soil moved from adjacent uplands down to a floodplain.

Gray-colored 'cap' on which I'm standing consists mostly of dried ash from Tower Fire, which was transported as a thick slurry during the debris torrent event.

As shown in figures 80 and 81, much coarse woody debris (logs, branchwood, and root wads, primarily) had been moved farther downstream by the time retake images were acquired 10 years later. And, a gray cap of fire-ash material, and associated soil and silt deposits in a floodplain, had also been largely reworked by then.

Some research suggests that compounding or cascading effects (i.e., wildfires followed by debris torrents) may become more common in a climate-changed future.

SUMMARY

This white paper leads to many conclusions about Tower Fire of 1996; here are a few important findings:

1. Tower Fire was a large, high-intensity wildfire. As the largest fire in recent memory, it served as a 'wake-up call' for Umatilla National Forest employees, especially long-time employees. [Since then, other large fires occurred on Umatilla NF – School, Columbia Complex, etc. – so recent fires haven't tended to generate as much employee reaction as Tower Fire.]
2. Camera points suggest there was surprisingly little difference between fire effects in unmanaged and managed portions of Tower Fire. This result challenged assumptions contained in a 1990 Umatilla NF Forest Plan (USDA Forest Service 1990), and it disputed some fire science of that era – both sources presumed that spruce budworm, wildfire, and other disturbance processes would have less impact in managed portions of a landscape.
3. Camera points functioned effectively for monitoring postfire vegetation change, and they were implemented in Tower Fire at relatively low cost. When a series of photographs are acquired through time (repeat photography), the value of camera points only increases as a long-term monitoring tool. Tower Fire camera points were monumented by using aluminum stakes and caps, so they could continue to future monitoring information.
4. In northern portion of Tower Fire, lodgepole pine regenerated prolifically (fig. 83), presumably due to copious amounts of seed from closed (serotinous) cones. Tree counts in excess of 5,000 per acre were commonly found near camera points in this lodgepole pine zone. In southern portion of Tower Fire (Texas Bar Creek and Oriental Creek drainages), tree regeneration is sparse and long-term recovery to prefire conditions is not assured everywhere!
5. Existing levels of postfire tree mortality were often greater than what was expected, by fire regime (see table 3). Increased levels of mortality were often accompanied by a strong response from snowbrush ceanothus (fig. 77) and Scouler willow. These 'competing' shrubs are expected to hinder future tree regeneration, perhaps further slowing forest recovery.
6. ***The most common, and consistent, lesson learned is that many more trees died in portions of Tower Fire mapped as low/moderate severity than was expected!***
   [Fire severity mapping is shown in figures 4 and 84 of this white paper.]

There was an expectation (hope? dream?) that reasonable levels of postfire tree survival would occur in low or moderate severity areas, and that surviving trees would provide valuable ecosystem services – seed for regeneration, visual/aesthetic diversity, future snags to replace those created by the fire, etc. Unfortunately, many more trees died from fire-caused injury than was anticipated, so these hopes and expectations were largely unrealized.

High levels of tree mortality are understandable for areas with thin-barked tree species because even a small amount of bole scorch is typically lethal for them. But, western larch, ponderosa pine, mature Douglas-fir, and other thick-barked species also sustained surprisingly high levels of mortality in low/moderate fire severity areas, and this result was unexpected.

In some instances, mortality of thick-barked species was attributed to secondary agents such as bark beetles (particularly Douglas-fir beetle), an expected outcome to some extent. Many trees of thick-barked species, however, died with no apparent evidence of attack by a secondary agent such as bark beetles or root disease. Perhaps this delayed mortality reflects increased levels of postfire stress caused by drought occurring relatively soon after the fire?

Figure 83 – Recent drone images showing tree regeneration in Tower Fire area. These images were acquired by John Marshall in late October 2019 (see Cover Photograph description on page 2 for additional information about John Marshall and his photographic services).

Two top photos show areas where apparently pure stands of lodgepole pine got established after Tower Fire. Note that standing snags are still present in some areas, more than 20 years following the blaze.

Image texture may provide some clues about stand development – stippled areas (such as lower half of upper left photo) suggest that stand differentiation may be occurring, where some lodgepole pines are outcompeting their neighbors and becoming dominant.

Other areas in these photos have a smooth, homogeneous texture, perhaps suggesting that stand differentiation is not occurring and perhaps stagnation has set in. [Stagnated stands have little difference in tree height – trees tend to remain the same height and diameter for long time periods, due primarily to intense inter-tree competition.]

Two bottom photos offer some hope for the future in terms of species diversity. Acquiring these drone images in late October provides a good perspective of western larch presence and abundance. Pockets of larch are present in both images, and its abundance (density) in these pockets bodes well for future species diversity.

Bottom images suggest that at least some portion of northern Tower Fire may not be destined to exist solely as a pure, lodgepole-pine monoculture!

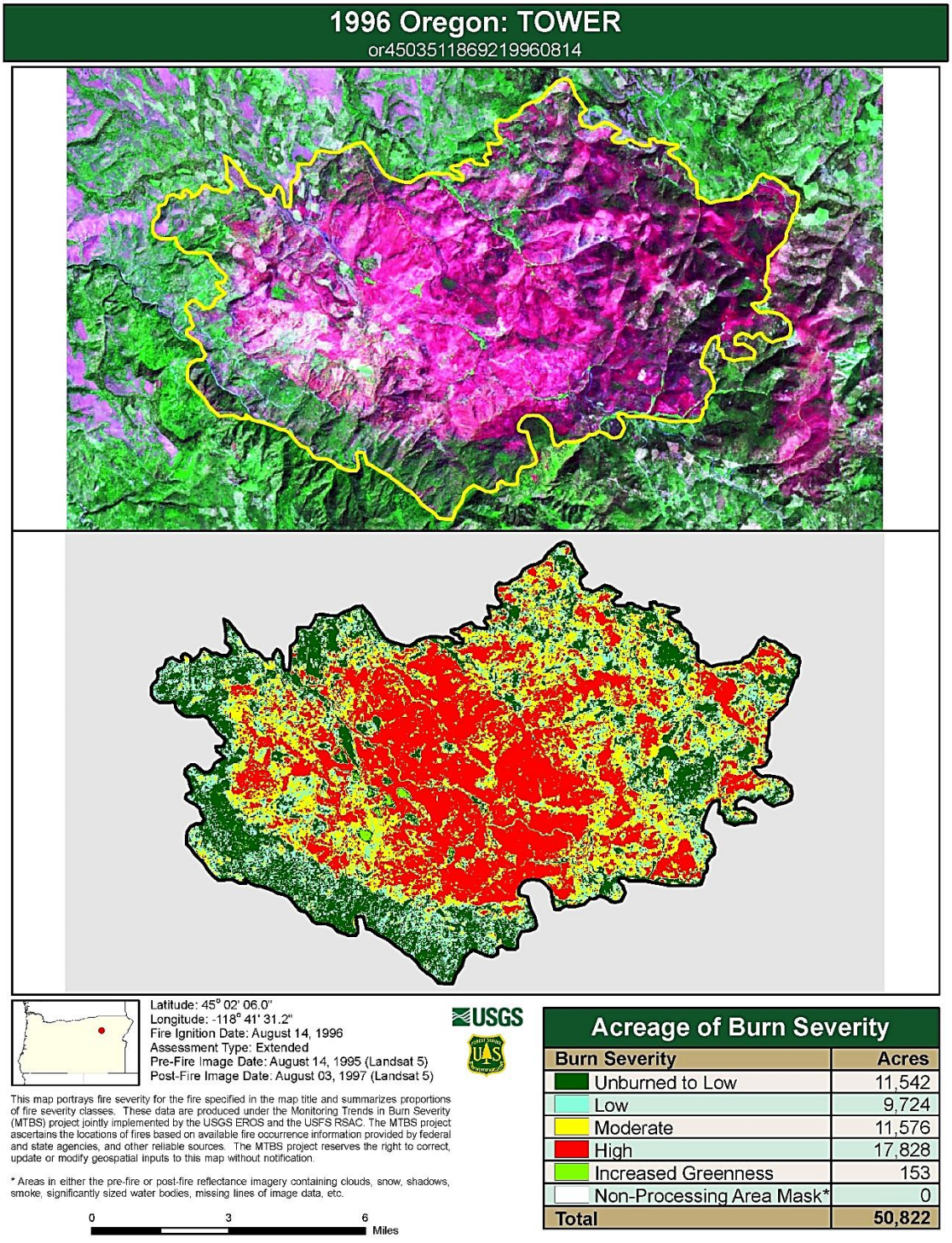

Figure 84 – Tower Fire, showing pre-fire reflectance information at top (reddish tints denote forest or shrub cover; greenish tints denote herbaceous cover), and post-fire burn severity at bottom. Tree mortality is typically associated with moderate and high burn severity, depending on tree species and their life-history traits (thin-barked species tend to die from even a small amount of bole scorch, for example). This comparison mapping and its associated analyses (Acreage of Burn Severity) is provided by the Monitoring Trends in Burn Severity (MTBS) program. MTBS is explained in more detail by Eidenshink et al. 2007.

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APPENDIX 1: INITIAL-TAKE AND RETAKE FORMS

Forms documenting camera point locations describe views established from a camera point, and characteristics of each photograph. A detailed description of camera-point forms is provided by Powell (2008).

If Tower Fire camera points have long-term monitoring value, then relocation information provided in this appendix will be important. For this reason, Tower Fire of 1996 camera-point forms are included here.

Appendix 1: Camera Point Record; Initial Take for CP T-96-1

Point Number: T-96-1 **National Forest:** Umatilla **Ranger District:** North Fork John Day

Retake Frequency: Annual; then 5 years **Due Dates:** Fall of 1997, 1998, 1999, 2000, 2001; 2006

Subject & Purpose: Monitor long-term effects of the Tower wildfire (burned August-September 1996)

Access Description: Point is approximately 78 feet below edge of asphalt off Road 52, about 0.95 miles east of the junction of roads 52 and 5226.

GPS Coordinates: **North** 4984893 **East** 374688 **Corrected?** Yes

Legal Description: **Town** 6S **Range** 34E **Section** 35 **Qtr** NW **Qtr**

Air Photo Number: **Map Identifier:** **Ecoclass:** CLS417

Photographer: Earle Rother **Elevation:** 5,377 feet **Aspect:** 342° **Slope %:** 25

Camera: Minolta SRT101 **Film:** Kodachrome Slide **ASA:** 64

Date: 10/4/1996 **Time:** 10:00 AM **Weather:** High overcast

VIEW 1		VIEW 2		VIEW 3	
Camera Height:	6' standing	**Camera Height:**	6' standing	**Camera Height:**	
Camera Angle:	Horizontal	**Camera Angle:**	Horizontal	**Camera Angle:**	
Azimuth:	320°	**Azimuth:**	7°	**Azimuth:**	°
Lens: 50 mm	**Filter**: None	**Lens**: 50 mm	**Filter**: None	**Lens**:	**Filter**:
F-stop: 11	**Speed**: 1/60	**F-stop**: 11	**Speed**: 1/60	**F-stop**:	**Speed**:
Focal Distance:	Infinity	**Focal Distance:**	Infinity	**Focal Distance:**	
Exposure Number:	1	**Exposure Number:**	2	**Exposure Number:**	

VIEW 4		VIEW 5		VIEW 6	
Camera Height:		**Camera Height:**		**Camera Height:**	
Camera Angle:		**Camera Angle:**		**Camera Angle:**	
Azimuth:	°	**Azimuth:**	°	**Azimuth:**	°
Lens:	**Filter**:	**Lens**:	**Filter**:	**Lens**:	**Filter**:
F-stop:	**Speed**:	**F-stop**:	**Speed**:	**F-stop**:	**Speed**:
Focal Distance:		**Focal Distance:**		**Focal Distance:**	
Exposure Number:		**Exposure Number:**		**Exposure Number:**	

REFERENCE POINT 1

Description: 10.4" DBH PICO

Marking: Orange poster

Azimuth: 347 ° **Feet**: 3

REFERENCE POINT 2

Description: 14.8" DBH LAOC

Marking: Orange poster

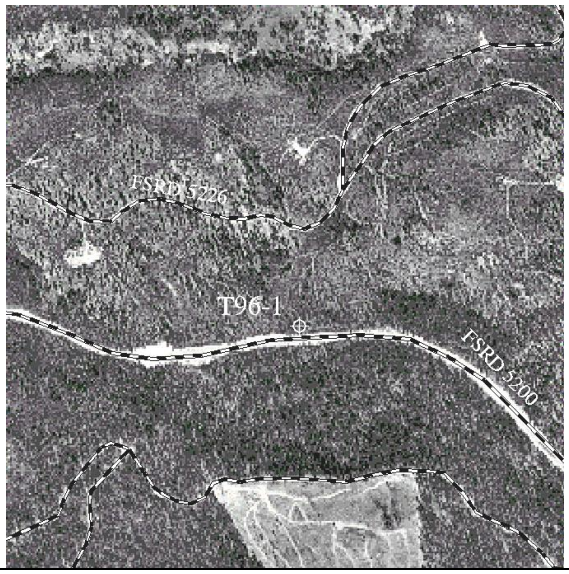
Azimuth: 238° **Feet**: 40

REFERENCE POINT 3

Description:

Marking:

Azimuth: **Feet**:



Appendix 1: Camera Point Record; Retake for CP T-96-1

Point Number: T-96-1	**National Forest:** Umatilla	**Ranger District:** North Fork John Day

Retake Number: 1	**Photographer:** Dave Powell	
Camera: Minolta X-700	**Film:** Kodachrome Slide	**ASA:** 64
Condition of Point Monument and References: Good		
Date: 6/20/1997	**Time:** 10:00 AM	**Weather:** Clear, sunny

VIEW 1	**VIEW 2**	**VIEW 3**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:**
Camera Angle: Horizontal	**Camera Angle:** Horizontal	**Camera Angle:**
Azimuth: 320°	**Azimuth:** 7°	**Azimuth:** °
Lens: 28 mm **Filter**: None	**Lens**: 28 mm **Filter**: None	**Lens**: **Filter**:
F-stop: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250	**F-stop**: **Speed**:
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:**
Exposure Number: 13	**Exposure Number:** 14, 15	**Exposure Number:**
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height:	**Camera Height:**	**Camera Height:**
Camera Angle:	**Camera Angle:**	**Camera Angle:**
Azimuth: °	**Azimuth:** °	**Azimuth:** °
Lens: **Filter**:	**Lens**: **Filter**:	**Lens**: **Filter**:
F-stop: **Speed**:	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance:	**Focal Distance:**	**Focal Distance:**
Exposure Number:	**Exposure Number:**	**Exposure Number:**

Retake Number: 2	**Photographer:** Earle Rother	
Camera: Minolta Maxxum 7000	**Film:** Kodachrome Slide	**ASA:** 64
Condition of Point Monument and References: Good		
Date: 10/8/1997	**Time:** 9:30 AM	**Weather:** Partly cloudy

VIEW 1	**VIEW 2**	**VIEW 3**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:**
Camera Angle: Horizontal	**Camera Angle:** Horizontal	**Camera Angle:**
Azimuth: 320°	**Azimuth:** 7°	**Azimuth:** °
Lens: 50/28mm **Filter**: None	**Lens**: 50/28mm **Filter**: None	**Lens**: **Filter**:
F-stop: 6.7 **Speed**: 1/100	**F-stop**: 6.7 **Speed**: 1/100	**F-stop**: **Speed**:
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:**
Exposure Number: 1, 2	**Exposure Number:** 3, 4	**Exposure Number:**
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height:	**Camera Height:**	**Camera Height:**
Camera Angle:	**Camera Angle:**	**Camera Angle:**
Azimuth: °	**Azimuth:** °	**Azimuth:** °
Lens: **Filter**:	**Lens**: **Filter**:	**Lens**: **Filter**:
F-stop: **Speed**:	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance:	**Focal Distance:**	**Focal Distance:**
Exposure Number:	**Exposure Number:**	**Exposure Number:**

Appendix 1: Camera Point Record; Retake for CP T-96-1

Point Number: T-96-1	**National Forest:** Umatilla	**Ranger District:** North Fork John Day

Retake Number: 3	**Photographer:** Earle Rother	
Camera: Minolta Maxxum 7000	**Film:** Fuji Slide (Poor quality!)	**ASA:** 64
Condition of Point Monument and References: Good		
Date: 9/29/1998	**Time:** 9:30 AM	**Weather:** Clear, sunny

VIEW 1	**VIEW 2**	**VIEW 3**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:**
Camera Angle: Horizontal	**Camera Angle:** Horizontal	**Camera Angle:**
Azimuth: 320°	**Azimuth:** 7°	**Azimuth:** °
Lens: 50/28mm **Filter**: Skylite	**Lens**: 50/28mm **Filter**: Skylite	**Lens**: **Filter**:
F-stop: 6.7 **Speed**: 1/100	**F-stop**: 6.7 **Speed**: 1/100	**F-stop**: **Speed**:
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:**
Exposure Number: 1, 2	**Exposure Number:** 3, 4	**Exposure Number:**
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height:	**Camera Height:**	**Camera Height:**
Camera Angle:	**Camera Angle:**	**Camera Angle:**
Azimuth: °	**Azimuth:** °	**Azimuth:** °
Lens: **Filter**:	**Lens**: **Filter**:	**Lens**: **Filter**:
F-stop: **Speed**:	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance:	**Focal Distance:**	**Focal Distance:**
Exposure Number:	**Exposure Number:**	**Exposure Number:**

Retake Number: 4	**Photographer:** Dave Powell	
Camera: Minolta X-700	**Film:** Kodachrome Slide	**ASA:** 64
Condition of Point Monument and References: Good		
Date: 9/24/1999	**Time:** 11:15 AM	**Weather:** Clear, sunny

VIEW 1	**VIEW 2**	**VIEW 3**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:**
Camera Angle: Horizontal	**Camera Angle:** Horizontal	**Camera Angle:**
Azimuth: 320°	**Azimuth:** 7°	**Azimuth:** °
Lens: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze	**Lens**: **Filter**:
F-stop: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250	**F-stop**: **Speed**:
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:**
Exposure Number: 5	**Exposure Number:** 6	**Exposure Number:**
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height:	**Camera Height:**	**Camera Height:**
Camera Angle:	**Camera Angle:**	**Camera Angle:**
Azimuth: °	**Azimuth:** °	**Azimuth:** °
Lens: **Filter**:	**Lens**: **Filter**:	**Lens**: **Filter**:
F-stop: **Speed**:	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance:	**Focal Distance:**	**Focal Distance:**
Exposure Number:	**Exposure Number:**	**Exposure Number:**

Appendix 1: Camera Point Record; Retake for CP T-96-1

Point Number: T-96-1	**National Forest:** Umatilla	**Ranger District:** North Fork John Day

Retake Number: 5	**Photographer:** Earle Rother	
Camera: Minolta Maxxum 7000	**Film:** Kodachrome Slide	**ASA:** 64
Condition of Point Monument and References: Good		
Date: 9/27/2000	**Time:** 10:30 AM	**Weather:** Clear, sunny

VIEW 1	**VIEW 2**	**VIEW 3**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:**
Camera Angle: Horizontal	**Camera Angle:** Horizontal	**Camera Angle:**
Azimuth: 320°	**Azimuth:** 7°	**Azimuth:** °
Lens: 28 mm **Filter**: Skylite	**Lens**: 28 mm **Filter**: Skylite	**Lens**: **Filter**:
F-stop: 6.7 **Speed**: 1/100	**F-stop**: 8 **Speed**: 1/100	**F-stop**: **Speed**:
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:**
Exposure Number: 5	**Exposure Number:** 6	**Exposure Number:**
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height:	**Camera Height:**	**Camera Height:**
Camera Angle:	**Camera Angle:**	**Camera Angle:**
Azimuth: °	**Azimuth:** °	**Azimuth:** °
Lens: **Filter**:	**Lens**: **Filter**:	**Lens**: **Filter**:
F-stop: **Speed**:	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance:	**Focal Distance:**	**Focal Distance:**
Exposure Number:	**Exposure Number:**	**Exposure Number:**

Retake Number: 6	**Photographer:** Dave Powell	
Camera: Minolta X-700	**Film:** Kodachrome Slide	**ASA:** 64
Condition of Point Monument and References: Good		
Date: 10/2/2001	**Time:** 11:00 AM	**Weather:** Clear, sunny

VIEW 1	**VIEW 2**	**VIEW 3**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:**
Camera Angle: Horizontal	**Camera Angle:** Horizontal	**Camera Angle:**
Azimuth: 320°	**Azimuth:** 7°	**Azimuth:** °
Lens: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze	**Lens**: **Filter**:
F-stop: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250	**F-stop**: **Speed**:
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:**
Exposure Number: 25	**Exposure Number:** 26	**Exposure Number:**
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height:	**Camera Height:**	**Camera Height:**
Camera Angle:	**Camera Angle:**	**Camera Angle:**
Azimuth: °	**Azimuth:** °	**Azimuth:** °
Lens: **Filter**:	**Lens**: **Filter**:	**Lens**: **Filter**:
F-stop: **Speed**:	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance:	**Focal Distance:**	**Focal Distance:**
Exposure Number:	**Exposure Number:**	**Exposure Number:**

Appendix 1: Camera Point Record; Retake for CP T-96-1

Point Number:	T-96-1	**National Forest:**	Umatilla	**Ranger District:**	North Fork John Day

Retake Number:	7	**Photographer:**	Dave Powell		
Camera:	Canon Rebel XT	**Film:**	Digital sensor	**ASA:**	
Condition of Point Monument and References:		Good			
Date:	8/22/2008	**Time:**	9:30 AM	**Weather:**	Clear, sunny

VIEW 1		**VIEW 2**		**VIEW 3**	
Camera Height:	6’ standing	**Camera Height:**	6’ standing	**Camera Height:**	
Camera Angle:	Horizontal	**Camera Angle:**	Horizontal	**Camera Angle:**	
Azimuth:	320°	**Azimuth:**	7°	**Azimuth:**	°
Lens: 24 mm	**Filter**:	**Lens**: 24 mm	**Filter**:	**Lens**:	**Filter**:
F-stop:	**Speed**:	**F-stop**:	**Speed**:	**F-stop**:	**Speed**:
Focal Distance:		**Focal Distance:**		**Focal Distance:**	
File Name:	Retake7	**File Name:**	Retake7	**File Name:**	

VIEW 4		**VIEW 5**		**VIEW 6**	
Camera Height:		**Camera Height:**		**Camera Height:**	
Camera Angle:		**Camera Angle:**		**Camera Angle:**	
Azimuth:	°	**Azimuth:**	°	**Azimuth:**	°
Lens:	**Filter**:	**Lens**:	**Filter**:	**Lens**:	**Filter**:
F-stop:	**Speed**:	**F-stop**:	**Speed**:	**F-stop**:	**Speed**:
Focal Distance:		**Focal Distance:**		**Focal Distance:**	
File Name:		**File Name:**		**File Name:**	

Appendix 1: Camera Point Record; Initial Take for CP T-96-2

Point Number: T-96-2 **National Forest:** Umatilla **Ranger District:** North Fork John Day

Retake Frequency: Annual; then 5 years **Due Dates:** Fall of 1997, 1998, 1999, 2000, 2001; 2006

Subject & Purpose: Monitor long-term effects of the Tower wildfire (burned August-September 1996)

Access Description: Point located on edge of 52 road where Winom Creek passes beneath the road. Photo taken directly above the "GPS Winom Creek 1993" cap, which is located 4 feet east of the green post. Cap is in rock fill about 14 feet north of the road edge.

GPS Coordinates: **North** 4986412 **East** 371231 **Corrected?** Yes

Legal Description: **Town** **Range** **Section** **Qtr** **Qtr**

Air Photo Number: **Map Identifier:** **Ecoclass:** N.A.

Photographer: Earle Rother **Elevation:** 5,022 feet **Aspect:** 7° **Slope %:** Level

Camera: Minolta SRT101 **Film:** Kodachrome Slide **ASA:** 64

Date: 10/4/1996 **Time:** 11:00 AM **Weather:** High overcast

VIEW 1		VIEW 2		VIEW 3	
Camera Height:	6' standing	**Camera Height:**	6' standing	**Camera Height:**	6' standing
Camera Angle:	Horizontal	**Camera Angle:**	Vertical	**Camera Angle:**	Vertical
Azimuth:	7° (up drainage)	**Azimuth:**	295°	**Azimuth:**	67°
Lens: 50 mm	**Filter**: None	**Lens**: 50 mm	**Filter**: None	**Lens**: 50 mm	**Filter**: None
F-stop: 11	**Speed**: 1/60	**F-stop**: 11	**Speed**: 1/60	**F-stop**: 8	**Speed**: 1/60
Focal Distance:	Infinity	**Focal Distance:**	Infinity	**Focal Distance:**	Infinity
Exposure Number:	4	**Exposure Number:**	5	**Exposure Number:**	6

VIEW 4		VIEW 5		VIEW 6	
Camera Height:		**Camera Height:**		**Camera Height:**	
Camera Angle:		**Camera Angle:**		**Camera Angle:**	
Azimuth:	°	**Azimuth:**	°	**Azimuth:**	°
Lens:	**Filter**:	**Lens**:	**Filter**:	**Lens**:	**Filter**:
F-stop:	**Speed**:	**F-stop**:	**Speed**:	**F-stop**:	**Speed**:
Focal Distance:		**Focal Distance:**		**Focal Distance:**	
Exposure Number:		**Exposure Number:**		**Exposure Number:**	

REFERENCE POINT 1

Description: Green metal post with land survey poster

Marking: Orange poster on post

Azimuth: 71° **Feet**: 4

REFERENCE POINT 2

Description:

Marking:

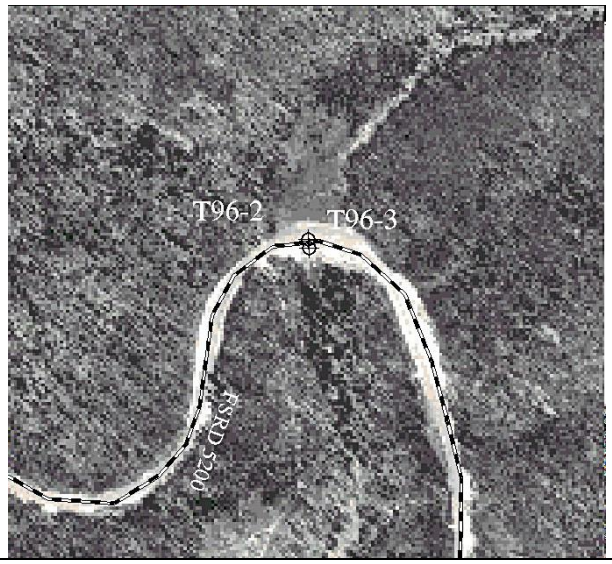
Azimuth: **Feet**:

REFERENCE POINT 3

Description:

Marking:

Azimuth: **Feet**:



Appendix 1: Camera Point Record; Retake for CP T-96-2

Point Number: T-96-2	**National Forest:** Umatilla	**Ranger District:** North Fork John Day

Retake Number: 1	**Photographer:** Dave Powell	
Camera: Minolta X-700	**Film:** Kodachrome Slide	**ASA:** 64
Condition of Point Monument and References: Good		
Date: 6/20/1997	**Time:** 10:40 AM	**Weather:** Clear, sunny

VIEW 1	**VIEW 2**	**VIEW 3**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:** 6’ standing
Camera Angle: Horizontal	**Camera Angle:** Vertical	**Camera Angle:** Vertical
Azimuth: 7° (up drain)	**Azimuth:** 295°	**Azimuth:** 67°
Lens: 28 mm **Filter**: None	**Lens**: 28mm **Filter**: None	**Lens**: 28 mm **Filter**: None
F-stop: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:** Infinity
Exposure Number: 16	**Exposure Number:** 17	**Exposure Number:** 18
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height:	**Camera Height:**	**Camera Height:**
Camera Angle:	**Camera Angle:**	**Camera Angle:**
Azimuth: °	**Azimuth:** °	**Azimuth:** °
Lens: **Filter**:	**Lens**: **Filter**:	**Lens**: **Filter**:
F-stop: **Speed**:	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance:	**Focal Distance:**	**Focal Distance:**
Exposure Number:	**Exposure Number:**	**Exposure Number:**

Retake Number: 2	**Photographer:** Earle Rother	
Camera: Minolta Maxxum 7000	**Film:** Kodachrome Slide	**ASA:** 64
Condition of Point Monument and References: Good		
Date: 10/8/1997	**Time:** 10:00 AM	**Weather:** Sunny

VIEW 1	**VIEW 2**	**VIEW 3**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:** 6’ standing
Camera Angle: Horizontal	**Camera Angle:** Vertical	**Camera Angle:** Vertical
Azimuth: 7°	**Azimuth:** 295°	**Azimuth:** 67°
Lens: 50/28mm **Filter**: None	**Lens**: 50/28mm **Filter**: None	**Lens**: 50/28mm **Filter**: None
F-stop: 8 **Speed**: 1/100	**F-stop**: 6.7 **Speed**: 1/350	**F-stop**: 8 **Speed**: 1/350
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:** Infinity
Exposure Number: 5, 6*	**Exposure Number:** 7, 8	**Exposure Number:** 9, 10
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height:	**Camera Height:**	**Camera Height:**
Camera Angle:	**Camera Angle:**	**Camera Angle:**
Azimuth: °	**Azimuth:** °	**Azimuth:** °
Lens: **Filter**:	**Lens**: **Filter**:	**Lens**: **Filter**:
F-stop: **Speed**:	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance:	**Focal Distance:**	**Focal Distance:**
Exposure Number:	**Exposure Number:**	**Exposure Number:**

* This slide was unusable following film processing.

Appendix 1: Camera Point Record; Retake for CP T-96-2

Point Number: T-96-2	**National Forest:** Umatilla	**Ranger District:** North Fork John Day

Retake Number: 3	**Photographer:** Earle Rother	
Camera: Minolta Maxxum 7000	**Film:** Fuji Slide (Poor quality!)	**ASA:** 64
Condition of Point Monument and References: Good		
Date: 9/29/1998	**Time:** 9:45 AM	**Weather:** Clear, sunny

VIEW 1	**VIEW 2**	**VIEW 3**
Camera Height: 6' standing	**Camera Height:** 6' standing	**Camera Height:** 6' standing
Camera Angle: Horizontal	**Camera Angle:** Vertical	**Camera Angle:** Vertical
Azimuth: 7° (up draw)	**Azimuth:** 295°	**Azimuth:** 67°
Lens: 50/28mm **Filter**: Skylite	**Lens**: 50/28mm **Filter**: Skylite	**Lens**: 28 mm **Filter**: Skylite
F-stop: 5.6 **Speed**: 1/250	**F-stop**: 4.5 **Speed**: 1/80	**F-stop**: 4 **Speed**: 1/80
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:** Infinity
Exposure Number: 5, 6	**Exposure Number:** 7, 8	**Exposure Number:** 9, 10
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height:	**Camera Height:**	**Camera Height:**
Camera Angle:	**Camera Angle:**	**Camera Angle:**
Azimuth: °	**Azimuth:** °	**Azimuth:** °
Lens: **Filter**:	**Lens**: **Filter**:	**Lens**: **Filter**:
F-stop: **Speed**:	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance:	**Focal Distance:**	**Focal Distance:**
Exposure Number:	**Exposure Number:**	**Exposure Number:**

Retake Number: 4	**Photographer:** Dave Powell	
Camera: Minolta X-700	**Film:** Kodachrome Slide	**ASA:** 64
Condition of Point Monument and References: Good		
Date: 9/24/1999	**Time:** 11:30 AM	**Weather:** Clear, sunny

VIEW 1	**VIEW 2**	**VIEW 3**
Camera Height: 6' standing	**Camera Height:** 6' standing	**Camera Height:** 6' standing
Camera Angle: Horizontal	**Camera Angle:** Vertical	**Camera Angle:** Vertical
Azimuth: 7°	**Azimuth:** 295°	**Azimuth:** 67°
Lens: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze
F-stop: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:** Infinity
Exposure Number: 7	**Exposure Number:** 8	**Exposure Number:** 9
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height:	**Camera Height:**	**Camera Height:**
Camera Angle:	**Camera Angle:**	**Camera Angle:**
Azimuth: °	**Azimuth:** °	**Azimuth:** °
Lens: **Filter**:	**Lens**: **Filter**:	**Lens**: **Filter**:
F-stop: **Speed**:	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance:	**Focal Distance:**	**Focal Distance:**
Exposure Number:	**Exposure Number:**	**Exposure Number:**

Appendix 1: Camera Point Record; Retake for CP T-96-2

Point Number: T-96-2	**National Forest:** Umatilla	**Ranger District:** North Fork John Day

Retake Number: 5	**Photographer:** Earle Rother	
Camera: Minolta Maxxum 7000	**Film:** Kodachrome Slide	**ASA:** 64
Condition of Point Monument and References: Good		
Date: 9/27/2000	**Time:** 10:45 AM	**Weather:** Clear, sunny

VIEW 1	**VIEW 2**	**VIEW 3**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:** 6’ standing
Camera Angle: Horizontal	**Camera Angle:** Vertical	**Camera Angle:** Vertical
Azimuth: 7° (up draw)	**Azimuth:** 295°	**Azimuth:** 67°
Lens: 28 mm **Filter**: Skylite	**Lens**: 28 mm **Filter**: Skylite	**Lens**: 28 mm **Filter**: Skylite
F-stop: 8 **Speed**: 1/125	**F-stop**: 8 **Speed**: 1/100	**F-stop**: 6.7 **Speed**: 1/100
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:** Infinity
Exposure Number: 7	**Exposure Number:** 8	**Exposure Number:** 9
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height:	**Camera Height:**	**Camera Height:**
Camera Angle:	**Camera Angle:**	**Camera Angle:**
Azimuth: °	**Azimuth:** °	**Azimuth:** °
Lens: **Filter**:	**Lens**: **Filter**:	**Lens**: **Filter**:
F-stop: **Speed**:	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance:	**Focal Distance:**	**Focal Distance:**
Exposure Number:	**Exposure Number:**	**Exposure Number:**

Retake Number: 6	**Photographer:** Dave Powell	
Camera: Minolta X-700	**Film:** Kodachrome Slide	**ASA:** 64
Condition of Point Monument and References: Good		
Date: 10/2/2001	**Time:** 11:20 AM	**Weather:** Clear, sunny

VIEW 1	**VIEW 2**	**VIEW 3**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:** 6’ standing
Camera Angle: Horizontal	**Camera Angle:** Vertical	**Camera Angle:** Vertical
Azimuth: 7°	**Azimuth:** 295°	**Azimuth:** 67°
Lens: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze
F-stop: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:** Infinity
Exposure Number: 27	**Exposure Number:** 3	**Exposure Number:** 4
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height:	**Camera Height:**	**Camera Height:**
Camera Angle:	**Camera Angle:**	**Camera Angle:**
Azimuth: °	**Azimuth:** °	**Azimuth:** °
Lens: **Filter**:	**Lens**: **Filter**:	**Lens**: **Filter**:
F-stop: **Speed**:	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance:	**Focal Distance:**	**Focal Distance:**
Exposure Number:	**Exposure Number:**	**Exposure Number:**

Appendix 1: Camera Point Record; Retake for CP T-96-2

Point Number:	T-96-2	**National Forest:**	Umatilla	**Ranger District:**	North Fork John Day

Retake Number:	7	**Photographer:**	Dave Powell		
Camera:	Canon Rebel XT	**Film:**	Digital sensor	**ASA:**	
Condition of Point Monument and References:		Good			
Date:	7/21/2008	**Time:**	9:30 AM	**Weather:**	Overcast

VIEW 1		**VIEW 2**		**VIEW 3**	
Camera Height:	6’ standing	**Camera Height:**	6’ standing	**Camera Height:**	6’ standing
Camera Angle:	Horizontal	**Camera Angle:**	Vertical	**Camera Angle:**	Vertical
Azimuth:	7°	**Azimuth:**	295°	**Azimuth:**	67°
Lens: 28 mm	**Filter**:	**Lens**: 28 mm	**Filter**:	**Lens**: 28 mm	**Filter**:
F-stop:	**Speed**:	**F-stop**:	**Speed**:	**F-stop**:	**Speed**:
Focal Distance:		**Focal Distance:**		**Focal Distance:**	
File Name:	Retake7	**File Name:**	Retake7	**File Name:**	Retake7

VIEW 4		**VIEW 5**		**VIEW 6**	
Camera Height:		**Camera Height:**		**Camera Height:**	
Camera Angle:		**Camera Angle:**		**Camera Angle:**	
Azimuth:	°	**Azimuth:**	°	**Azimuth:**	°
Lens:	**Filter**:	**Lens**:	**Filter**:	**Lens**:	**Filter**:
F-stop:	**Speed**:	**F-stop**:	**Speed**:	**F-stop**:	**Speed**:
Focal Distance:		**Focal Distance:**		**Focal Distance:**	
File Name:		**File Name:**		**File Name:**	

Appendix 1: Camera Point Record; Initial Take for CP T-96-3

Point Number: T-96-3 **National Forest:** Umatilla **Ranger District:** North Fork John Day

Retake Frequency: Annual; then 5 years **Due Dates:** Fall of 1997, 1998, 1999, 2000, 2001; 2006

Subject & Purpose: Monitor long-term effects of the Tower wildfire (burned August-September 1996)

Access Description: Point located on south edge of 52 road where Winom Creek passes beneath the road (about 2 miles west of 52/5226 junction). Cap is in rock fill about 13 feet south of road edge.

GPS Coordinates: **North** 4986401 **East** 371232 **Corrected?** Yes

Legal Description: **Town** 6S **Range** 34E **Section** 28 **Qtr** NW **Qtr**

Air Photo Number: **Map Identifier:** **Ecoclass:** N. A.

Photographer: Earle Rother **Elevation:** 5,017 feet **Aspect:** 180° **Slope %:** Level

Camera: Minolta SRT101 **Film:** Kodachrome Slide **ASA:** 64

Date: 10/4/1996 **Time:** 11:15 AM **Weather:** High overcast

VIEW 1		VIEW 2		VIEW 3	
Camera Height:	6' standing	**Camera Height:**	6' standing	**Camera Height:**	
Camera Angle:	Horizontal	**Camera Angle:**	Vertical	**Camera Angle:**	
Azimuth:	165°	**Azimuth:**	194°	**Azimuth:**	°
Lens: 50 mm	**Filter**: None	**Lens**: 50 mm	**Filter**: None	**Lens**:	**Filter**:
F-stop: 11	**Speed**: 1/60	**F-stop**: 11	**Speed**: 1/60	**F-stop**:	**Speed**:
Focal Distance:	Infinity	**Focal Distance:**	Infinity	**Focal Distance:**	
Exposure Number:	7	**Exposure Number:**	8	**Exposure Number:**	

VIEW 4		VIEW 5		VIEW 6	
Camera Height:		**Camera Height:**		**Camera Height:**	
Camera Angle:		**Camera Angle:**		**Camera Angle:**	
Azimuth:	°	**Azimuth:**	°	**Azimuth:**	°
Lens:	**Filter**:	**Lens**:	**Filter**:	**Lens**:	**Filter**:
F-stop:	**Speed**:	**F-stop**:	**Speed**:	**F-stop**:	**Speed**:
Focal Distance:		**Focal Distance:**		**Focal Distance:**	
Exposure Number:		**Exposure Number:**		**Exposure Number:**	

REFERENCE POINT 1

Description: Green metal post with land survey poster

Marking: Orange poster on post

Azimuth: 167° **Feet**: 63

REFERENCE POINT 2

Description:

Marking:

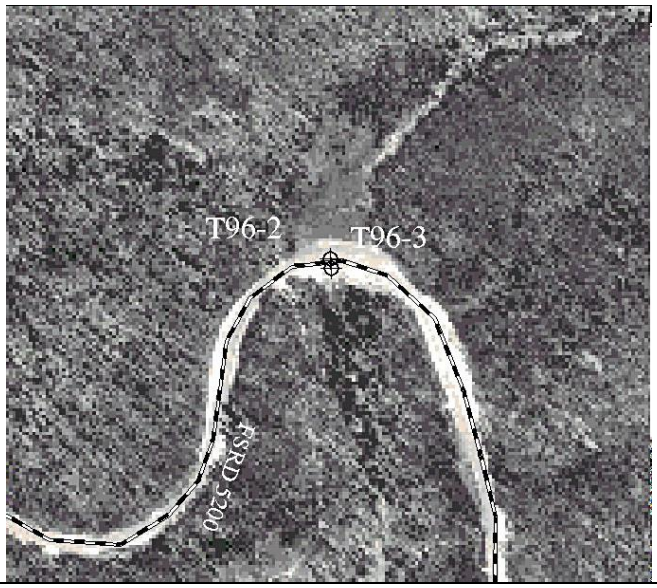
Azimuth: **Feet**:

REFERENCE POINT 3

Description:

Marking:

Azimuth: **Feet**:



Appendix 1: Camera Point Record; Retake for CP T-96-3

Point Number: T-96-3	**National Forest:** Umatilla	**Ranger District:** North Fork John Day

Retake Number: 1	**Photographer:** Dave Powell	
Camera: Minolta X-700	**Film:** Kodachrome Slide	**ASA:** 64
Condition of Point Monument and References: Good		
Date: 6/20/1997	**Time:** 10:45 AM	**Weather:** Sunny, clear

VIEW 1	**VIEW 2**	**VIEW 3**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:**
Camera Angle: Horizontal	**Camera Angle:** Vertical	**Camera Angle:**
Azimuth: 165°	**Azimuth:** 194°	**Azimuth:** °
Lens: 28 mm **Filter**: None	**Lens**: 28 mm **Filter**: None	**Lens**: **Filter**:
F-stop: 22 **Speed**: 1/125	**F-stop**: 22 **Speed**: 1/125	**F-stop**: **Speed**:
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:**
Exposure Number: 20	**Exposure Number:** 21	**Exposure Number:**
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height:	**Camera Height:**	**Camera Height:**
Camera Angle:	**Camera Angle:**	**Camera Angle:**
Azimuth: °	**Azimuth:** °	**Azimuth:** °
Lens: **Filter**:	**Lens**: **Filter**:	**Lens**: **Filter**:
F-stop: **Speed**:	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance:	**Focal Distance:**	**Focal Distance:**
Exposure Number:	**Exposure Number:**	**Exposure Number:**

Retake Number: 2	**Photographer:** Earle Rother	
Camera: Minolta Maxxum 7000	**Film:** Kodachrome Slide	**ASA:** 64
Condition of Point Monument and References: Good		
Date: 10/8/1997	**Time:** 10:00 AM	**Weather:** Sunny

VIEW 1	**VIEW 2**	**VIEW 3**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:**
Camera Angle: Horizontal	**Camera Angle:** Vertical	**Camera Angle:**
Azimuth: 165°	**Azimuth:** 195°	**Azimuth:** °
Lens: 50/28mm **Filter**: None	**Lens**: 50/28mm **Filter**: None	**Lens**: **Filter**:
F-stop: 4 **Speed**: 1/80	**F-stop**: 8 **Speed**: 1/350	**F-stop**: **Speed**:
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:**
Exposure Number: 11, 12	**Exposure Number:** 13*, 14*	**Exposure Number:**
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height:	**Camera Height:**	**Camera Height:**
Camera Angle:	**Camera Angle:**	**Camera Angle:**
Azimuth: °	**Azimuth:** °	**Azimuth:** °
Lens: **Filter**:	**Lens**: **Filter**:	**Lens**: **Filter**:
F-stop: **Speed**:	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance:	**Focal Distance:**	**Focal Distance:**
Exposure Number:	**Exposure Number:**	**Exposure Number:**

* This slide was not usable following film processing.

Appendix 1: Camera Point Record; Retake for CP T-96-3

Point Number: T-96-3	**National Forest:** Umatilla	**Ranger District:** North Fork John Day

Retake Number: 3	**Photographer:** Earle Rother	
Camera: Minolta Maxxum 7000	**Film:** Fuji Slide (Poor quality!)	**ASA:** 64
Condition of Point Monument and References: Good		
Date: 9/29/1998	**Time:** 9:45 AM	**Weather:** Clear, sunny

VIEW 1	**VIEW 2**	**VIEW 3**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:**
Camera Angle: Horizontal	**Camera Angle:** Vertical	**Camera Angle:**
Azimuth: 165°	**Azimuth:** 194°	**Azimuth:** °
Lens: 50/28mm **Filter**: Skylite	**Lens**: 50/28mm **Filter**: Skylite	**Lens**: **Filter**:
F-stop: 4 **Speed**: 1/80	**F-stop**: 4 **Speed**: 1/80	**F-stop**: **Speed**:
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:**
Exposure Number: 11, 12	**Exposure Number:** 13, 14	**Exposure Number:**
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height:	**Camera Height:**	**Camera Height:**
Camera Angle:	**Camera Angle:**	**Camera Angle:**
Azimuth: °	**Azimuth:** °	**Azimuth:** °
Lens: **Filter**:	**Lens**: **Filter**:	**Lens**: **Filter**:
F-stop: **Speed**:	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance:	**Focal Distance:**	**Focal Distance:**
Exposure Number:	**Exposure Number:**	**Exposure Number:**

Retake Number: 4	**Photographer:** Dave Powell	
Camera: Minolta X-700	**Film:** Kodachrome Slide	**ASA:** 64
Condition of Point Monument and References: Good		
Date: 9/24/1999	**Time:** 11:45 AM	**Weather:** Clear, sunny

VIEW 1	**VIEW 2**	**VIEW 3**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:**
Camera Angle: Horizontal	**Camera Angle:** Vertical	**Camera Angle:**
Azimuth: 165°	**Azimuth:** 195°	**Azimuth:** °
Lens: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze	**Lens**: **Filter**:
F-stop: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250	**F-stop**: **Speed**:
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:**
Exposure Number: 10	**Exposure Number:** 11	**Exposure Number:**
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height:	**Camera Height:**	**Camera Height:**
Camera Angle:	**Camera Angle:**	**Camera Angle:**
Azimuth: °	**Azimuth:** °	**Azimuth:** °
Lens: **Filter**:	**Lens**: **Filter**:	**Lens**: **Filter**:
F-stop: **Speed**:	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance:	**Focal Distance:**	**Focal Distance:**
Exposure Number:	**Exposure Number:**	**Exposure Number:**

Appendix 1: Camera Point Record; Retake for CP T-96-3

Point Number: T-96-3	**National Forest:** Umatilla	**Ranger District:** North Fork John Day

Retake Number: 5	**Photographer:** Earle Rother	
Camera: Minolta Maxxum 7000	**Film:** Kodachrome Slide	**ASA:** 64
Condition of Point Monument and References: Good		
Date: 9/27/2000	**Time:** 10:50 AM	**Weather:** Clear, sunny

VIEW 1	**VIEW 2**	**VIEW 3**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:**
Camera Angle: Horizontal	**Camera Angle:** Vertical	**Camera Angle:**
Azimuth: 165°	**Azimuth:** 194°	**Azimuth:** °
Lens: 28 mm **Filter**: Skylite	**Lens**: 28 mm **Filter**: Skylite	**Lens**: **Filter**:
F-stop: 8 **Speed**: 1/125	**F-stop**: 8 **Speed**: 1/125	**F-stop**: **Speed**:
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:**
Exposure Number: 10	**Exposure Number:** 11	**Exposure Number:**
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height:	**Camera Height:**	**Camera Height:**
Camera Angle:	**Camera Angle:**	**Camera Angle:**
Azimuth: °	**Azimuth:** °	**Azimuth:** °
Lens: **Filter**:	**Lens**: **Filter**:	**Lens**: **Filter**:
F-stop: **Speed**:	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance:	**Focal Distance:**	**Focal Distance:**
Exposure Number:	**Exposure Number:**	**Exposure Number:**

Retake Number: 6	**Photographer:** Dave Powell	
Camera: Minolta X-700	**Film:** Kodachrome Slide	**ASA:** 64
Condition of Point Monument and References: Good		
Date: 10/2/2001	**Time:** 11:30 AM	**Weather:** Clear, sunny

VIEW 1	**VIEW 2**	**VIEW 3**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:**
Camera Angle: Horizontal	**Camera Angle:** Vertical	**Camera Angle:**
Azimuth: 165°	**Azimuth:** 195°	**Azimuth:** °
Lens: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze	**Lens**: **Filter**:
F-stop: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250	**F-stop**: **Speed**:
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:**
Exposure Number: 5	**Exposure Number:** 6	**Exposure Number:**
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height:	**Camera Height:**	**Camera Height:**
Camera Angle:	**Camera Angle:**	**Camera Angle:**
Azimuth: °	**Azimuth:** °	**Azimuth:** °
Lens: **Filter**:	**Lens**: **Filter**:	**Lens**: **Filter**:
F-stop: **Speed**:	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance:	**Focal Distance:**	**Focal Distance:**
Exposure Number:	**Exposure Number:**	**Exposure Number:**

Appendix 1: Camera Point Record; Retake for CP T-96-3

Point Number:	T-96-3	**National Forest:**	Umatilla	**Ranger District:**	North Fork John Day

Retake Number:	7	**Photographer:**	Dave Powell		
Camera:	Canon Rebel XT	**Film:**	Digital sensor	**ASA:**	
Condition of Point Monument and References:	Good				
Date:	7/21/2008	**Time:**	9:45 AM	**Weather:**	Overcast

VIEW 1		**VIEW 2**		**VIEW 3**	
Camera Height:	6’ standing	**Camera Height:**	6’ standing	**Camera Height:**	
Camera Angle:	Horizontal	**Camera Angle:**	Vertical	**Camera Angle:**	
Azimuth:	165°	**Azimuth:**	194°	**Azimuth:**	°
Lens: 28 mm	**Filter**:	**Lens**: 28 mm	**Filter**:	**Lens**:	**Filter**:
F-stop:	**Speed**:	**F-stop**:	**Speed**:	**F-stop**:	**Speed**:
Focal Distance:		**Focal Distance:**		**Focal Distance:**	
File Name:	Retake7	**File Name:**	Retake7	**File Name:**	

VIEW 4		**VIEW 5**		**VIEW 6**	
Camera Height:		**Camera Height:**		**Camera Height:**	
Camera Angle:		**Camera Angle:**		**Camera Angle:**	
Azimuth:	°	**Azimuth:**	°	**Azimuth:**	°
Lens:	**Filter**:	**Lens**:	**Filter**:	**Lens**:	**Filter**:
F-stop:	**Speed**:	**F-stop**:	**Speed**:	**F-stop**:	**Speed**:
Focal Distance:		**Focal Distance:**		**Focal Distance:**	
File Name:		**File Name:**		**File Name:**	

Appendix 1: Camera Point Record; Initial Take for CP T-96-4

Point Number: T-96-4 **National Forest:** Umatilla **Ranger District:** North Fork John Day

Retake Frequency: Annual; then 5 years **Due Dates:** Fall of 1997, 1998, 1999, 2000, 2001; 2006

Subject & Purpose: Monitor long-term effects of the Tower wildfire (burned August-September 1996)

Access Description: Point located on top of rock knob approximately ¼ mile southeast of curve in 52 road, about 2.05 miles east of the junction of the 52 and 5507 roads.

GPS Coordinates: **North** 4986215 **East** 370096 **Corrected?** Yes

Legal Description: **Town** **Range** **Section** **Qtr** **Qtr**

Air Photo Number: **Map Identifier:** **Ecoclass:** N. A.

Photographer: Earle Rother **Elevation:** 5,278 feet **Aspect:** N.A. **Slope %:** Level

Camera: Minolta SRT101 **Film:** Kodachrome Slide **ASA:** 64

Date: 10/4/1996 **Time:** 11:45 AM **Weather:** High overcast

VIEW 1		VIEW 2		VIEW 3	
Camera Height:	6' standing	**Camera Height:**	6' standing	**Camera Height:**	6’ standing
Camera Angle:	Vertical	**Camera Angle:**	Horizontal	**Camera Angle:**	Horizontal
Azimuth:	161°	**Azimuth:**	168°	**Azimuth:**	333°
Lens: 50 mm	**Filter**: None	**Lens**: 50 mm	**Filter**: None	**Lens**: 50 mm	**Filter**: None
F-stop: 11	**Speed**: 1/60	**F-stop**: 11	**Speed**: 1/60	**F-stop**: 11	**Speed**: 1/60
Focal Distance:	Infinity	**Focal Distance:**	Infinity	**Focal Distance:**	Infinity
Exposure Number:	9	**Exposure Number:**	10	**Exposure Number:**	11

VIEW 4		VIEW 5		VIEW 6	
Camera Height:		**Camera Height:**		**Camera Height:**	
Camera Angle:		**Camera Angle:**		**Camera Angle:**	
Azimuth:	°	**Azimuth:**	°	**Azimuth:**	°
Lens:	**Filter**:	**Lens**:	**Filter**:	**Lens**:	**Filter**:
F-stop:	**Speed**:	**F-stop**:	**Speed**:	**F-stop**:	**Speed**:
Focal Distance:		**Focal Distance:**		**Focal Distance:**	
Exposure Number:		**Exposure Number:**		**Exposure Number:**	

REFERENCE POINT 1

Description: 1.9" dbh PICO, 9' tall

Marking: Orange poster

Azimuth: 144° **Feet**: 9.0

REFERENCE POINT 2

Description:

Marking:

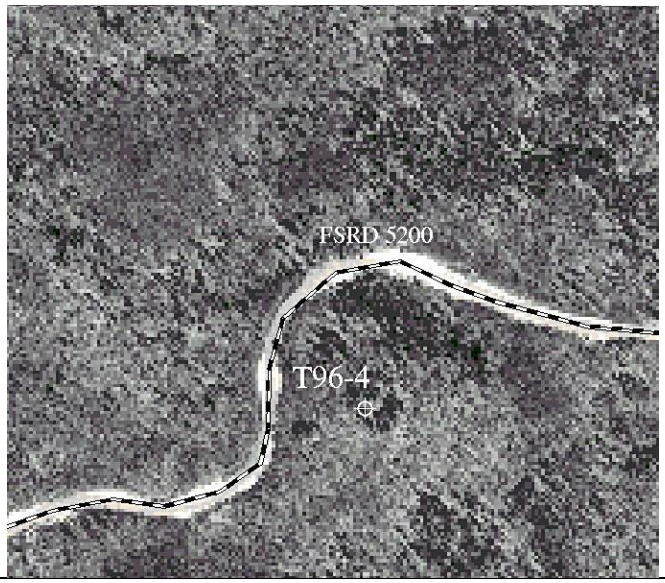
Azimuth: **Feet**:

REFERENCE POINT 3

Description:

Marking:

Azimuth: **Feet**:



Appendix 1: Camera Point Record; Retake for CP T-96-4

Point Number: T-96-4	**National Forest:** Umatilla	**Ranger District:** North Fork John Day

Retake Number: 1	**Photographer:** Dave Powell	
Camera: Minolta X-700	**Film:** Kodachrome Slide	**ASA:** 64
Condition of Point Monument and References: Good		
Date: 6/20/1997	**Time:** 10:55 AM	**Weather:** Sunny, clear

VIEW 1	**VIEW 2**	**VIEW 3**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:** 6’ standing
Camera Angle: Vertical	**Camera Angle:** Horizontal	**Camera Angle:** Horizontal
Azimuth: 161°	**Azimuth:** 168°	**Azimuth:** 333°
Lens: 28 mm **Filter**: None	**Lens**: 28 mm **Filter**: None	**Lens**: 28 mm **Filter**: None
F-stop: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:** Infinity
Exposure Number: 22	**Exposure Number:** 23	**Exposure Number:** 24
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height:	**Camera Height:**	**Camera Height:**
Camera Angle:	**Camera Angle:**	**Camera Angle:**
Azimuth: °	**Azimuth:** °	**Azimuth:** °
Lens: **Filter**:	**Lens**: **Filter**:	**Lens**: **Filter**:
F-stop: **Speed**:	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance:	**Focal Distance:**	**Focal Distance:**
Exposure Number:	**Exposure Number:**	**Exposure Number:**

Retake Number: 2	**Photographer:** Earle Rother	
Camera: Minolta Maxxum 7000	**Film:** Kodachrome Slide	**ASA:** 64
Condition of Point Monument and References: Good		
Date: 10/8/1997	**Time:** 10:15 AM	**Weather:** Partly cloudy

VIEW 1	**VIEW 2**	**VIEW 3**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:** 6’ standing
Camera Angle: Vertical	**Camera Angle:** Horizontal	**Camera Angle:** Horizontal
Azimuth: 161°	**Azimuth:** 168°	**Azimuth:** 333°
Lens: 50/28mm **Filter**: None	**Lens**: 50/28mm **Filter**: None	**Lens**: 50/28mm **Filter**: None
F-stop: 8 **Speed**: 1/350	**F-stop**: 6.7 **Speed**: 1/250	**F-stop**: 5.6 **Speed**: 1/250
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:** Infinity
Exposure Number: 15, 16	**Exposure Number:** 17, 18	**Exposure Number:** 19, 20
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height:	**Camera Height:**	**Camera Height:**
Camera Angle:	**Camera Angle:**	**Camera Angle:**
Azimuth: °	**Azimuth:** °	**Azimuth:** °
Lens: **Filter**:	**Lens**: **Filter**:	**Lens**: **Filter**:
F-stop: **Speed**:	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance:	**Focal Distance:**	**Focal Distance:**
Exposure Number:	**Exposure Number:**	**Exposure Number:**

Appendix 1: Camera Point Record; Retake for CP T-96-4

Point Number: T-96-4	**National Forest:** Umatilla	**Ranger District:** North Fork John Day

Retake Number: 3	**Photographer:** Earle Rother	
Camera: Minolta Maxxum 7000	**Film:** Fuji Slide (Poor quality!)	**ASA:** 64
Condition of Point Monument and References: Good		
Date: 9/29/1998	**Time:** 10:00 AM	**Weather:** Clear, sunny

VIEW 1	**VIEW 2**	**VIEW 3**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:** 6’ standing
Camera Angle: Vertical	**Camera Angle:** Horizontal	**Camera Angle:** Horizontal
Azimuth: 161°	**Azimuth:** 168°	**Azimuth:** 333°
Lens: 50/28mm **Filter**: Skylite	**Lens**: 50/28mm **Filter**: Skylite	**Lens**: 50/28mm **Filter**: Skylite
F-stop: 4.5 **Speed**: 1/80	**F-stop**: 4 **Speed**: 1/80	**F-stop**: 5.6 **Speed**: 1/250
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:** Infinity
Exposure Number: 15, 16	**Exposure Number:** 17, 18	**Exposure Number:** 19, 20
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height:	**Camera Height:**	**Camera Height:**
Camera Angle:	**Camera Angle:**	**Camera Angle:**
Azimuth: °	**Azimuth:** °	**Azimuth:** °
Lens: **Filter**:	**Lens**: **Filter**:	**Lens**: **Filter**:
F-stop: **Speed**:	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance:	**Focal Distance:**	**Focal Distance:**
Exposure Number:	**Exposure Number:**	**Exposure Number:**

Retake Number: 4	**Photographer:** Dave Powell	
Camera: Minolta X-700	**Film:** Kodachrome Slide	**ASA:** 64
Condition of Point Monument and References: Stake, cap and sign were missing (all were replaced)		
Date: 9/24/1999	**Time:** 12:30 PM	**Weather:** Clear, sunny

VIEW 1	**VIEW 2**	**VIEW 3**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:** 6’ standing
Camera Angle: Vertical	**Camera Angle:** Horizontal	**Camera Angle:** Horizontal
Azimuth: 161°	**Azimuth:** 168°	**Azimuth:** 333°
Lens: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze
F-stop: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:** Infinity
Exposure Number: 12	**Exposure Number:** 13	**Exposure Number:** 14
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height:	**Camera Height:**	**Camera Height:**
Camera Angle:	**Camera Angle:**	**Camera Angle:**
Azimuth: °	**Azimuth:** °	**Azimuth:** °
Lens: **Filter**:	**Lens**: **Filter**:	**Lens**: **Filter**:
F-stop: **Speed**:	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance:	**Focal Distance:**	**Focal Distance:**
Exposure Number:	**Exposure Number:**	**Exposure Number:**

Appendix 1: Camera Point Record; Retake for CP T-96-4

Point Number: T-96-4	**National Forest:** Umatilla	**Ranger District:** North Fork John Day

Retake Number: 5	**Photographer:** Earle Rother	
Camera: Minolta Maxxum 7000	**Film:** Kodachrome Slide	**ASA:** 64
Condition of Point Monument and References: Good		
Date: 9/27/2000	**Time:** 11:00 AM	**Weather:** Clear, sunny

VIEW 1	**VIEW 2**	**VIEW 3**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:** 6’ standing
Camera Angle: Vertical	**Camera Angle:** Horizontal	**Camera Angle:** Horizontal
Azimuth: 161°	**Azimuth:** 168°	**Azimuth:** 333°
Lens: 28 mm **Filter**: Skylite	**Lens**: 28 mm **Filter**: Skylite	**Lens**: 28 mm **Filter**: Skylite
F-stop: 8 **Speed**: 1/125	**F-stop**: 8 **Speed**: 1/125	**F-stop**: 8 **Speed**: 1/125
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:** Infinity
Exposure Number: 12	**Exposure Number:** 13	**Exposure Number:** 14
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height:	**Camera Height:**	**Camera Height:**
Camera Angle:	**Camera Angle:**	**Camera Angle:**
Azimuth: °	**Azimuth:** °	**Azimuth:** °
Lens: **Filter**:	**Lens**: **Filter**:	**Lens**: **Filter**:
F-stop: **Speed**:	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance:	**Focal Distance:**	**Focal Distance:**
Exposure Number:	**Exposure Number:**	**Exposure Number:**

Retake Number: 6	**Photographer:** Dave Powell	
Camera: Minolta X-700	**Film:** Kodachrome Slide	**ASA:** 64
Condition of Point Monument and References: Good		
Date: 10/2/2001	**Time:** 11:45 AM	**Weather:** Clear, sunny

VIEW 1	**VIEW 2**	**VIEW 3**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:** 6’ standing
Camera Angle: Vertical	**Camera Angle:** Horizontal	**Camera Angle:** Horizontal
Azimuth: 161°	**Azimuth:** 168°	**Azimuth:** 333°
Lens: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze
F-stop: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:** Infinity
Exposure Number: 7	**Exposure Number:** 8	**Exposure Number:** 9
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height:	**Camera Height:**	**Camera Height:**
Camera Angle:	**Camera Angle:**	**Camera Angle:**
Azimuth: °	**Azimuth:** °	**Azimuth:** °
Lens: **Filter**:	**Lens**: **Filter**:	**Lens**: **Filter**:
F-stop: **Speed**:	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance:	**Focal Distance:**	**Focal Distance:**
Exposure Number:	**Exposure Number:**	**Exposure Number:**

Appendix 1: Camera Point Record; Retake for CP T-96-4

Point Number:	T-96-4	**National Forest:**	Umatilla	**Ranger District:**	North Fork John Day

Retake Number:	7	**Photographer:**	Dave Powell		
Camera:	Canon Rebel XT	**Film:**	Digital sensor	**ASA:**	
Condition of Point Monument and References:		New RP tag installed; new cap glued to rock surface			
Date:	7/21/2008	**Time:**	10:15 AM	**Weather:**	Overcast; drizzling

VIEW 1		**VIEW 2**		**VIEW 3**	
Camera Height:	6’ standing	**Camera Height:**	6’ standing	**Camera Height:**	6’ standing
Camera Angle:	Vertical	**Camera Angle:**	Horizontal	**Camera Angle:**	Horizontal
Azimuth:	161°	**Azimuth:**	168°	**Azimuth:**	333°
Lens: 28 mm	**Filter**:	**Lens**: 28 mm	**Filter**:	**Lens**: 28 mm	**Filter**:
F-stop:	**Speed**:	**F-stop**:	**Speed**:	**F-stop**:	**Speed**:
Focal Distance:		**Focal Distance:**		**Focal Distance:**	
File Name:	Retake7	**File Name:**	Retake7	**File Name:**	Retake7

VIEW 4		**VIEW 5**		**VIEW 6**	
Camera Height:		**Camera Height:**		**Camera Height:**	
Camera Angle:		**Camera Angle:**		**Camera Angle:**	
Azimuth:	°	**Azimuth:**	°	**Azimuth:**	°
Lens:	**Filter**:	**Lens**:	**Filter**:	**Lens**:	**Filter**:
F-stop:	**Speed**:	**F-stop**:	**Speed**:	**F-stop**:	**Speed**:
Focal Distance:		**Focal Distance:**		**Focal Distance:**	
File Name:		**File Name:**		**File Name:**	

RT7 comments: Veg cover – SHCA (high); VAME (mod); VASC (low); SASC (low).

Appendix 1: Camera Point Record; Initial Take for CP T-96-5

Point Number: T-96-5 **National Forest:** Umatilla **Ranger District:** North Fork John Day

Retake Frequency: Annual; then 5 years **Due Dates:** Fall of 1997, 1998, 1999, 2000, 2001; 2006

Subject & Purpose: Monitor long-term effects of the Tower wildfire (burned August-September 1996)

Access Description: Point located about 450 feet from small trailhead/pullout off 52 road for the Cut-Across trail, number 3158. Camera point cap is 6-8 feet south of the trail tread. Pullout off 52 road is about 0.9 miles west of the road junction of 52 and 5507.

GPS Coordinates: **North** 4986951 **East** 366407 **Corrected?** Yes

Legal Description: **Town** **Range** **Section** **Qtr** **Qtr**

Air Photo Number: **Map Identifier:** **Ecoclass:** CWS811

Photographer: Earle Rother **Elevation:** 5,260 feet **Aspect:** 338° **Slope %:** 13

Camera: Minolta SRT101 **Film:** Kodachrome Slide **ASA:** 64

Date: 10/4/1996 **Time:** 12:30 PM **Weather:** Clear, sunny

VIEW 1	VIEW 2	VIEW 3
Camera Height: 6' standing	**Camera Height:** 6' standing	**Camera Height:** 6’ standing
Camera Angle: Horizontal	**Camera Angle:** Vertical	**Camera Angle:** Horizontal
Azimuth: 37°	**Azimuth:** 328°	**Azimuth:** 90° (due east)
Lens: 50 mm **Filter**: None	**Lens**: 50 mm **Filter**: None	**Lens**: 50 mm **Filter**: None
F-stop: 11 **Speed**: 1/60	**F-stop**: 11 **Speed**: 1/60	**F-stop**: 8 **Speed**: 1/60
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:** Infinity
Exposure Number: 12	**Exposure Number:** 13	**Exposure Number:** 14

VIEW 4	VIEW 5	VIEW 6
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:** 6’ standing
Camera Angle: Horizontal	**Camera Angle:** Horizontal	**Camera Angle:** Horizontal
Azimuth: 180°	**Azimuth:** 270°	**Azimuth:** 0/360°
Lens: 50 mm **Filter**: None	**Lens**: 50 mm **Filter**: None	**Lens**: 50 mm **Filter**: None
F-stop: 8 **Speed**: 1/60	**F-stop**: 8 **Speed**: 1/60	**F-stop**: 8 **Speed**: 1/60
Focal Distance: 10 meters	**Focal Distance:** 10 meters	**Focal Distance:** 10 meters
Exposure Number: 15	**Exposure Number:** 16	**Exposure Number:** 17

REFERENCE POINT 1

Description: 10.1" DBH PICO (dead)

Marking: Orange poster

Azimuth: 175° **Feet**: 20

REFERENCE POINT 2

Description:

Marking:

Azimuth: **Feet**:

REFERENCE POINT 3

Description:

Marking:

Azimuth: **Feet**:

Appendix 1: Camera Point Record; Retake for CP T-96-5

Point Number: T-96-5	**National Forest:** Umatilla	**Ranger District:** North Fork John Day

Retake Number: 1	**Photographer:** Dave Powell	
Camera: Minolta X-700	**Film:** Kodachrome Slide	**ASA:** 64
Condition of Point Monument and References: Good		
Date: 6/20/1997	**Time:** 11:25 AM	**Weather:** Sunny, clear

VIEW 1	**VIEW 2**	**VIEW 3**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:** 6’ standing
Camera Angle: Horizontal	**Camera Angle:** Vertical	**Camera Angle:** Horizontal
Azimuth: 37°	**Azimuth:** 328°	**Azimuth:** 90°
Lens: 28 mm **Filter**: None	**Lens**: 28 mm **Filter**: None	**Lens**: 28 mm **Filter**: None
F-stop: 22 **Speed**: 1/125	**F-stop**: 22 **Speed**: 125	**F-stop**: 22 **Speed**: 1/250
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:** Infinity
Exposure Number: 25	**Exposure Number:** 26, 2	**Exposure Number:** 3
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:** 6’ standing
Camera Angle: Horizontal	**Camera Angle:** Horizontal	**Camera Angle:** Horizontal
Azimuth: 180°	**Azimuth:** 270°	**Azimuth:** 360°
Lens: 28 mm **Filter**: None	**Lens**: 28 mm **Filter**: None	**Lens**: 28 mm **Filter**: None
F-stop: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:** Infinity
Exposure Number: 9	**Exposure Number:** 10	**Exposure Number:** 11

Retake Number: 2	**Photographer:** Earle Rother	
Camera: Minolta Maxxum 7000	**Film:** Kodachrome Slide	**ASA:** 64
Condition of Point Monument and References: Good		
Date: 10/8/1997	**Time:** 10:30 AM	**Weather:** Cloudy

VIEW 1	**VIEW 2**	**VIEW 3**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:** 6’ standing
Camera Angle: Horizontal	**Camera Angle:** Vertical	**Camera Angle:** Horizontal
Azimuth: 37°	**Azimuth:** 328°	**Azimuth:** 90°
Lens: 50/28 **Filter**: None	**Lens**: 50/28 **Filter**: None	**Lens**: 50/28 **Filter**: None
F-stop: 4 **Speed**: 1/80	**F-stop**: 8 **Speed**: 1/350	**F-stop**: 5.6 **Speed**: 1/80
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:** Infinity
Exposure Number: 21, 22	**Exposure Number:** 1, 2	**Exposure Number:** 3, 4
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:** 6’ standing
Camera Angle: Horizontal	**Camera Angle:** Horizontal	**Camera Angle:** Horizontal
Azimuth: 180°	**Azimuth:** 270°	**Azimuth:** 360°
Lens: 50/28 **Filter**: None	**Lens**: 50/28 **Filter**: None	**Lens**: 50/28 **Filter**: None
F-stop: 4 **Speed**: 1/80	**F-stop**: 5.6 **Speed**: 1/80	**F-stop**: 4.5 **Speed**: 1/80
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:** Infinity
Exposure Number: 5, 6	**Exposure Number:** 7, 8	**Exposure Number:** 9, 10

Appendix 1: Camera Point Record; Retake for CP T-96-5

Point Number: T-96-5	**National Forest:** Umatilla	**Ranger District:** North Fork John Day

Retake Number: 3	**Photographer:** Earle Rother	
Camera: Minolta Maxxum 7000	**Film:** Kodachrome Slide	**ASA:** 64
Condition of Point Monument and References: Good		
Date: 9/29/1998	**Time:** 10:15 AM	**Weather:** Clear, sunny

VIEW 1	**VIEW 2**	**VIEW 3**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:** 6’ standing
Camera Angle: Horizontal	**Camera Angle:** Vertical	**Camera Angle:** Horizontal
Azimuth: 37°	**Azimuth:** 328°	**Azimuth:** 90°
Lens: 50/28mm **Filter**: Skylite	**Lens**: 50/28mm **Filter**: Skylite	**Lens**: 50/28mm **Filter**: Skylite
F-stop: 4.5 **Speed**: 1/80	**F-stop**: 5.6 **Speed**: 1/250	**F-stop**: 4 **Speed**: 1/125
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:** Infinity
Exposure Number: 21, 22	**Exposure Number:** 23, 24	**Exposure Number:** 25, 26
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:** 6’ standing
Camera Angle: Horizontal	**Camera Angle:** Horizontal	**Camera Angle:** Horizontal
Azimuth: 180°	**Azimuth:** 270°	**Azimuth:** 360°
Lens: 50/28mm **Filter**: Skylite	**Lens**: 50/28mm **Filter**: Skylite	**Lens**: 50/28mm **Filter**: Skylite
F-stop: 4.5 **Speed**: 1/80	**F-stop**: 5.6 **Speed**: 1/250	**F-stop**: 4.5 **Speed**: 1/80
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:** Infinity
Exposure Number: 27, 28	**Exposure Number:** 29, 30	**Exposure Number:** 31, 32

Retake Number: 4	**Photographer:** Dave Powell	
Camera: Minolta X-700	**Film:** Kodachrome Slide	**ASA:** 64
Condition of Point Monument and References: Good		
Date: 9/24/1999	**Time:** 1:00 PM	**Weather:** Clear, sunny

VIEW 1	**VIEW 2**	**VIEW 3**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:** 6’ standing
Camera Angle: Horizontal	**Camera Angle:** Vertical	**Camera Angle:** Horizontal
Azimuth: 37°	**Azimuth:** 328°	**Azimuth:** 90°
Lens: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze
F-stop: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:** Infinity
Exposure Number: 15	**Exposure Number:** 16	**Exposure Number:** 17
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:** 6’ standing
Camera Angle: Horizontal	**Camera Angle:** Horizontal	**Camera Angle:** Horizontal
Azimuth: 180°	**Azimuth:** 270°	**Azimuth:** 360°
Lens: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze
F-stop: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:** Infinity
Exposure Number: 18	**Exposure Number:** 19	**Exposure Number:** 20

Appendix 1: Camera Point Record; Retake for CP T-96-5

Point Number: T-96-5	**National Forest:** Umatilla	**Ranger District:** North Fork John Day

Retake Number: 5	**Photographer:** Earle Rother	
Camera: Minolta Maxxum 7000	**Film:** Kodachrome Slide	**ASA:** 64
Condition of Point Monument and References: Good		
Date: 9/27/2000	**Time:** 11:20 AM	**Weather:** Clear, sunny

VIEW 1	**VIEW 2**	**VIEW 3**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:** 6’ standing
Camera Angle: Horizontal	**Camera Angle:** Vertical	**Camera Angle:** Horizontal
Azimuth: 37°	**Azimuth:** 328°	**Azimuth:** 90°
Lens: 28 mm **Filter**: Skylite	**Lens**: 28 mm **Filter**: Skylite	**Lens**: 28 mm **Filter**: Skylite
F-stop: 8 **Speed**: 1/100	**F-stop**: 8 **Speed**: 1/125	**F-stop**: 6.7 **Speed**: 1/100
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:** Infinity
Exposure Number: 15	**Exposure Number:** 16	**Exposure Number:** 17
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:** 6’ standing
Camera Angle: Horizontal	**Camera Angle:** Horizontal	**Camera Angle:** Horizontal
Azimuth: 180°	**Azimuth:** 270°	**Azimuth:** 360°
Lens: 28 mm **Filter**: Skylite	**Lens**: 28 mm **Filter**: Skylite	**Lens**: 28 mm **Filter**: Skylite
F-stop: 8 **Speed**: 1/125	**F-stop**: 8 **Speed**: 1/125	**F-stop**: 8 **Speed**: 1/125
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:** Infinity
Exposure Number: 18	**Exposure Number:** 19	**Exposure Number:** 20

Retake Number: 6	**Photographer:** Dave Powell	
Camera: Minolta X-700	**Film:** Kodachrome Slide	**ASA:** 64
Condition of Point Monument and References: Good		
Date: 10/2/2001	**Time:** 12:00 PM	**Weather:** Clear, sunny

VIEW 1	**VIEW 2**	**VIEW 3**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:** 6’ standing
Camera Angle: Horizontal	**Camera Angle:** Vertical	**Camera Angle:** Horizontal
Azimuth: 37°	**Azimuth:** 328°	**Azimuth:** 90°
Lens: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze
F-stop: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:** Infinity
Exposure Number: 12	**Exposure Number:** 13	**Exposure Number:** 14
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:** 6’ standing
Camera Angle: Horizontal	**Camera Angle:** Horizontal	**Camera Angle:** Horizontal
Azimuth: 180°	**Azimuth:** 270°	**Azimuth:** 360°
Lens: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze
F-stop: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:** Infinity
Exposure Number: 15	**Exposure Number:** 16	**Exposure Number:** 17

Appendix 1: Camera Point Record; Retake for CP T-96-5

Point Number: T-96-5	**National Forest:** Umatilla	**Ranger District:** North Fork John Day

Retake Number: 7		**Photographer:** Dave Powell			
Camera: Canon Rebel XT		**Film:** Digital sensor		**ASA:**	
Condition of Point Monument and References: Good					
Date: 7/21/2008	**Time:** 11:00 AM	**Weather:** Overcast; drizzling			
VIEW 1		**VIEW 2**		**VIEW 3**	
Camera Height:	6’ standing	**Camera Height:**	6’ standing	**Camera Height:**	6’ standing
Camera Angle:	Horizontal	**Camera Angle:**	Vertical	**Camera Angle:**	Horizontal
Azimuth:	37°	**Azimuth:**	328°	**Azimuth:**	90°
Lens: 28 mm	**Filter**:	**Lens**: 28 mm	**Filter**:	**Lens**: 28 mm	**Filter**:
F-stop:	**Speed**:	**F-stop**:	**Speed**:	**F-stop**:	**Speed**:
Focal Distance:		**Focal Distance:**		**Focal Distance:**	
File Name:	Retake7	**File Name:**	Retake7	**File Name:**	Retake7
VIEW 4		**VIEW 5**		**VIEW 6**	
Camera Height:	6’ standing	**Camera Height:**	6’ standing	**Camera Height:**	6’ standing
Camera Angle:	Horizontal	**Camera Angle:**	Horizontal	**Camera Angle:**	Horizontal
Azimuth:	180°	**Azimuth:**	270°	**Azimuth:**	360°
Lens: 28 mm	**Filter**:	**Lens**: 28 mm	**Filter**:	**Lens**: 28 mm	**Filter**:
F-stop:	**Speed**:	**F-stop**:	**Speed**:	**F-stop**:	**Speed**:
Focal Distance:		**Focal Distance:**		**Focal Distance:**	
File Name:	Retake7	**File Name:**	Retake7	**File Name:**	Retake7

Appendix 1: Camera Point Record; Initial Take for CP T-96-6

Point Number: T-96-6 **National Forest:** Umatilla **Ranger District:** North Fork John Day

Retake Frequency: Annual; then 5 years **Due Dates:** Fall of 1997, 1998, 1999, 2000, 2001; 2006

Subject & Purpose: Monitor long-term effects of the Tower wildfire (burned August-September 1996)

Access Description: Point located on rock outcrop above (south) of 52 road near unnumbered trail, about 0.7 miles east of the junction of roads 52 and 340 (Pearson summer home tract).

GPS Coordinates: **North** 4987619 **East** 363767 **Corrected?** Yes

Legal Description: **Town** **Range** **Section** **Qtr** **Qtr**

Air Photo Number: **Map Identifier:** **Ecoclass:** CWG112

Photographer: Earle Rother **Elevation:** 5,577 feet **Aspect:** 57° **Slope %:** 10

Camera: Minolta SRT101 **Film:** Kodachrome Slide **ASA:** 64

Date: 10/4/1996 **Time:** 1:00 PM **Weather:** High overcast

VIEW 1		VIEW 2		VIEW 3	
Camera Height:	6' standing	**Camera Height:**	6' standing	**Camera Height:**	6’ standing
Camera Angle:	Horizontal	**Camera Angle:**	Horizontal	**Camera Angle:**	Horizontal
Azimuth:	70°	**Azimuth:**	33°	**Azimuth:**	297°
Lens: 50 mm	**Filter**: None	**Lens**: 50 mm	**Filter**: None	**Lens**: 50 mm	**Filter**: None
F-stop: 11	**Speed**: 1/60	**F-stop**: 11	**Speed**: 1/60	**F-stop**: 11	**Speed**: 1/60
Focal Distance:	Infinity	**Focal Distance:**	Infinity	**Focal Distance:**	Infinity
Exposure Number:	18	**Exposure Number:**	19	**Exposure Number:**	20

VIEW 4		VIEW 5		VIEW 6	
Camera Height:		**Camera Height:**		**Camera Height:**	
Camera Angle:		**Camera Angle:**		**Camera Angle:**	
Azimuth:	°	**Azimuth:**	°	**Azimuth:**	°
Lens:	**Filter**:	**Lens**:	**Filter**:	**Lens**:	**Filter**:
F-stop:	**Speed**:	**F-stop**:	**Speed**:	**F-stop**:	**Speed**:
Focal Distance:		**Focal Distance:**		**Focal Distance:**	
Exposure Number:		**Exposure Number:**		**Exposure Number:**	

REFERENCE POINT 1

Description: 6.8" DBH ABGR (dead)

Marking: Orange poster

Azimuth: 305° **Feet**: 21

REFERENCE POINT 2

Description: 14.8" DBH LAOC

Marking: Orange poster

Azimuth: 238 ° **Feet**: 40

REFERENCE POINT 3

Description:

Marking:

Azimuth: **Feet**:

Appendix 1: Camera Point Record; Retake for CP T-96-6

Point Number: T-96-6	**National Forest:** Umatilla	**Ranger District:** North Fork John Day

Retake Number: 1	**Photographer:** Dave Powell	
Camera: Minolta X-700	**Film:** Kodachrome Slide	**ASA:** 64
Condition of Point Monument and References: Good		
Date: 6/20/1997	**Time:** 11:45 AM	**Weather:** Sunny, clear

VIEW 1	**VIEW 2**	**VIEW 3**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:** 6’ standing
Camera Angle: Horizontal	**Camera Angle:** Horizontal	**Camera Angle:** Horizontal
Azimuth: 70°	**Azimuth:** 33°	**Azimuth:** 297°
Lens: 28 mm **Filter**: None	**Lens**: 28 mm **Filter**: None	**Lens**: 28 mm **Filter**: None
F-stop: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:** Infinity
Exposure Number: 6	**Exposure Number:** 7	**Exposure Number:** 8
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height:	**Camera Height:**	**Camera Height:**
Camera Angle:	**Camera Angle:**	**Camera Angle:**
Azimuth: °	**Azimuth:** °	**Azimuth:** °
Lens: **Filter**:	**Lens**: **Filter**:	**Lens**: **Filter**:
F-stop: **Speed**:	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance:	**Focal Distance:**	**Focal Distance:**
Exposure Number:	**Exposure Number:**	**Exposure Number:**

Retake Number: 2	**Photographer:** Earle Rother	
Camera: Minolta Maxxum 7000	**Film:** Kodachrome Slide	**ASA:** 64
Condition of Point Monument and References: Good		
Date: 10/8/1997	**Time:** 10:45 AM	**Weather:** Cloudy

VIEW 1	**VIEW 2**	**VIEW 3**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:** 6’ standing
Camera Angle: Horizontal	**Camera Angle:** Horizontal	**Camera Angle:** Horizontal
Azimuth: 70°	**Azimuth:** 33°	**Azimuth:** 297°
Lens: 50/28mm **Filter**: None	**Lens**: 50/28mm **Filter**: None	**Lens**: 50/28mm **Filter**: None
F-stop: 5.6 **Speed**: 1/250	**F-stop**: 5.6 **Speed**: 1/80	**F-stop**: 4.5 **Speed**: 1/80
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:** Infinity
Exposure Number: 11, 12	**Exposure Number:** 13, 14	**Exposure Number:** 15, 16
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height:	**Camera Height:**	**Camera Height:**
Camera Angle:	**Camera Angle:**	**Camera Angle:**
Azimuth: °	**Azimuth:** °	**Azimuth:** °
Lens: **Filter**:	**Lens**: **Filter**:	**Lens**: **Filter**:
F-stop: **Speed**:	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance:	**Focal Distance:**	**Focal Distance:**
Exposure Number:	**Exposure Number:**	**Exposure Number:**

Appendix 1: Camera Point Record; Retake for CP T-96-6

Point Number: T-96-6	**National Forest:** Umatilla	**Ranger District:** North Fork John Day

Retake Number: 3	**Photographer:** Earle Rother	
Camera: Minolta Maxxum 7000	**Film:** Kodachrome/Fuji Slide	**ASA:** 64/100
Condition of Point Monument and References: Good		
Date: 9/29/1998	**Time:** 11:15 AM	**Weather:** Clear, sunny

VIEW 1	**VIEW 2**	**VIEW 3**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:** 6’ standing
Camera Angle: Horizontal	**Camera Angle:** Horizontal	**Camera Angle:** Horizontal
Azimuth: 70°	**Azimuth:** 33°	**Azimuth:** 297°
Lens: 50/28mm **Filter**: Skylite	**Lens**: 50/28mm **Filter**: Skylite	**Lens**: 50/28mm **Filter**: Skylite
F-stop: 5.6 **Speed**: 1/250	**F-stop**: 6.7 **Speed**: 1/250	**F-stop**: 6.7 **Speed**: 1/250
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:** Infinity
Exposure Number: 33, 34	**Exposure Number:** 35, 36	**Exposure Number:** 1, 2
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height:	**Camera Height:**	**Camera Height:**
Camera Angle:	**Camera Angle:**	**Camera Angle:**
Azimuth: °	**Azimuth:** °	**Azimuth:** °
Lens: **Filter**:	**Lens**: **Filter**:	**Lens**: **Filter**:
F-stop: **Speed**:	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance:	**Focal Distance:**	**Focal Distance:**
Exposure Number:	**Exposure Number:**	**Exposure Number:**

Retake Number: 4	**Photographer:** Dave Powell	
Camera: Minolta X-700	**Film:** Kodachrome Slide	**ASA:** 64
Condition of Point Monument and References: Good		
Date: 9/24/1999	**Time:** 1:15 PM	**Weather:** Slight overcast

VIEW 1	**VIEW 2**	**VIEW 3**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:** 6’ standing
Camera Angle: Horizontal	**Camera Angle:** Horizontal	**Camera Angle:** Horizontal
Azimuth: 70°	**Azimuth:** 33°	**Azimuth:** 297°
Lens: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze
F-stop: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:** Infinity
Exposure Number: 21	**Exposure Number:** 22	**Exposure Number:** 23
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height:	**Camera Height:**	**Camera Height:**
Camera Angle:	**Camera Angle:**	**Camera Angle:**
Azimuth: °	**Azimuth:** °	**Azimuth:** °
Lens: **Filter**:	**Lens**: **Filter**:	**Lens**: **Filter**:
F-stop: **Speed**:	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance:	**Focal Distance:**	**Focal Distance:**
Exposure Number:	**Exposure Number:**	**Exposure Number:**

Appendix 1: Camera Point Record; Retake for CP T-96-6

Point Number: T-96-6	**National Forest:** Umatilla	**Ranger District:** North Fork John Day

Retake Number: 5	**Photographer:** Earle Rother	
Camera: Minolta Maxxum 7000	**Film:** Kodachrome Slide	**ASA:** 64
Condition of Point Monument and References: Good		
Date: 9/27/2000	**Time:** 11:45 AM	**Weather:** Clear, sunny

VIEW 1	**VIEW 2**	**VIEW 3**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:** 6’ standing
Camera Angle: Horizontal	**Camera Angle:** Horizontal	**Camera Angle:** Horizontal
Azimuth: 70°	**Azimuth:** 33°	**Azimuth:** 297°
Lens: 28 mm **Filter**: Skylite	**Lens**: 28 mm **Filter**: Skylite	**Lens**: 28 mm **Filter**: Skylite
F-stop: 8 **Speed**: 1/125	**F-stop**: 8 **Speed**: 1/125	**F-stop**: 8 **Speed**: 1/125
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:** Infinity
Exposure Number: 21	**Exposure Number:** 22	**Exposure Number:** 23
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height:	**Camera Height:**	**Camera Height:**
Camera Angle:	**Camera Angle:**	**Camera Angle:**
Azimuth: °	**Azimuth:** °	**Azimuth:** °
Lens: **Filter**:	**Lens**: **Filter**:	**Lens**: **Filter**:
F-stop: **Speed**:	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance:	**Focal Distance:**	**Focal Distance:**
Exposure Number:	**Exposure Number:**	**Exposure Number:**

Retake Number: 6	**Photographer:** Dave Powell	
Camera: Minolta X-700	**Film:** Kodachrome Slide	**ASA:** 64
Condition of Point Monument and References: Good (LAOC is now down?)		
Date: 10/2/2001	**Time:** 12:40 PM	**Weather:** Clear, sunny

VIEW 1	**VIEW 2**	**VIEW 3**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:** 6’ standing
Camera Angle: Horizontal	**Camera Angle:** Horizontal	**Camera Angle:** Horizontal
Azimuth: 70°	**Azimuth:** 33°	**Azimuth:** 297°
Lens: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze
F-stop: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:** Infinity
Exposure Number: 18	**Exposure Number:** 19	**Exposure Number:** 20
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height:	**Camera Height:**	**Camera Height:**
Camera Angle:	**Camera Angle:**	**Camera Angle:**
Azimuth: °	**Azimuth:** °	**Azimuth:** °
Lens: **Filter**:	**Lens**: **Filter**:	**Lens**: **Filter**:
F-stop: **Speed**:	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance:	**Focal Distance:**	**Focal Distance:**
Exposure Number:	**Exposure Number:**	**Exposure Number:**

Appendix 1: Camera Point Record; Retake for CP T-96-6

Point Number: T-96-6	**National Forest:** Umatilla	**Ranger District:** North Fork John Day

Retake Number: 7	**Photographer:** Dave Powell	
Camera: Canon Rebel XT	**Film:** Digital sensor	**ASA:**
Condition of Point Monument and References: Good		
Date: 7/22/2008	**Time:** 11:00 AM	**Weather:** Overcast

VIEW 1		**VIEW 2**		**VIEW 3**	
Camera Height:	6’ standing	**Camera Height:**	6’ standing	**Camera Height:**	6’ standing
Camera Angle:	Horizontal	**Camera Angle:**	Horizontal	**Camera Angle:**	Horizontal
Azimuth:	70°	**Azimuth:**	33°	**Azimuth:**	297°
Lens: 28 mm	**Filter**:	**Lens**: 28 mm	**Filter**:	**Lens**: 28 mm	**Filter**:
F-stop:	**Speed**:	**F-stop**:	**Speed**:	**F-stop**:	**Speed**:
Focal Distance:		**Focal Distance:**		**Focal Distance:**	
File Name:	Retake7	**File Name:**	Retake7	**File Name:**	Retake7

VIEW 4		**VIEW 5**		**VIEW 6**	
Camera Height:		**Camera Height:**		**Camera Height:**	
Camera Angle:		**Camera Angle:**		**Camera Angle:**	
Azimuth:	°	**Azimuth:**	°	**Azimuth:**	°
Lens:	**Filter**:	**Lens**:	**Filter**:	**Lens**:	**Filter**:
F-stop:	**Speed**:	**F-stop**:	**Speed**:	**F-stop**:	**Speed**:
Focal Distance:		**Focal Distance:**		**Focal Distance:**	
File Name:		**File Name:**		**File Name:**	

Appendix 1: Camera Point Record; Initial Take for CP T-96-7

Point Number: T-96-7 **National Forest:** Umatilla **Ranger District:** North Fork John Day
Retake Frequency: Annual; then 5 years **Due Dates:** Fall of 1997, 1998, 1999, 2000, 2001; 2006
Subject & Purpose: Monitor long-term effects of the Tower wildfire (burned August-September 1996)
Access Description: Point located below (north) of 52 road in Junewood timber sale plantation, about 1/3 of which was burned by the fire. Unit is about ¾ miles east of the junction of 52/55 roads.
GPS Coordinates: **North** 4989425 **East** 359951 **Corrected?** Yes
Legal Description: **Town** **Range** **Section** **Qtr** **Qtr**
Air Photo Number: **Map Identifier:** **Ecoclass:** CWG112
Photographer: Earle Rother **Elevation:** 5,444 feet **Aspect:** 33° **Slope %:** 12
Camera: Minolta SRT101 **Film:** Kodachrome Slide **ASA:** 64
Date: 10/4/1996 **Time:** 2:00 PM **Weather:** High overcast

VIEW 1		VIEW 2		VIEW 3	
Camera Height:	6' standing	**Camera Height:**	6' standing	**Camera Height:**	6’ standing
Camera Angle:	Horizontal	**Camera Angle:**	Horizontal	**Camera Angle:**	Horizontal
Azimuth:	352°	**Azimuth:**	37°	**Azimuth:**	64°
Lens: 50 mm	**Filter**: None	**Lens**: 50 mm	**Filter**: None	**Lens**: 50 mm	**Filter**: None
F-stop: 11	**Speed**: 1/60	**F-stop**: 11	**Speed**: 1/60	**F-stop**: 11	**Speed**: 1/60
Focal Distance:	Infinity	**Focal Distance:**	Infinity	**Focal Distance:**	Infinity
Exposure Number:	21	**Exposure Number:**	22	**Exposure Number:**	23

VIEW 4		VIEW 5		VIEW 6	
Camera Height:		**Camera Height:**		**Camera Height:**	
Camera Angle:		**Camera Angle:**		**Camera Angle:**	
Azimuth:	°	**Azimuth:**	°	**Azimuth:**	°
Lens:	**Filter**:	**Lens**:	**Filter**:	**Lens**:	**Filter**:
F-stop:	**Speed**:	**F-stop**:	**Speed**:	**F-stop**:	**Speed**:
Focal Distance:		**Focal Distance:**		**Focal Distance:**	
Exposure Number:		**Exposure Number:**		**Exposure Number:**	

REFERENCE POINT 1
Description: 4.9" DBH PIPO
Marking: Orange poster
Azimuth: 26° **Feet**: 70

REFERENCE POINT 2
Description:
Marking:
Azimuth: **Feet**:

REFERENCE POINT 3
Description:
Marking:
Azimuth: **Feet**:

Appendix 1: Camera Point Record; Retake for CP T-96-7

Point Number: T-96-7	**National Forest:** Umatilla	**Ranger District:** North Fork John Day

Retake Number: 1	**Photographer:** Dave Powell	
Camera: Minolta X-700	**Film:** Kodachrome Slide	**ASA:** 64
Condition of Point Monument and References: Good		
Date: 6/20/1997	**Time:** 12:15 PM	**Weather:** Sunny, clear

VIEW 1	**VIEW 2**	**VIEW 3**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:** 6’ standing
Camera Angle: Horizontal	**Camera Angle:** Horizontal	**Camera Angle:** Horizontal
Azimuth: 352°	**Azimuth:** 37°	**Azimuth:** 64°
Lens: 28 mm **Filter**: None	**Lens**: 28 mm **Filter**: None	**Lens**: 28 mm **Filter**: None
F-stop: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:** Infinity
Exposure Number: 12	**Exposure Number:** 13	**Exposure Number:** 14
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height:	**Camera Height:**	**Camera Height:**
Camera Angle:	**Camera Angle:**	**Camera Angle:**
Azimuth: °	**Azimuth:** °	**Azimuth:** °
Lens: **Filter**:	**Lens**: **Filter**:	**Lens**: **Filter**:
F-stop: **Speed**:	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance:	**Focal Distance:**	**Focal Distance:**
Exposure Number:	**Exposure Number:**	**Exposure Number:**

Retake Number: 2	**Photographer:** Earle Rother	
Camera: Minolta Maxxum 7000	**Film:** Kodachrome Slide	**ASA:** 64
Condition of Point Monument and References: Good		
Date: 10/8/1997	**Time:** 11:00 AM	**Weather:** Partly cloudy

VIEW 1	**VIEW 2**	**VIEW 3**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:** 6’ standing
Camera Angle: Horizontal	**Camera Angle:** Horizontal	**Camera Angle:** Horizontal
Azimuth: 352°	**Azimuth:** 37°	**Azimuth:** 64°
Lens: 50/28mm **Filter**: None	**Lens**: 50/28mm **Filter**: None	**Lens**: 50/28mm **Filter**: None
F-stop: 4.5 **Speed**: 1/80	**F-stop**: 5.6 **Speed**: 1/250	**F-stop**: 5.6 **Speed**: 1/250
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:** Infinity
Exposure Number: 17, 18	**Exposure Number:** 19, 20	**Exposure Number:** 21, 22
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height:	**Camera Height:**	**Camera Height:**
Camera Angle:	**Camera Angle:**	**Camera Angle:**
Azimuth: °	**Azimuth:** °	**Azimuth:** °
Lens: **Filter**:	**Lens**: **Filter**:	**Lens**: **Filter**:
F-stop: **Speed**:	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance:	**Focal Distance:**	**Focal Distance:**
Exposure Number:	**Exposure Number:**	**Exposure Number:**

Appendix 1: Camera Point Record; Retake for CP T-96-7

Point Number: T-96-7	**National Forest:** Umatilla	**Ranger District:** North Fork John Day

Retake Number: 3	**Photographer:** Earle Rother	
Camera: Minolta Maxxum 7000	**Film:** Fuji Slide	**ASA:** 100
Condition of Point Monument and References: Good		
Date: 9/29/1998	**Time:** 11:30 AM	**Weather:** Clear, sunny

VIEW 1	**VIEW 2**	**VIEW 3**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:** 6’ standing
Camera Angle: Horizontal	**Camera Angle:** Horizontal	**Camera Angle:** Horizontal
Azimuth: 352°	**Azimuth:** 37°	**Azimuth:** 64°
Lens: 50/28mm **Filter**: Skylite	**Lens**: 50/28mm **Filter**: Skylite	**Lens**: 50/28mm **Filter**: Skylite
F-stop: 8 **Speed**: 1/350	**F-stop**: 8 **Speed**: 1/350	**F-stop**: 6.7 **Speed**: 1/250
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:** Infinity
Exposure Number: 5, 6	**Exposure Number:** 7, 8	**Exposure Number:** 9, 10
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height:	**Camera Height:**	**Camera Height:**
Camera Angle:	**Camera Angle:**	**Camera Angle:**
Azimuth: °	**Azimuth:** °	**Azimuth:** °
Lens: **Filter**:	**Lens**: **Filter**:	**Lens**: **Filter**:
F-stop: **Speed**:	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance:	**Focal Distance:**	**Focal Distance:**
Exposure Number:	**Exposure Number:**	**Exposure Number:**

Retake Number: 4	**Photographer:** Dave Powell	
Camera: Minolta X-700	**Film:** Kodachrome Slide	**ASA:** 64
Condition of Point Monument and References: New reference tree selected; old one is down		
Date: 9/24/1999	**Time:** 1:30 PM	**Weather:** Partly overcast

VIEW 1	**VIEW 2**	**VIEW 3**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:** 6’ standing
Camera Angle: Horizontal	**Camera Angle:** Horizontal	**Camera Angle:** Horizontal
Azimuth: 352°	**Azimuth:** 37°	**Azimuth:** 64°
Lens: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze
F-stop: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:** Infinity
Exposure Number: 24	**Exposure Number:** 1	**Exposure Number:** 2
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height:	**Camera Height:**	**Camera Height:**
Camera Angle:	**Camera Angle:**	**Camera Angle:**
Azimuth: °	**Azimuth:** °	**Azimuth:** °
Lens: **Filter**:	**Lens**: **Filter**:	**Lens**: **Filter**:
F-stop: **Speed**:	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance:	**Focal Distance:**	**Focal Distance:**
Exposure Number:	**Exposure Number:**	**Exposure Number:**

Appendix 1: Camera Point Record; Retake for CP T-96-7

Point Number: T-96-7	**National Forest:** Umatilla	**Ranger District:** North Fork John Day

Retake Number: 5	**Photographer:** Earle Rother	
Camera: Minolta Maxxum 7000	**Film:** Kodachrome Slide	**ASA:** 64
Condition of Point Monument and References: Good		
Date: 9/27/2000	**Time:** 12:30 PM	**Weather:** Clear, sunny

VIEW 1	**VIEW 2**	**VIEW 3**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:** 6’ standing
Camera Angle: Horizontal	**Camera Angle:** Horizontal	**Camera Angle:** Horizontal
Azimuth: 352°	**Azimuth:** 37°	**Azimuth:** 64°
Lens: 28 mm **Filter**: Skylite	**Lens**: 28 mm **Filter**: Skylite	**Lens**: 28 mm **Filter**: Skylite
F-stop: 3.5 **Speed**: 1/125	**F-stop**: 8 **Speed**: 1/125	**F-stop**: 8 **Speed**: 1/125
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:** Infinity
Exposure Number: 1	**Exposure Number:** 2	**Exposure Number:** 3
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height:	**Camera Height:**	**Camera Height:**
Camera Angle:	**Camera Angle:**	**Camera Angle:**
Azimuth: °	**Azimuth:** °	**Azimuth:** °
Lens: **Filter**:	**Lens**: **Filter**:	**Lens**: **Filter**:
F-stop: **Speed**:	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance:	**Focal Distance:**	**Focal Distance:**
Exposure Number:	**Exposure Number:**	**Exposure Number:**

Retake Number: 6	**Photographer:** Dave Powell	
Camera: Minolta X-700	**Film:** Kodachrome Slide	**ASA:** 64
Condition of Point Monument and References: Good		
Date: 10/2/2001	**Time:** 1:00 PM	**Weather:** Clear, sunny

VIEW 1	**VIEW 2**	**VIEW 3**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:** 6’ standing
Camera Angle: Horizontal	**Camera Angle:** Horizontal	**Camera Angle:** Horizontal
Azimuth: 352°	**Azimuth:** 37°	**Azimuth:** 64°
Lens: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze
F-stop: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:** Infinity
Exposure Number: 21	**Exposure Number:** 22	**Exposure Number:** 23
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height:	**Camera Height:**	**Camera Height:**
Camera Angle:	**Camera Angle:**	**Camera Angle:**
Azimuth: °	**Azimuth:** °	**Azimuth:** °
Lens: **Filter**:	**Lens**: **Filter**:	**Lens**: **Filter**:
F-stop: **Speed**:	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance:	**Focal Distance:**	**Focal Distance:**
Exposure Number:	**Exposure Number:**	**Exposure Number:**

Appendix 1: Camera Point Record; Retake for CP T-96-7

Point Number: T-96-7	**National Forest:** Umatilla	**Ranger District:** North Fork John Day

Retake Number: 7	**Photographer:** Dave Powell	
Camera: Canon Rebel XT	**Film:**	**ASA:**
Condition of Point Monument and References: Good		
Date: 7/24/2008	**Time:** 10:45 AM	**Weather:** Clear, sunny

VIEW 1		**VIEW 2**		**VIEW 3**	
Camera Height:	6’ standing	**Camera Height:**	6’ standing	**Camera Height:**	6’ standing
Camera Angle:	Horizontal	**Camera Angle:**	Horizontal	**Camera Angle:**	Horizontal
Azimuth:	352°	**Azimuth:**	37°	**Azimuth:**	64°
Lens: 28 mm	**Filter**:	**Lens**: 28 mm	**Filter**:	**Lens**: 28 mm	**Filter**:
F-stop:	**Speed**:	**F-stop**:	**Speed**:	**F-stop**:	**Speed**:
Focal Distance:		**Focal Distance:**		**Focal Distance:**	
File Name:	Retake7	**File Name:**	Retake7	**File Name:**	Retake7

VIEW 4		**VIEW 5**		**VIEW 6**	
Camera Height:		**Camera Height:**		**Camera Height:**	
Camera Angle:		**Camera Angle:**		**Camera Angle:**	
Azimuth:	°	**Azimuth:**	°	**Azimuth:**	°
Lens:	**Filter**:	**Lens**:	**Filter**:	**Lens**:	**Filter**:
F-stop:	**Speed**:	**F-stop**:	**Speed**:	**F-stop**:	**Speed**:
Focal Distance:		**Focal Distance:**		**Focal Distance:**	
File Name:		**File Name:**		**File Name:**	

Appendix 1: Camera Point Record; Initial Take for CP T-96-8

Point Number: T-96-8 **National Forest:** Umatilla **Ranger District:** North Fork John Day
Retake Frequency: Annual; then 5 years **Due Dates:** Fall of 1997, 1998, 1999, 2000, 2001; 2006
Subject & Purpose: Monitor long-term effects of the Tower wildfire (burned August-September 1996)
Access Description: Point is about 250 feet from switchback of 55 road near its junction with private land. Texas Bar Creek passes beneath the 55 road – point is about 250 feet at 50° from there.
GPS Coordinates: **North** 4987929 **East** 358910 **Corrected?** Yes
Legal Description: **Town** **Range** **Section** **Qtr** **Qtr**
Air Photo Number: **Map Identifier:** **Ecoclass:** CWG112
Photographer: Earle Rother **Elevation:** 4,177 feet **Aspect:** 150° **Slope %:** 31
Camera: Minolta SRT101 **Film:** Kodachrome Slide **ASA:** 64
Date: 10/4/1996 **Time:** 2:30 PM **Weather:** Sunny

VIEW 1	VIEW 2	VIEW 3
Camera Height: 6' standing	**Camera Height:** 6' standing	**Camera Height:** 6' standing
Camera Angle: Vertical	**Camera Angle:** Vertical	**Camera Angle:** Vertical
Azimuth: 97°	**Azimuth:** 153°	**Azimuth:** 20°
Lens: 50 mm **Filter**: None	**Lens**: 50 mm **Filter**: None	**Lens**: 50 mm **Filter**: None
F-stop: 5.6 **Speed**: 1/60	**F-stop**: 8 **Speed**: 1/60	**F-stop**: 11 **Speed**: 1/60
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:** Infinity
Exposure Number: 24	**Exposure Number:** 25	**Exposure Number:** 26

VIEW 4	VIEW 5	VIEW 6
Camera Height: 6' standing	**Camera Height:**	**Camera Height:**
Camera Angle: Horizontal	**Camera Angle:**	**Camera Angle:**
Azimuth: 210°	**Azimuth:** °	**Azimuth:** °
Lens: 50 mm **Filter**: None	**Lens**: **Filter**:	**Lens**: **Filter**:
F-stop: 5.6 **Speed**: 1/60	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance: Infinity	**Focal Distance:**	**Focal Distance:**
Exposure Number: 26	**Exposure Number:**	**Exposure Number:**

REFERENCE POINT 1

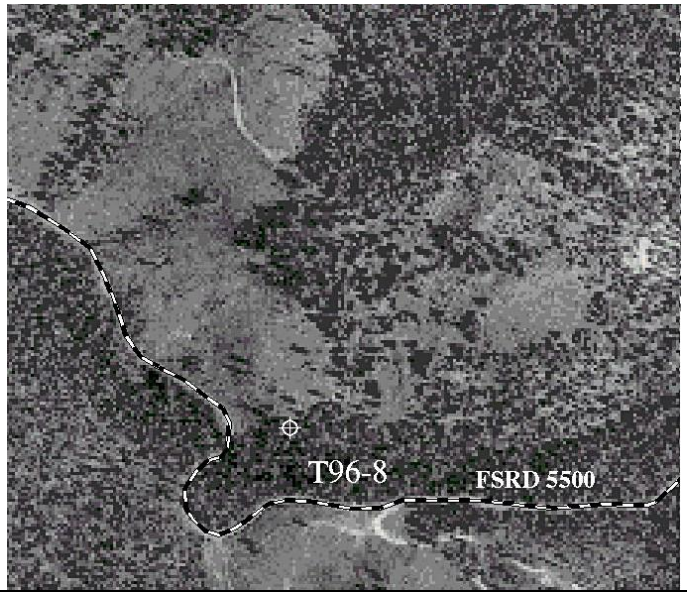
Description: Stump (2-feet tall)
Marking: Orange poster
Azimuth: 80° **Feet**: 5.0

REFERENCE POINT 2

Description:
Marking:
Azimuth: **Feet**:

REFERENCE POINT 3

Description:
Marking:
Azimuth: **Feet**:



Appendix 1: Camera Point Record; Retake for CP T-96-8

Point Number: T-96-8	**National Forest:** Umatilla	**Ranger District:** North Fork John Day

Retake Number: 1	**Photographer:** Dave Powell	
Camera: Minolta X-700	**Film:** Kodachrome Slide	**ASA:** 64
Condition of Point Monument and References: Good		
Date: 6/20/1997	**Time:** 3:10 PM	**Weather:** Sunny, clear

VIEW 1	**VIEW 2**	**VIEW 3**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:** 6’ standing
Camera Angle: Vertical	**Camera Angle:** Vertical	**Camera Angle:** Vertical
Azimuth: 97°	**Azimuth:** 153°	**Azimuth:** 20°
Lens: 28 mm **Filter**: None	**Lens**: 28 mm **Filter**: None	**Lens**: 28 mm **Filter**: None
F-stop: 22 **Speed**: 1/125	**F-stop**: 22 **Speed**: 1/125	**F-stop**: 22 **Speed**: 1/125
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:** Infinity
Exposure Number: 24	**Exposure Number:** 25	**Exposure Number:** 26
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height: 6’ standing	**Camera Height:**	**Camera Height:**
Camera Angle: Horizontal	**Camera Angle:**	**Camera Angle:**
Azimuth: 210°	**Azimuth:** °	**Azimuth:** °
Lens: 28 mm **Filter**: None	**Lens**: **Filter**:	**Lens**: **Filter**:
F-stop: 22 **Speed**: 1/125	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance: Infinity	**Focal Distance:**	**Focal Distance:**
Exposure Number: 1*	**Exposure Number:**	**Exposure Number:**

Retake Number: 2	**Photographer:** Earle Rother	
Camera: Minolta Maxxum 7000	**Film:** Kodachrome Slide	**ASA:** 64
Condition of Point Monument and References: Good		
Date: 10/8/1997	**Time:** 11:30 AM	**Weather:** Cloudy

VIEW 1	**VIEW 2**	**VIEW 3**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:** 6’ standing
Camera Angle: Vertical	**Camera Angle:** Vertical	**Camera Angle:** Vertical
Azimuth: 97°	**Azimuth:** 153°	**Azimuth:** 20°
Lens: 50/28mm **Filter**: None	**Lens**: 50/28mm **Filter**: None	**Lens**: 50/28mm **Filter**: None
F-stop: 4 **Speed**: 1/125	**F-stop**: 8 **Speed**: 1/350	**F-stop**: 5.6 **Speed**: 1/250
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:** Infinity
Exposure Number: 23, 24	**Exposure Number:** 25*, 1	**Exposure Number:** 2, 3
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height: 6’ standing	**Camera Height:**	**Camera Height:**
Camera Angle: Horizontal	**Camera Angle:**	**Camera Angle:**
Azimuth: 210°	**Azimuth:** °	**Azimuth:** °
Lens: 50/28mm **Filter**: None	**Lens**: **Filter**:	**Lens**: **Filter**:
F-stop: 5.4 **Speed**: 1/100	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance: Infinity	**Focal Distance:**	**Focal Distance:**
Exposure Number: 4, 5	**Exposure Number:**	**Exposure Number:**

* This slide was not usable following film processing.

Appendix 1: Camera Point Record; Retake for CP T-96-8

Point Number: T-96-8	**National Forest:** Umatilla	**Ranger District:** North Fork John Day

Retake Number: 3	**Photographer:** Earle Rother	
Camera: Minolta Maxxum 7000	**Film:** Fuji Slide	**ASA:** 100
Condition of Point Monument and References: Good		
Date: 9/29/1998	**Time:** 11:55 AM	**Weather:** Clear, sunny

VIEW 1	**VIEW 2**	**VIEW 3**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:** 6’ standing
Camera Angle: Vertical	**Camera Angle:** Vertical	**Camera Angle:** Vertical
Azimuth: 97°	**Azimuth:** 153°	**Azimuth:** 20°
Lens: 50/28mm **Filter**: Skylite	**Lens**: 28 mm **Filter**: Skylite	**Lens**: 28 mm **Filter**: Skylite
F-stop: 4.5 **Speed**: 1/80	**F-stop**: 6.7 **Speed**: 1/250	**F-stop**: 6.7 **Speed**: 1/350
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:** Infinity
Exposure Number: 11, 12	**Exposure Number:** 13, 14	**Exposure Number:** 15, 16
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height: 6’ standing	**Camera Height:**	**Camera Height:**
Camera Angle: Horizontal	**Camera Angle:**	**Camera Angle:**
Azimuth: 210°	**Azimuth:** °	**Azimuth:** °
Lens: 28 mm **Filter**: Skylite	**Lens**: **Filter**:	**Lens**: **Filter**:
F-stop: 4.5 **Speed**: 1/80	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance: Infinity	**Focal Distance:**	**Focal Distance:**
Exposure Number: 17, 18	**Exposure Number:**	**Exposure Number:**

Retake Number: 4	**Photographer:** Dave Powell	
Camera: Minolta X-700	**Film:** Kodachrome Slide	**ASA:** 64
Condition of Point Monument and References: Good		
Date: 9/24/1999	**Time:** 2:00 PM	**Weather:** Clear, sunny

VIEW 1	**VIEW 2**	**VIEW 3**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:** 6’ standing
Camera Angle: Vertical	**Camera Angle:** Vertical	**Camera Angle:** Vertical
Azimuth: 97°	**Azimuth:** 153°	**Azimuth:** 20°
Lens: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze
F-stop: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:** Infinity
Exposure Number: 3	**Exposure Number:** 4	**Exposure Number:** 5
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height: 6’ standing	**Camera Height:**	**Camera Height:**
Camera Angle: Horizontal	**Camera Angle:**	**Camera Angle:**
Azimuth: 210°	**Azimuth:** °	**Azimuth:** °
Lens: 28 mm **Filter**: Haze	**Lens**: **Filter**:	**Lens**: **Filter**:
F-stop: 22 **Speed**: 1/250	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance: Infinity	**Focal Distance:**	**Focal Distance:**
Exposure Number: 6	**Exposure Number:**	**Exposure Number:**

Appendix 1: Camera Point Record; Retake for CP T-96-8

Point Number: T-96-8	**National Forest:** Umatilla	**Ranger District:** North Fork John Day

Retake Number: 5	**Photographer:** Earle Rother	
Camera: Minolta Maxxum 7000	**Film:** Kodachrome Slide	**ASA:** 64
Condition of Point Monument and References: Good		
Date: 9/27/2000	**Time:** 1:00 PM	**Weather:** Clear, sunny

VIEW 1	**VIEW 2**	**VIEW 3**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:** 6’ standing
Camera Angle: Vertical	**Camera Angle:** Vertical	**Camera Angle:** Vertical
Azimuth: 97°	**Azimuth:** 153°	**Azimuth:** 20°
Lens: 28 mm **Filter**: Skylite	**Lens**: 28 mm **Filter**: Skylite	**Lens**: 28 mm **Filter**: Skylite
F-stop: 6.7 **Speed**: 1/100	**F-stop**: 8 **Speed**: 1/125	**F-stop**: 8 **Speed**: 1/125
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:** Infinity
Exposure Number: 4	**Exposure Number:** 5	**Exposure Number:** 6
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height: 6’ standing	**Camera Height:**	**Camera Height:**
Camera Angle: Horizontal	**Camera Angle:**	**Camera Angle:**
Azimuth: 210°	**Azimuth:** °	**Azimuth:** °
Lens: 28 mm **Filter**: Skylite	**Lens**: **Filter**:	**Lens**: **Filter**:
F-stop: 8 **Speed**: 1/125	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance: Infinity	**Focal Distance:**	**Focal Distance:**
Exposure Number: 7	**Exposure Number:**	**Exposure Number:**

Retake Number: 6	**Photographer:** Dave Powell	
Camera: Minolta X-700	**Film:** Kodachrome Slide	**ASA:** 64
Condition of Point Monument and References: Good		
Date: 10/2/2001	**Time:** 1:30 PM	**Weather:** Clear, sunny

VIEW 1	**VIEW 2**	**VIEW 3**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:** 6’ standing
Camera Angle: Vertical	**Camera Angle:** Vertical	**Camera Angle:** Vertical
Azimuth: 97°	**Azimuth:** 153°	**Azimuth:** 20°
Lens: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze
F-stop: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:** Infinity
Exposure Number: 24	**Exposure Number:** 25	**Exposure Number:**
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height: 6’ standing	**Camera Height:**	**Camera Height:**
Camera Angle: Horizontal	**Camera Angle:**	**Camera Angle:**
Azimuth: 210°	**Azimuth:** °	**Azimuth:** °
Lens: 28 mm **Filter**: Haze	**Lens**: **Filter**:	**Lens**: **Filter**:
F-stop: 22 **Speed**: 1/250	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance: Infinity	**Focal Distance:**	**Focal Distance:**
Exposure Number:	**Exposure Number:**	**Exposure Number:**

Appendix 1: Camera Point Record; Retake for CP T-96-8

Point Number: T-96-8	**National Forest:** Umatilla	**Ranger District:** North Fork John Day

Retake Number: 7	**Photographer:** Dave Powell	
Camera: Canon Rebel XT	**Film:** Digital sensor	**ASA:**
Condition of Point Monument and References: Cap OK; RP now a 2' stump (poster faces downhill)		
Date: 7/22/2008	**Time:** 9:45 AM	**Weather:** Cloudy, drizzling

VIEW 1		VIEW 2		VIEW 3	
Camera Height:	6' standing	**Camera Height:**	6' standing	**Camera Height:**	6' standing
Camera Angle:	Vertical	**Camera Angle:**	Vertical	**Camera Angle:**	Vertical
Azimuth:	97°	**Azimuth:**	153°	**Azimuth:**	20°
Lens: 28 mm	**Filter**:	**Lens**: 28 mm	**Filter**:	**Lens**: 28 mm	**Filter**:
F-stop:	**Speed**:	**F-stop**:	**Speed**:	**F-stop**: 8	**Speed**:
Focal Distance:		**Focal Distance:**		**Focal Distance:**	
File Name:	Retake7	**File Name:**	Retake7	**File Name:**	Retake7

VIEW 4		VIEW 5		VIEW 6	
Camera Height:	6' standing	**Camera Height:**		**Camera Height:**	
Camera Angle:	Horizontal	**Camera Angle:**		**Camera Angle:**	
Azimuth:	210°	**Azimuth:**	°	**Azimuth:**	°
Lens: 28 mm	**Filter**:	**Lens**:	**Filter**:	**Lens**:	**Filter**:
F-stop:	**Speed**:	**F-stop**:	**Speed**:	**F-stop**:	**Speed**:
Focal Distance:		**Focal Distance:**		**Focal Distance:**	
File Name:	Retake7	**File Name:**		**File Name:**	

Appendix 1: Camera Point Record; Initial Take for CP T-96-9

Point Number: T-96-9 **National Forest:** Umatilla **Ranger District:** North Fork John Day

Retake Frequency: Annual; then 5 years **Due Dates:** Spring of 1998, 1999, 2000, 2001, 2002; 2007

Subject & Purpose: Monitor long-term effects of the Tower wildfire (burned August-September 1996)

Access Description: Point located east of the 5507 road in an old Junewood timber sale plantation about 1.7 miles south of the junction of the 52 and 5507 roads.

GPS Coordinates: **North** 4984735 **East** 366686 **Corrected?** Yes

Legal Description: **Town** **Range** **Section** **Qtr** **Qtr**

Air Photo Number: **Map Identifier:** **Ecoclass:** CWG112

Photographer: Dave Powell **Elevation:** 5,609 feet **Aspect:** 237° **Slope %:** 24

Camera: Minolta X700 **Film:** Kodachrome Slide **ASA:** 64

Date: 6/20/1997 **Time:** 1:10 PM **Weather:** Sunny, Clear

VIEW 1		VIEW 2		VIEW 3	
Camera Height:	6' standing	**Camera Height:**	6' standing	**Camera Height:**	
Camera Angle:	Horizontal	**Camera Angle:**	Horizontal	**Camera Angle:**	
Azimuth:	193°	**Azimuth:**	333°	**Azimuth:**	°
Lens: 28 mm	**Filter**: None	**Lens**: 28 mm	**Filter**: None	**Lens**:	**Filter**:
F-stop: 22	**Speed**: 1/250	**F-stop**: 22	**Speed**: 1/250	**F-stop**:	**Speed**:
Focal Distance:	Infinity	**Focal Distance:**	Infinity	**Focal Distance:**	
Exposure Number:	14	**Exposure Number:**	15	**Exposure Number:**	

VIEW 4		VIEW 5		VIEW 6	
Camera Height:		**Camera Height:**		**Camera Height:**	
Camera Angle:		**Camera Angle:**		**Camera Angle:**	
Azimuth:	°	**Azimuth:**	°	**Azimuth:**	°
Lens:	**Filter**:	**Lens**:	**Filter**:	**Lens**:	**Filter**:
F-stop:	**Speed**:	**F-stop**:	**Speed**:	**F-stop**:	**Speed**:
Focal Distance:		**Focal Distance:**		**Focal Distance:**	
Exposure Number:		**Exposure Number:**		**Exposure Number:**	

REFERENCE POINT 1

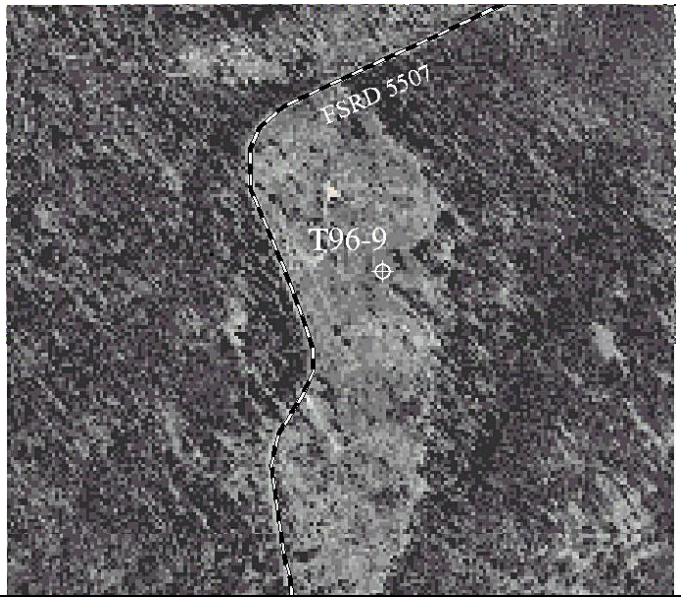
Description: 15.9" PSME (scorched)
Marking: Orange poster
Azimuth: 240° **Feet**: 46

REFERENCE POINT 2

Description:
Marking:
Azimuth: **Feet**:

REFERENCE POINT 3

Description:
Marking:
Azimuth: **Feet**:



Appendix 1: Camera Point Record; Retake for CP T-96-9

Point Number: T-96-9	**National Forest:** Umatilla	**Ranger District:** North Fork John Day

Retake Number: 1	**Photographer:** Earle Rother	
Camera: Minolta Maxxum 7000	**Film:** Kodachrome Slide	**ASA:** 64
Condition of Point Monument and References: Good		
Date: 10/8/1997	**Time:** 1:45 PM	**Weather:** Cloudy, cold

VIEW 1	**VIEW 2**	**VIEW 3**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:**
Camera Angle: Horizontal	**Camera Angle:** Horizontal	**Camera Angle:**
Azimuth: 193°	**Azimuth:** 333°	**Azimuth:** °
Lens: 28 mm **Filter**: None	**Lens**: 28 mm **Filter**: None	**Lens**: **Filter**:
F-stop: 5.6 **Speed**: 1/250	**F-stop**: 5.6 **Speed**: 1/250	**F-stop**: **Speed**:
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:**
Exposure Number: 22	**Exposure Number:** 24	**Exposure Number:**
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height:	**Camera Height:**	**Camera Height:**
Camera Angle:	**Camera Angle:**	**Camera Angle:**
Azimuth: °	**Azimuth:** °	**Azimuth:** °
Lens: **Filter**:	**Lens**: **Filter**:	**Lens**: **Filter**:
F-stop: **Speed**:	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance:	**Focal Distance:**	**Focal Distance:**
Exposure Number:	**Exposure Number:**	**Exposure Number:**

Retake Number: 2	**Photographer:** Earle Rother	
Camera: Minolta Maxxum 7000	**Film:** Kodachrome Slide	**ASA:** 64
Condition of Point Monument and References: Good		
Date: 6/19/1998	**Time:** 12:45 PM	**Weather:** Cloudy, cool

VIEW 1	**VIEW 2**	**VIEW 3**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:**
Camera Angle: Horizontal	**Camera Angle:** Horizontal	**Camera Angle:**
Azimuth: 193°	**Azimuth:** 333°	**Azimuth:** °
Lens: 28 mm **Filter**: Skylite	**Lens**: 28 mm **Filter**: Skylite	**Lens**: **Filter**:
F-stop: 9.5 **Speed**: 1/80	**F-stop**: 9.5 **Speed**: 1/80	**F-stop**: **Speed**:
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:**
Exposure Number: 16	**Exposure Number:** 17	**Exposure Number:**
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height:	**Camera Height:**	**Camera Height:**
Camera Angle:	**Camera Angle:**	**Camera Angle:**
Azimuth: °	**Azimuth:** °	**Azimuth:** °
Lens: **Filter**:	**Lens**: **Filter**:	**Lens**: **Filter**:
F-stop: **Speed**:	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance:	**Focal Distance:**	**Focal Distance:**
Exposure Number:	**Exposure Number:**	**Exposure Number:**

Appendix 1: Camera Point Record; Retake for CP T-96-9

Point Number: T-96-9	**National Forest:** Umatilla	**Ranger District:** North Fork John Day

Retake Number: 3	**Photographer:** Earle Rother	
Camera: Minolta Maxxum 7000	**Film:** Kodachrome Slide	**ASA:** 64
Condition of Point Monument and References: Good		
Date: 7/2/1999	**Time:** 1:00 PM	**Weather:** Partly cloudy

VIEW 1	**VIEW 2**	**VIEW 3**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:**
Camera Angle: Horizontal	**Camera Angle:** Horizontal	**Camera Angle:**
Azimuth: 193°	**Azimuth:** 333°	**Azimuth:** °
Lens: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze	**Lens**: **Filter**:
F-stop: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250	**F-stop**: **Speed**:
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:**
Exposure Number: 10	**Exposure Number:** 11	**Exposure Number:**
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height:	**Camera Height:**	**Camera Height:**
Camera Angle:	**Camera Angle:**	**Camera Angle:**
Azimuth: °	**Azimuth:** °	**Azimuth:** °
Lens: **Filter**:	**Lens**: **Filter**:	**Lens**: **Filter**:
F-stop: **Speed**:	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance:	**Focal Distance:**	**Focal Distance:**
Exposure Number:	**Exposure Number:**	**Exposure Number:**

Retake Number: 4	**Photographer:** Dave Powell	
Camera: Minolta X-700	**Film:** Kodachrome Slide	**ASA:** 64
Condition of Point Monument and References: Good		
Date: 7/7/2000	**Time:** 11:40 AM	**Weather:** Sunny with scattered clouds

VIEW 1	**VIEW 2**	**VIEW 3**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:**
Camera Angle: Horizontal	**Camera Angle:** Horizontal	**Camera Angle:**
Azimuth: 193°	**Azimuth:** 333°	**Azimuth:** °
Lens: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze	**Lens**: **Filter**:
F-stop: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250	**F-stop**: **Speed**:
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:**
Exposure Number: 1	**Exposure Number:** 2	**Exposure Number:**
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height:	**Camera Height:**	**Camera Height:**
Camera Angle:	**Camera Angle:**	**Camera Angle:**
Azimuth: °	**Azimuth:** °	**Azimuth:** °
Lens: **Filter**:	**Lens**: **Filter**:	**Lens**: **Filter**:
F-stop: **Speed**:	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance:	**Focal Distance:**	**Focal Distance:**
Exposure Number:	**Exposure Number:**	**Exposure Number:**

Appendix 1: Camera Point Record; Retake for CP T-96-9

Point Number: T-96-9	**National Forest:** Umatilla	**Ranger District:** North Fork John Day

Retake Number: 5	**Photographer:** Dave Powell	
Camera: Minolta X-700	**Film:** Kodachrome Slide	**ASA:** 64
Condition of Point Monument and References: Good		
Date: 7/18/2001	**Time:** 10:50 AM	**Weather:** Cloudy

VIEW 1	**VIEW 2**	**VIEW 3**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:**
Camera Angle: Horizontal	**Camera Angle:** Horizontal	**Camera Angle:**
Azimuth: 193°	**Azimuth:** 333°	**Azimuth:** °
Lens: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze	**Lens**: **Filter**:
F-stop: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250	**F-stop**: **Speed**:
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:**
Exposure Number: 18	**Exposure Number:** 19	**Exposure Number:**
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height:	**Camera Height:**	**Camera Height:**
Camera Angle:	**Camera Angle:**	**Camera Angle:**
Azimuth: °	**Azimuth:** °	**Azimuth:** °
Lens: **Filter**:	**Lens**: **Filter**:	**Lens**: **Filter**:
F-stop: **Speed**:	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance:	**Focal Distance:**	**Focal Distance:**
Exposure Number:	**Exposure Number:**	**Exposure Number:**

Retake Number: 6	**Photographer:** Dave Powell	
Camera: Minolta X-700	**Film:** Kodachrome Slide	**ASA:** 64
Condition of Point Monument and References: Good		
Date: 7/3/2002	**Time:** 11:45 AM	**Weather:** Clear, sunny

VIEW 1	**VIEW 2**	**VIEW 3**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:**
Camera Angle: Horizontal	**Camera Angle:** Horizontal	**Camera Angle:**
Azimuth: 193°	**Azimuth:** 333°	**Azimuth:** °
Lens: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze	**Lens**: **Filter**:
F-stop: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250	**F-stop**: **Speed**:
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:**
Exposure Number: 12	**Exposure Number:** 13	**Exposure Number:**
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height:	**Camera Height:**	**Camera Height:**
Camera Angle:	**Camera Angle:**	**Camera Angle:**
Azimuth: °	**Azimuth:** °	**Azimuth:** °
Lens: **Filter**:	**Lens**: **Filter**:	**Lens**: **Filter**:
F-stop: **Speed**:	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance:	**Focal Distance:**	**Focal Distance:**
Exposure Number:	**Exposure Number:**	**Exposure Number:**

Appendix 1: Camera Point Record; Retake for CP T-96-9

Point Number: T-96-9	**National Forest:** Umatilla	**Ranger District:** North Fork John Day

Retake Number: 7	**Photographer:** Dave Powell	
Camera: Canon Rebel XT	**Film:** Digital sensor	**ASA:**
Condition of Point Monument and References: Cap not found		
Date: 7/22/2008	**Time:** Noon	**Weather:** Cloudy

VIEW 1		**VIEW 2**		**VIEW 3**	
Camera Height:	6’ standing	**Camera Height:**	6’ standing	**Camera Height:**	
Camera Angle:	Horizontal	**Camera Angle:**	Horizontal	**Camera Angle:**	
Azimuth:	193°	**Azimuth:**	333°	**Azimuth:**	°
Lens: 28 mm	**Filter**:	**Lens**: 28 mm	**Filter**:	**Lens**:	**Filter**:
F-stop:	**Speed**:	**F-stop**:	**Speed**:	**F-stop**:	**Speed**:
Focal Distance:		**Focal Distance:**		**Focal Distance:**	
File Name:	Retake7	**File Name:**	Retake7	**File Name:**	

VIEW 4		**VIEW 5**		**VIEW 6**	
Camera Height:		**Camera Height:**		**Camera Height:**	
Camera Angle:		**Camera Angle:**		**Camera Angle:**	
Azimuth:	°	**Azimuth:**	°	**Azimuth:**	°
Lens:	**Filter**:	**Lens**:	**Filter**:	**Lens**:	**Filter**:
F-stop:	**Speed**:	**F-stop**:	**Speed**:	**F-stop**:	**Speed**:
Focal Distance:		**Focal Distance:**		**Focal Distance:**	
File Name:		**File Name:**		**File Name:**	

Appendix 1: Camera Point Record; Initial Take for CP T-96-10

Point Number: T-97-10 **National Forest:** Umatilla **Ranger District:** North Fork John Day
Retake Frequency: Annual; then 5 years **Due Dates:** Spring of 1998, 1999, 2000, 2001, 2002; 2007
Subject & Purpose: Monitor long-term effects of the Tower wildfire (burned August-September 1996)
Access Description: Point located along edge of a large turnout on SW shoulder of 5507 road, about 0.8 miles below the junction of the 5507 and 5510 roads.
GPS Coordinates: **North** 4983634 **East** 366426 **Corrected?** Yes
Legal Description: **Town** 7S **Range** 33E **Section** 1 **Qtr** NW **Qtr** NW
Air Photo Number: **Map Identifier:** **Ecoclass:** N. A. (Road)
Photographer: Dave Powell **Elevation:** 5,172 feet **Aspect:** 218° **Slope %:** 40
Camera: Minolta X-700 **Film:** Kodachrome Slide **ASA:** 64
Date: 6/20/1997 **Time:** 1:30 PM **Weather:** Sunny, clear

VIEW 1		VIEW 2		VIEW 3	
Camera Height:	6' standing	**Camera Height:**	6' standing	**Camera Height:**	6' standing
Camera Angle:	Horizontal	**Camera Angle:**	Horizontal	**Camera Angle:**	Horizontal
Azimuth:	359°	**Azimuth:**	299°	**Azimuth:**	243°
Lens: 28 mm	**Filter**: None	**Lens**: 28 mm	**Filter**: None	**Lens**: 28 mm	**Filter**: None
F-stop: 22	**Speed**: 1/250	**F-stop**: 22	**Speed**: 1/250	**F-stop**: 22	**Speed**: 1/250
Focal Distance:	Infinity	**Focal Distance:**	Infinity	**Focal Distance:**	Infinity
Exposure Number:	16	**Exposure Number:**	17	**Exposure Number:**	18

VIEW 4		VIEW 5		VIEW 6	
Camera Height:	6' standing	**Camera Height:**	6' standing	**Camera Height:**	
Camera Angle:	Horizontal	**Camera Angle:**	Horizontal	**Camera Angle:**	
Azimuth:	183°	**Azimuth:**	121°	**Azimuth:**	°
Lens: 28 mm	**Filter**: None	**Lens**: 28 mm	**Filter**: None	**Lens**:	**Filter**:
F-stop: 22	**Speed**: 1/250	**F-stop**: 22	**Speed**: 1/250	**F-stop**:	**Speed**:
Focal Distance:	Infinity	**Focal Distance:**	Infinity	**Focal Distance:**	
Exposure Number:	19	**Exposure Number:**	20	**Exposure Number:**	

REFERENCE POINT 1

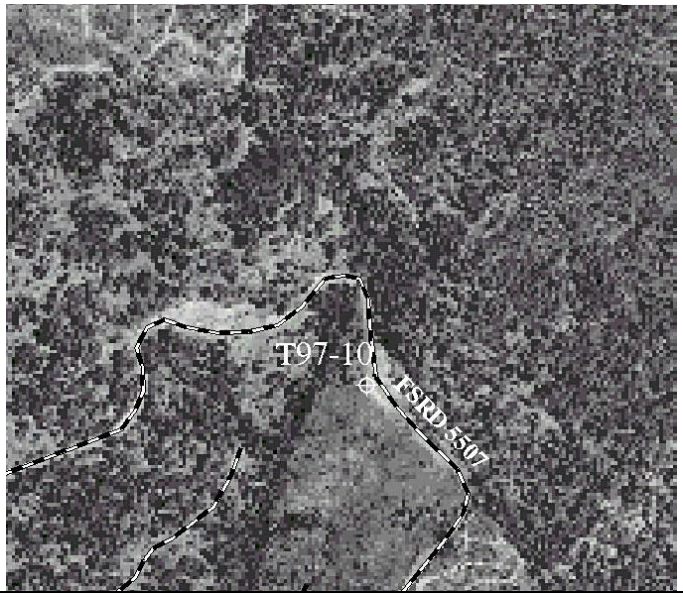
Description: 12" DBH PIPO (dead)
Marking: Orange poster @ 5½ feet
Azimuth: 143° **Feet**: 54

REFERENCE POINT 2

Description:
Marking:
Azimuth: **Feet**:

REFERENCE POINT 3

Description:
Marking:
Azimuth: **Feet**:



Appendix 1: Camera Point Record; Retake for CP T-96-10

Point Number: T-97-10	**National Forest:** Umatilla	**Ranger District:** North Fork John Day

Retake Number: 1 **Photographer:** Earle Rother
Camera: Minolta Maxxum 7000 **Film:** Kodachrome Slide **ASA:** 64
Condition of Point Monument and References: Good
Date: 10/8/1997 **Time:** 1:00 PM **Weather:** Cloudy

VIEW 1	VIEW 2	VIEW 3
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:** 6’ standing
Camera Angle: Horizontal	**Camera Angle:** Horizontal	**Camera Angle:** Horizontal
Azimuth: 359°	**Azimuth:** 299°	**Azimuth:** 243°
Lens: 28 mm **Filter**: None	**Lens**: 28 mm **Filter**: None	**Lens**: 28 mm **Filter**: None
F-stop: 6.7 **Speed**: 1/100	**F-stop**: 6.7 **Speed**: 1/100	**F-stop**: 6.7 **Speed**: 1/60
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:** Infinity
Exposure Number: 14	**Exposure Number:** 15	**Exposure Number:** 16
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:**
Camera Angle: Horizontal	**Camera Angle:** Horizontal	**Camera Angle:**
Azimuth: 183°	**Azimuth:** 121°	**Azimuth:** °
Lens: 28 mm **Filter**: None	**Lens**: 28 mm **Filter**: None	**Lens**: **Filter**:
F-stop: 8 **Speed**: 1/125	**F-stop**: 9.5 **Speed**: 1/80	**F-stop**: **Speed**:
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:**
Exposure Number: 17	**Exposure Number:** 18	**Exposure Number:**

Retake Number: 2 **Photographer:** Earle Rother
Camera: Minolta Maxxum 7000 **Film:** Kodachrome Slide **ASA:** 64
Condition of Point Monument and References: Good
Date: 6/19/1998 **Time:** 1:15 PM **Weather:** Cloudy, cool

VIEW 1	VIEW 2	VIEW 3
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:** 6’ standing
Camera Angle: Horizontal	**Camera Angle:** Horizontal	**Camera Angle:** Horizontal
Azimuth: 359°	**Azimuth:** 299°	**Azimuth:** 243°
Lens: 28 mm **Filter**: Skylite	**Lens**: 28 mm **Filter**: Skylite	**Lens**: 28 mm **Filter**: Skylite
F-stop: 9.5 **Speed**: 1/80	**F-stop**: 8 **Speed**: 1/125	**F-stop**: 9.5 **Speed**: 1/80
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:** Infinity
Exposure Number: 18	**Exposure Number:** 19	**Exposure Number:** 20
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:**
Camera Angle: Horizontal	**Camera Angle:** Horizontal	**Camera Angle:**
Azimuth: 183°	**Azimuth:** 121°	**Azimuth:** °
Lens: 28 mm **Filter**: Skylite	**Lens**: 28 mm **Filter**: Skylite	**Lens**: **Filter**:
F-stop: 9.5 **Speed**: 1/80	**F-stop**: 9.5 **Speed**: 1/80	**F-stop**: **Speed**:
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:**
Exposure Number: 21	**Exposure Number:** 22	**Exposure Number:**

Appendix 1: Camera Point Record; Retake for CP T-96-10

Point Number: T-97-10	**National Forest:** Umatilla	**Ranger District:** North Fork John Day

Retake Number: 3	**Photographer:** Earle Rother	
Camera: Minolta X-700	**Film:** Kodachrome Slide	**ASA:** 64
Condition of Point Monument and References: Good		
Date: 7/2/1999	**Time:** 2:00 PM	**Weather:** Partly cloudy

VIEW 1	**VIEW 2**	**VIEW 3**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:** 6’ standing
Camera Angle: Horizontal	**Camera Angle:** Horizontal	**Camera Angle:** Horizontal
Azimuth: 359°	**Azimuth:** 299°	**Azimuth:** 243°
Lens: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze
F-stop: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/125
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:** Infinity
Exposure Number: 16	**Exposure Number:** 17	**Exposure Number:** 18
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:**
Camera Angle: Horizontal	**Camera Angle:** Horizontal	**Camera Angle:**
Azimuth: 183°	**Azimuth:** 121°	**Azimuth:** °
Lens: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze	**Lens**: **Filter**:
F-stop: 22 **Speed**: 1/125	**F-stop**: 22 **Speed**: 1/125	**F-stop**: **Speed**:
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:**
Exposure Number: 19	**Exposure Number:** 20	**Exposure Number:**

Retake Number: 4	**Photographer:** Dave Powell	
Camera: Minolta X-700	**Film:** Kodachrome Slide	**ASA:** 64
Condition of Point Monument and References: Good		
Date: 7/7/2000	**Time:** 12:35 PM	**Weather:** Sunny with scattered high clouds

VIEW 1	**VIEW 2**	**VIEW 3**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:** 6’ standing
Camera Angle: Horizontal	**Camera Angle:** Horizontal	**Camera Angle:** Horizontal
Azimuth: 359°	**Azimuth:** 299°	**Azimuth:** 243°
Lens: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze
F-stop: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:** Infinity
Exposure Number: 3	**Exposure Number:** 4	**Exposure Number:** 5
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:**
Camera Angle: Horizontal	**Camera Angle:** Horizontal	**Camera Angle:**
Azimuth: 183°	**Azimuth:** 121°	**Azimuth:** °
Lens: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze	**Lens**: **Filter**:
F-stop: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250	**F-stop**: **Speed**:
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:**
Exposure Number: 6	**Exposure Number:** 7	**Exposure Number:**

Appendix 1: Camera Point Record; Retake for CP T-96-10

Point Number: T-97-10	**National Forest:** Umatilla	**Ranger District:** North Fork John Day

Retake Number: 5	**Photographer:** Dave Powell	
Camera: Minolta X-700	**Film:** Kodachrome Slide	**ASA:** 64
Condition of Point Monument and References: Good		
Date: 7/18/2001	**Time:** 11:15 AM	**Weather:** Partly cloudy

VIEW 1	**VIEW 2**	**VIEW 3**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:** 6’ standing
Camera Angle: Horizontal	**Camera Angle:** Horizontal	**Camera Angle:** Horizontal
Azimuth: 359°	**Azimuth:** 299°	**Azimuth:** 243°
Lens: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze
F-stop: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:** Infinity
Exposure Number: 20	**Exposure Number:** 21	**Exposure Number:** 22
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:**
Camera Angle: Horizontal	**Camera Angle:** Horizontal	**Camera Angle:**
Azimuth: 183°	**Azimuth:** 121°	**Azimuth:** °
Lens: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze	**Lens**: **Filter**:
F-stop: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250	**F-stop**: **Speed**:
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:**
Exposure Number: 23	**Exposure Number:** 24	**Exposure Number:**

Retake Number: 6	**Photographer:** Dave Powell	
Camera: Minolta X-700	**Film:** Kodachrome Slide	**ASA:** 64
Condition of Point Monument and References: Good		
Date: 7/3/2002	**Time:** 12:15 PM	**Weather:** Clear, sunny

VIEW 1	**VIEW 2**	**VIEW 3**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:** 6’ standing
Camera Angle: Horizontal	**Camera Angle:** Horizontal	**Camera Angle:** Horizontal
Azimuth: 359°	**Azimuth:** 299°	**Azimuth:** 243°
Lens: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze
F-stop: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:** Infinity
Exposure Number: 15	**Exposure Number:** 16	**Exposure Number:** 17
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:**
Camera Angle: Horizontal	**Camera Angle:** Horizontal	**Camera Angle:**
Azimuth: 183°	**Azimuth:** 121°	**Azimuth:** °
Lens: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze	**Lens**: **Filter**:
F-stop: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250	**F-stop**: **Speed**:
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:**
Exposure Number: 18	**Exposure Number:** 19	**Exposure Number:**

Appendix 1: Camera Point Record; Retake for CP T-96-10

Point Number:	T-97-10	**National Forest:**	Umatilla	**Ranger District:**	North Fork John Day

Retake Number:	7	**Photographer:**	Dave Powell		
Camera:	Canon Rebel XT	**Film:**	Digital sensor	**ASA:**	
Condition of Point Monument and References:	Gone; new cap installed				
Date:	7/22/2008	**Time:**	1:00 PM	**Weather:**	Cloudy

VIEW 1		**VIEW 2**		**VIEW 3**	
Camera Height:	6’ standing	**Camera Height:**	6’ standing	**Camera Height:**	6’ standing
Camera Angle:	Horizontal	**Camera Angle:**	Horizontal	**Camera Angle:**	Horizontal
Azimuth:	359°	**Azimuth:**	299°	**Azimuth:**	243°
Lens: 28 mm	**Filter**:	**Lens**: 28 mm	**Filter**:	**Lens**: 28 mm	**Filter**:
F-stop:	**Speed**:	**F-stop**:	**Speed**:	**F-stop**:	**Speed**:
Focal Distance:		**Focal Distance:**		**Focal Distance:**	
File Name:	Retake7	**File Name:**	Retake7	**File Name:**	Retake7

VIEW 4		**VIEW 5**		**VIEW 6**	
Camera Height:	6’ standing	**Camera Height:**	6’ standing	**Camera Height:**	
Camera Angle:	Horizontal	**Camera Angle:**	Horizontal	**Camera Angle:**	
Azimuth:	183°	**Azimuth:**	121°	**Azimuth:**	°
Lens: 28 mm	**Filter**:	**Lens**: 28 mm	**Filter**:	**Lens**:	**Filter**:
F-stop:	**Speed**:	**F-stop**:	**Speed**:	**F-stop**:	**Speed**:
Focal Distance:		**Focal Distance:**		**Focal Distance:**	
File Name:	Retake7	**File Name:**	Retake7	**File Name:**	

Appendix 1: Camera Point Record; Initial Take for CP T-96-11

Point Number: T-97-11 **National Forest:** Umatilla **Ranger District:** North Fork John Day

Retake Frequency: Annual; then 5 years **Due Dates:** Spring of 1998, 1999, 2000, 2001, 2002; 2007

Subject & Purpose: Monitor long-term effects of the Tower wildfire (burned August-September 1996)

Access Description: Point located about 4.3 miles south of the junction of 5507 and 5510 roads along a shoulder on the east side of 5507. This point is about 3.45 miles from point T-97-10.

GPS Coordinates: **North** 4983162 **East** 364169 **Corrected?** Yes

Legal Description: **Town** **Range** **Section** **Qtr** **Qtr**

Air Photo Number: **Map Identifier:** **Ecoclass:** N.A. (Roadside)

Photographer: Dave Powell **Elevation:** 4,001 feet **Aspect:** 327° **Slope %:** 47

Camera: Minolta X-700 **Film:** Kodachrome Slide **ASA:** 64

Date: 6/20/1997 **Time:** 2:30 PM **Weather:** Sunny, Clear

VIEW 1		VIEW 2		VIEW 3	
Camera Height:	6' standing	**Camera Height:**	6' standing	**Camera Height:**	
Camera Angle:	Horizontal	**Camera Angle:**	Horizontal	**Camera Angle:**	
Azimuth:	348°	**Azimuth:**	130°	**Azimuth:**	°
Lens: 28 mm	**Filter**: None	**Lens**: 28 mm	**Filter**: None	**Lens**:	**Filter**:
F-stop: 22	**Speed**: 1/250	**F-stop**: 22	**Speed**: 1/250	**F-stop**:	**Speed**:
Focal Distance:	Infinity	**Focal Distance:**	Infinity	**Focal Distance:**	
Exposure Number:	21	**Exposure Number:**	22	**Exposure Number:**	

VIEW 4		VIEW 5		VIEW 6	
Camera Height:		**Camera Height:**		**Camera Height:**	
Camera Angle:		**Camera Angle:**		**Camera Angle:**	
Azimuth:	°	**Azimuth:**	°	**Azimuth:**	°
Lens:	**Filter**:	**Lens**:	**Filter**:	**Lens**:	**Filter**:
F-stop:	**Speed**:	**F-stop**:	**Speed**:	**F-stop**:	**Speed**:
Focal Distance:		**Focal Distance:**		**Focal Distance:**	
Exposure Number:		**Exposure Number:**		**Exposure Number:**	

REFERENCE POINT 1

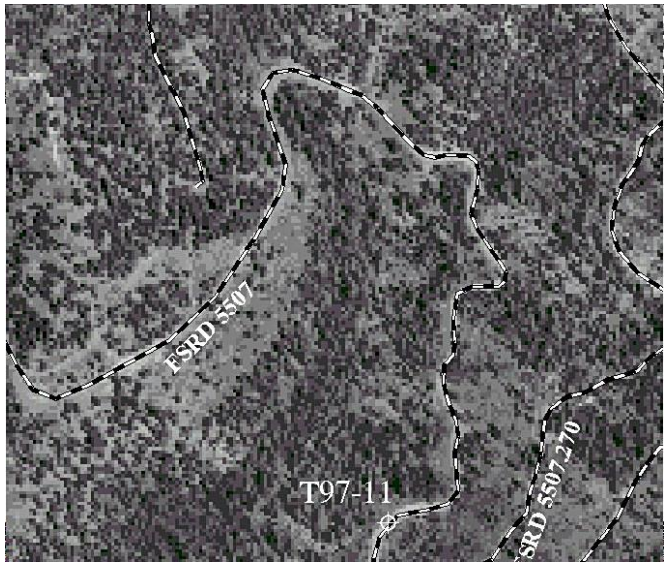
Description: Young PIPO
Marking: Orange poster
Azimuth: 322° **Feet**: 49.3

REFERENCE POINT 2

Description:
Marking:
Azimuth: **Feet**:

REFERENCE POINT 3

Description:
Marking:
Azimuth: **Feet**:



Appendix 1: Camera Point Record; Retake for CP T-96-11

Point Number: T-97-11	**National Forest:** Umatilla	**Ranger District:** North Fork John Day

Retake Number: 1	**Photographer:** Earle Rother	
Camera: Minolta Maxxum 7000	**Film:** Kodachrome Slide	**ASA:** 64
Condition of Point Monument and References: Good		
Date: 10/8/1997	**Time:** 1:15 PM	**Weather:** Cloudy

VIEW 1	VIEW 2	VIEW 3
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:**
Camera Angle: Horizontal	**Camera Angle:** Horizontal	**Camera Angle:**
Azimuth: 348°	**Azimuth:** 130°	**Azimuth:** °
Lens: 28 mm **Filter**: None	**Lens**: 28 mm **Filter**: None	**Lens**: **Filter**:
F-stop: 6.7 **Speed**: 1/100	**F-stop**: 5.6 **Speed**: 1/60	**F-stop**: **Speed**:
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:**
Exposure Number: 19	**Exposure Number:** 20	**Exposure Number:**
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height:	**Camera Height:**	**Camera Height:**
Camera Angle:	**Camera Angle:**	**Camera Angle:**
Azimuth: °	**Azimuth:** °	**Azimuth:** °
Lens: **Filter**:	**Lens**: **Filter**:	**Lens**: **Filter**:
F-stop: **Speed**:	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance:	**Focal Distance:**	**Focal Distance:**
Exposure Number:	**Exposure Number:**	**Exposure Number:**

Retake Number: 2	**Photographer:** Earle Rother	
Camera: Minolta Maxxum 7000	**Film:** Kodachrome Slide	**ASA:** 64
Condition of Point Monument and References: Good		
Date: 6/19/1998	**Time:** 1:30 PM	**Weather:** Overcast, cool

VIEW 1	VIEW 2	VIEW 3
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:**
Camera Angle: Horizontal	**Camera Angle:** Horizontal	**Camera Angle:**
Azimuth: 348°	**Azimuth:** 130°	**Azimuth:** °
Lens: 28 mm **Filter**: Skylite	**Lens**: 28 mm **Filter**: Skylite	**Lens**: **Filter**:
F-stop: 9.5 **Speed**: 1/80	**F-stop**: 9.5 **Speed**: 1/80	**F-stop**: **Speed**:
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:**
Exposure Number: 23, 24	**Exposure Number:** 25	**Exposure Number:**
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height:	**Camera Height:**	**Camera Height:**
Camera Angle:	**Camera Angle:**	**Camera Angle:**
Azimuth: °	**Azimuth:** °	**Azimuth:** °
Lens: **Filter**:	**Lens**: **Filter**:	**Lens**: **Filter**:
F-stop: **Speed**:	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance:	**Focal Distance:**	**Focal Distance:**
Exposure Number:	**Exposure Number:**	**Exposure Number:**

Appendix 1: Camera Point Record; Retake for CP T-96-11

Point Number: T-97-11	**National Forest:** Umatilla	**Ranger District:** North Fork John Day

Retake Number: 3	**Photographer:** Earle Rother	
Camera: Minolta X-700	**Film:** Kodachrome Slide	**ASA:** 64
Condition of Point Monument and References: Good		
Date: 7/2/1999	**Time:** 3:00 PM	**Weather:** Partly cloudy

VIEW 1	**VIEW 2**	**VIEW 3**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:**
Camera Angle: Horizontal	**Camera Angle:** Horizontal	**Camera Angle:**
Azimuth: 348°	**Azimuth:** 130°	**Azimuth:** °
Lens: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze	**Lens**: **Filter**:
F-stop: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250	**F-stop**: **Speed**:
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:**
Exposure Number: 23	**Exposure Number:** 24	**Exposure Number:**
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height:	**Camera Height:**	**Camera Height:**
Camera Angle:	**Camera Angle:**	**Camera Angle:**
Azimuth: °	**Azimuth:** °	**Azimuth:** °
Lens: **Filter**:	**Lens**: **Filter**:	**Lens**: **Filter**:
F-stop: **Speed**:	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance:	**Focal Distance:**	**Focal Distance:**
Exposure Number:	**Exposure Number:**	**Exposure Number:**

Retake Number: 4	**Photographer:** Dave Powell	
Camera: Minolta X-700	**Film:** Kodachrome Slide	**ASA:** 64
Condition of Point Monument and References: Good, although reference tree fell over		
Date: 7/7/2000	**Time:** 1:00 PM	**Weather:** Sunny with scattered high clouds

VIEW 1	**VIEW 2**	**VIEW 3**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:**
Camera Angle: Horizontal	**Camera Angle:** Horizontal	**Camera Angle:**
Azimuth: 348°	**Azimuth:** 130°	**Azimuth:** °
Lens: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze	**Lens**: **Filter**:
F-stop: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250	**F-stop**: **Speed**:
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:**
Exposure Number: 8	**Exposure Number:** 9	**Exposure Number:**
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height:	**Camera Height:**	**Camera Height:**
Camera Angle:	**Camera Angle:**	**Camera Angle:**
Azimuth: °	**Azimuth:** °	**Azimuth:** °
Lens: **Filter**:	**Lens**: **Filter**:	**Lens**: **Filter**:
F-stop: **Speed**:	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance:	**Focal Distance:**	**Focal Distance:**
Exposure Number:	**Exposure Number:**	**Exposure Number:**

Appendix 1: Camera Point Record; Retake for CP T-96-11

Point Number: T-97-11	**National Forest:** Umatilla	**Ranger District:** North Fork John Day

Retake Number: 5	**Photographer:** Dave Powell	
Camera: Minolta X-700	**Film:** Kodachrome Slide	**ASA:** 64
Condition of Point Monument and References: Good; reference tree on ground		
Date: 7/18/2001	**Time:** 11:45 AM	**Weather:** Partly cloudy

VIEW 1	**VIEW 2**	**VIEW 3**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:**
Camera Angle: Horizontal	**Camera Angle:** Horizontal	**Camera Angle:**
Azimuth: 348°	**Azimuth:** 130°	**Azimuth:** °
Lens: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze	**Lens**: **Filter**:
F-stop: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250	**F-stop**: **Speed**:
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:**
Exposure Number: 2	**Exposure Number:** 3	**Exposure Number:**
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height:	**Camera Height:**	**Camera Height:**
Camera Angle:	**Camera Angle:**	**Camera Angle:**
Azimuth: °	**Azimuth:** °	**Azimuth:** °
Lens: **Filter**:	**Lens**: **Filter**:	**Lens**: **Filter**:
F-stop: **Speed**:	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance:	**Focal Distance:**	**Focal Distance:**
Exposure Number:	**Exposure Number:**	**Exposure Number:**

Retake Number: 6	**Photographer:** Dave Powell	
Camera: Minolta X-700	**Film:** Kodachrome Slide	**ASA:** 64
Condition of Point Monument and References: Good (although reference tag is missing!)		
Date: 7/3/2002	**Time:** 12:45 PM	**Weather:** Clear, sunny

VIEW 1	**VIEW 2**	**VIEW 3**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:**
Camera Angle: Horizontal	**Camera Angle:** Horizontal	**Camera Angle:**
Azimuth: 348°	**Azimuth:** 130°	**Azimuth:** °
Lens: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze	**Lens**: **Filter**:
F-stop: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250	**F-stop**: **Speed**:
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:**
Exposure Number: 21	**Exposure Number:** 22	**Exposure Number:**
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height:	**Camera Height:**	**Camera Height:**
Camera Angle:	**Camera Angle:**	**Camera Angle:**
Azimuth: °	**Azimuth:** °	**Azimuth:** °
Lens: **Filter**:	**Lens**: **Filter**:	**Lens**: **Filter**:
F-stop: **Speed**:	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance:	**Focal Distance:**	**Focal Distance:**
Exposure Number:	**Exposure Number:**	**Exposure Number:**

Appendix 1: Camera Point Record; Retake for CP T-96-11

Point Number:	T-97-11	**National Forest:**	Umatilla	**Ranger District:**	North Fork John Day

Retake Number:	7	**Photographer:**	Dave Powell		
Camera:	Canon Rebel XT	**Film:**	Digital sensor	**ASA:**	
Condition of Point Monument and References:	Cap OK; reference tree gone (new RP installed)				
Date:	7/22/2008	**Time:**	1:45 PM	**Weather:**	Sunny

VIEW 1		**VIEW 2**		**VIEW 3**	
Camera Height:	6’ standing	**Camera Height:**	6’ standing	**Camera Height:**	
Camera Angle:	Horizontal	**Camera Angle:**	Horizontal	**Camera Angle:**	
Azimuth:	348°	**Azimuth:**	130°	**Azimuth:**	°
Lens: 28 mm	**Filter**:	**Lens**: 28 mm	**Filter**:	**Lens**:	**Filter**:
F-stop:	**Speed**:	**F-stop**:	**Speed**:	**F-stop**:	**Speed**:
Focal Distance:		**Focal Distance:**		**Focal Distance:**	
File Name:	Retake7	**File Name:**	Retake7	**File Name:**	

VIEW 4		**VIEW 5**		**VIEW 6**	
Camera Height:		**Camera Height:**		**Camera Height:**	
Camera Angle:		**Camera Angle:**		**Camera Angle:**	
Azimuth:	°	**Azimuth:**	°	**Azimuth:**	°
Lens:	**Filter**:	**Lens**:	**Filter**:	**Lens**:	**Filter**:
F-stop:	**Speed**:	**F-stop**:	**Speed**:	**F-stop**:	**Speed**:
Focal Distance:		**Focal Distance:**		**Focal Distance:**	
File Name:		**File Name:**		**File Name:**	

Appendix 1: Camera Point Record; Initial Take for CP T-96-12

Point Number: T-97-12 **National Forest:** Umatilla **Ranger District:** North Fork John Day

Retake Frequency: Annual; then 5 years **Due Dates:** Spring of 1998, 1999, 2000, 2001, 2002; 2007

Subject & Purpose: Monitor long-term effects of the Tower wildfire (burned August-September 1996)

Access Description: From 52 road, go south on 5507 for about 0.85 miles to Trail #3153 (Winom Trail). Head east on trail for about 1.0 mile (into the North Fork John Day Wilderness) to camera point located below a large rock outcrop in an open area on a moderately steep slope.

GPS Coordinates: **North** 45° 00.' 07.9446″ **West** 118° 41' 14.46″ **Corrected?** Juno

Legal Description: **Town** **Range** **Section** **Qtr** **Qtr**

Air Photo Number: **Map Identifier:** **Ecoclass:** CWG111

Photographer: Earle Rother **Elevation:** 5,396 feet **Aspect:** 192° **Slope %:** 57

Camera: Minolta Maxxum 7000 **Film:** Kodachrome Slide **ASA:** 64

Date: 6/23/1997 **Time:** 10:30 AM **Weather:** Overcast with intermittent rain

VIEW 1	VIEW 2	VIEW 3
Camera Height: 6' standing	**Camera Height:** 6' standing	**Camera Height:** 6’ standing
Camera Angle: Horizontal	**Camera Angle:** Vertical	**Camera Angle:** Vertical
Azimuth: 255°	**Azimuth:** 207°	**Azimuth:** 143°
Lens: 50 mm **Filter**: Skylite	**Lens**: 50 mm **Filter**: Skylite	**Lens**: 50 mm **Filter**: Skylite
F-stop: 5.6 **Speed**: 1/250	**F-stop**: 5.6 **Speed**: 1/250	**F-stop**: 8 **Speed**: 1/350
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:** Infinity
Exposure Number: 1	**Exposure Number:** 2	**Exposure Number:** 3

VIEW 4	VIEW 5	VIEW 6
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:** 6’ standing
Camera Angle: Vertical	**Camera Angle:** Horizontal	**Camera Angle:** Vertical
Azimuth: 39°	**Azimuth:** 114°	**Azimuth:** 114°
Lens: 50 mm **Filter**: Skylite	**Lens**: 50 mm **Filter**: Skylite	**Lens**: 50 mm **Filter**: Skylite
F-stop: 6.7 **Speed**: 1/250	**F-stop**: 6.7 **Speed**: 1/250	**F-stop**: 6.7 **Speed**: 1/250
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:** Infinity
Exposure Number: 4	**Exposure Number:** 5	**Exposure Number:** 6

REFERENCE POINT 1

Description: 18.4” DBH PSME (dead)

Marking: Orange poster

Azimuth: 85° **Feet**: 60

REFERENCE POINT 2

Description:

Marking:

Azimuth: **Feet**:

REFERENCE POINT 3

Description:

Marking:

Azimuth: **Feet**:

Notes: CP cap relocated (after several previous unsuccessful attempts) on August 11, 2010. It is located just below a short rock cairn comprised of four flat basalt rocks. RP tree is down (tag still affixed to downhill side); I recommend that a basalt boulder/outcrop about 5-6 feet tall be used as a new RP. It is located 52 feet at an azimuth of 64.5° from cap (so a backsight would be needed from boulder to cap to establish an azimuth value if it is used as a future RP for this point). On 8/11/2010, plant composition near cap was: Monardella, Eriogonum (yellow-flowered), elk sedge, spreading dogbane (Apocynum), balsamroot (Balsamorhiza), Ribes (probably cereum), and an herbaceous Potentilla. Soil erosion was impressive on 8/11/10, with much rilling and pedestalled plants! Site’s geology seems to consist of a basalt and granite mix (perhaps basalt erratics), with erosion associated primarily with granitic soils.

Appendix 1: Camera Point Record; Retake for CP T-96-12

Point Number: T-97-12	**National Forest:** Umatilla	**Ranger District:** North Fork John Day

Retake Number: 1	**Photographer:** Earle Rother	
Camera: Minolta Maxxum 7000	**Film:** Kodachrome Slide	**ASA:** 64
Condition of Point Monument and References: Good		
Date: 6/19/1998	**Time:** 11:45 AM	**Weather:** Overcast, cool

VIEW 1	**VIEW 2**	**VIEW 3**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:** 6’ standing
Camera Angle: Horizontal	**Camera Angle:** Vertical	**Camera Angle:** Vertical
Azimuth: 255°	**Azimuth:** 207°	**Azimuth:** 143°
Lens: 50 mm **Filter**: Skylite	**Lens**: 50 mm **Filter**: Skylite	**Lens**: 50 mm **Filter**: Skylite
F-stop: **Speed**:	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:** Infinity
Exposure Number: 9	**Exposure Number:** 11	**Exposure Number:** 12
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:** 6’ standing
Camera Angle: Vertical	**Camera Angle:** Horizontal	**Camera Angle:** Vertical
Azimuth: 39°	**Azimuth:** 114°	**Azimuth:** 114°
Lens: 50 mm **Filter**: Skylite	**Lens**: 50 mm **Filter**: Skylite	**Lens**: 50 mm **Filter**: Skylite
F-stop: **Speed**:	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:** Infinity
Exposure Number: 13	**Exposure Number:** 14	**Exposure Number:** 15

Retake Number: 2	**Photographer:** Earle Rother	
Camera: Minolta X-700	**Film:** Kodachrome Slide	**ASA:** 64
Condition of Point Monument and References: Good		
Date: 7/2/1999	**Time:** 12:00 PM	**Weather:** Partly cloudy

VIEW 1	**VIEW 2**	**VIEW 3**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:** 6’ standing
Camera Angle: Horizontal	**Camera Angle:** Vertical	**Camera Angle:** Vertical
Azimuth: 255°	**Azimuth:** 207°	**Azimuth:** 143°
Lens: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze
F-stop: 22 **Speed**: 1/125	**F-stop**: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:** Infinity
Exposure Number: 4	**Exposure Number:** 5	**Exposure Number:** 6
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:** 6’ standing
Camera Angle: Vertical	**Camera Angle:** Horizontal	**Camera Angle:** Vertical
Azimuth: 39°	**Azimuth:** 114°	**Azimuth:** 114°
Lens: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze
F-stop: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:** Infinity
Exposure Number: 7	**Exposure Number:** 8	**Exposure Number:** 9

Appendix 1: Camera Point Record; Retake for CP T-96-12

Point Number: T-97-12	**National Forest:** Umatilla	**Ranger District:** North Fork John Day

Retake Number: 3	**Photographer:** Dave Powell	
Camera: Minolta X-700	**Film:** Kodachrome Slide	**ASA:** 64
Condition of Point Monument and References: Good		
Date: 7/7/2000	**Time:** 10:45 AM	**Weather:** Sunny, clear

VIEW 1	**VIEW 2**	**VIEW 3**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:** 6’ standing
Camera Angle: Horizontal	**Camera Angle:** Vertical	**Camera Angle:** Vertical
Azimuth: 255°	**Azimuth:** 207°	**Azimuth:** 143°
Lens: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze
F-stop: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:** Infinity
Exposure Number: 19	**Exposure Number:** 20	**Exposure Number:** 21
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:** 6’ standing
Camera Angle: Vertical	**Camera Angle:** Horizontal	**Camera Angle:** Vertical
Azimuth: 39°	**Azimuth:** 114°	**Azimuth:** 114°
Lens: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze
F-stop: 22 **Speed**: 1/250	**F-stop**: 22 **Speed:** 1/250	**F-stop**: 22 **Speed**: 1/250
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:** Infinity
Exposure Number: 22	**Exposure Number:** 23	**Exposure Number:** 24

Retake Number: 4	**Photographer:** Dave Powell	
Camera: Minolta X-700	**Film:** Kodachrome Slide	**ASA:** 64
Condition of Point Monument and References: Good		
Date: 7/18/2001	**Time:** 10:05 AM	**Weather:** Cloudy

VIEW 1	**VIEW 2**	**VIEW 3**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:** 6’ standing
Camera Angle: Horizontal	**Camera Angle:** Vertical	**Camera Angle:** Vertical
Azimuth: 255°	**Azimuth:** 207°	**Azimuth:** 143°
Lens: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze
F-stop: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:** Infinity
Exposure Number: 7	**Exposure Number:** 8	**Exposure Number:** 9
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:** 6’ standing
Camera Angle: Vertical	**Camera Angle:** Horizontal	**Camera Angle:** Vertical
Azimuth: 39°	**Azimuth:** 114°	**Azimuth:** 114°
Lens: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze
F-stop: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:** Infinity
Exposure Number: 10	**Exposure Number:** 11	**Exposure Number:** 12

Appendix 1: Camera Point Record; Retake for CP T-96-12

Point Number: T-97-12	**National Forest:** Umatilla	**Ranger District:** North Fork John Day

Retake Number: 5	**Photographer:** Dave Powell	
Camera: Minolta X-700	**Film:** Kodachrome Slide	**ASA:** 64
Condition of Point Monument and References: Good		
Date: 7/3/2002	**Time:** 11:00 AM	**Weather:** Clear, sunny

VIEW 1	**VIEW 2**	**VIEW 3**
Camera Height: 6' standing	**Camera Height:** 6' standing	**Camera Height:** 6' standing
Camera Angle: Horizontal	**Camera Angle:** Vertical	**Camera Angle:** Vertical
Azimuth: 255°	**Azimuth:** 207°	**Azimuth:** 143°
Lens: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze
F-stop: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:** Infinity
Exposure Number: 23	**Exposure Number:** 24	**Exposure Number:** 25
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height: 6' standing	**Camera Height:** 6' standing	**Camera Height:** 6' standing
Camera Angle: Vertical	**Camera Angle:** Horizontal	**Camera Angle:** Vertical
Azimuth: 39°	**Azimuth:** 114°	**Azimuth:** 114°
Lens: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze
F-stop: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:** Infinity
Exposure Number: 26/2	**Exposure Number:** 3	**Exposure Number:** 4

Retake Number: 6	**Photographer:** Dave Powell (Justice assisting)	
Camera: Canon Rebel XT	**Film:** Digital sensor	**ASA:**
Condition of Point Monument and References: Good; RP tree down, cap good near small rock cairn		
Date: 8/11/2010	**Time:** 10:00 AM	**Weather:** Overcast with occasional sun breaks

VIEW 1	**VIEW 2**	**VIEW 3**
Camera Height: 6' standing	**Camera Height:** 6' standing	**Camera Height:** 6' standing
Camera Angle: Horizontal	**Camera Angle:** Vertical	**Camera Angle:** Vertical
Azimuth: 255°	**Azimuth:** 207°	**Azimuth:** 143°
Lens: 28 mm **Filter**:	**Lens**: 28 mm **Filter**:	**Lens**: 28 mm **Filter**:
F-stop: **Speed**:	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance:	**Focal Distance:**	**Focal Distance:**
File Name: Retake6	**File Name:** Retake6	**File Name:** Retake6
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height: 6' standing	**Camera Height:** 6' standing	**Camera Height:** 6' standing
Camera Angle: Vertical	**Camera Angle:** Horizontal	**Camera Angle:** Vertical
Azimuth: 39°	**Azimuth:** 114°	**Azimuth:** 114°
Lens: 28 mm **Filter**:	**Lens**: 28 mm **Filter**:	**Lens**: 28 mm **Filter**:
F-stop: **Speed**:	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance:	**Focal Distance:**	**Focal Distance:**
File Name: Retake6	**File Name:** Retake6	**File Name:** Retake6

Appendix 1: Camera Point Record; Initial Take for CP T-96-13

Point Number: T-97-13 **National Forest:** Umatilla **Ranger District:** North Fork John Day

Retake Frequency: Annual; then 5 years **Due Dates:** Spring of 1998, 1999, 2000, 2001, 2002; 2007

Subject & Purpose: Monitor long-term effects of the Tower wildfire (burned August-September 1996)

Access Description: Point located about 50 feet above road 5510 in a large plantation established in May, 1997. Point located 3.8 miles below upper junction of 5510/5507 roads and about 5.65 miles above lower junction of 5510/5507. Note that 5510 road was obliterated in August 2007!

GPS Coordinates: **North** 4986082 **East** 362926 **Corrected?** Yes

Legal Description: **Town** **Range** **Section** **Qtr** **Qtr**

Air Photo Number: **Map Identifier:** **Ecoclass:** CWS211

Photographer: Earle Rother **Elevation:** 4,977 feet **Aspect:** 56° **Slope %:** 50

Camera: Minolta Maxxum 7000 **Film:** Kodachrome Slide **ASA:** 64

Date: 6/23/1997 **Time:** 1:00 PM **Weather:** Overcast, sunny and rain mixed

VIEW 1		VIEW 2		VIEW 3	
Camera Height:	6' standing	**Camera Height:**	6' standing	**Camera Height:**	6' standing
Camera Angle:	Vertical	**Camera Angle:**	Vertical	**Camera Angle:**	Vertical
Azimuth:	25°	**Azimuth:**	105°	**Azimuth:**	339°
Lens: 50 mm	**Filter**: Skylite	**Lens**: 50 mm	**Filter**: Skylite	**Lens**: 50 mm	**Filter**: Skylite
F-stop: 4	**Speed**: 1/180	**F-stop**: 8	**Speed**: 1/350	**F-stop**: 3.5	**Speed**: 1/250
Focal Distance:	Infinity	**Focal Distance:**	Infinity	**Focal Distance:**	Infinity
Exposure Number:	7, 11	**Exposure Number:**	8, 12	**Exposure Number:**	9, 13

VIEW 4		VIEW 5		VIEW 6	
Camera Height:	6' standing	**Camera Height:**		**Camera Height:**	
Camera Angle:	Horizontal	**Camera Angle:**		**Camera Angle:**	
Azimuth:	303°	**Azimuth:**	°	**Azimuth:**	°
Lens: 50 mm	**Filter**: Skylite	**Lens**:	**Filter**:	**Lens**:	**Filter**:
F-stop: 5.6	**Speed**: 1/250	**F-stop**:	**Speed**:	**F-stop**:	**Speed**:
Focal Distance:	Infinity	**Focal Distance:**		**Focal Distance:**	
Exposure Number:	10, 14	**Exposure Number:**		**Exposure Number:**	

REFERENCE POINT 1

Description: Burned stump

Marking: Orange poster

Azimuth: 115° **Feet**: 11.8

REFERENCE POINT 2

Description:

Marking:

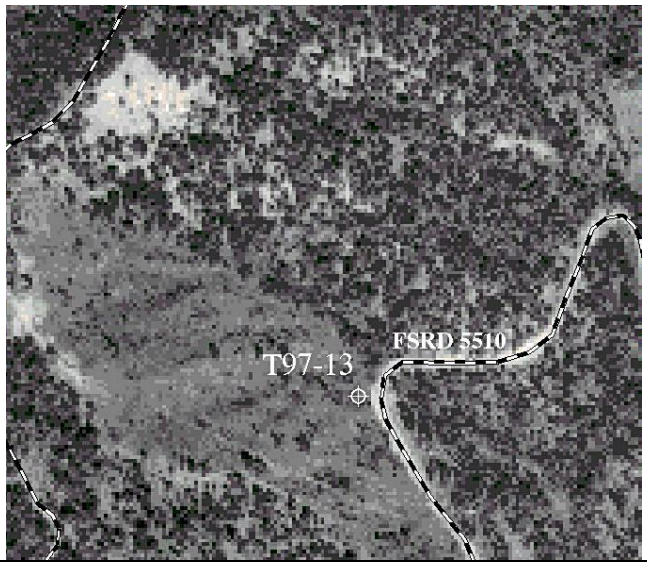
Azimuth: **Feet**:

REFERENCE POINT 3

Description:

Marking:

Azimuth: **Feet**:



Appendix 1: Camera Point Record; Retake for CP T-96-13

Point Number: T-97-13	**National Forest:** Umatilla	**Ranger District:** North Fork John Day

Retake Number: 1	**Photographer:** Earle Rother	
Camera: Minolta Maxxum 7000	**Film:** Kodachrome Slide	**ASA:** 64
Condition of Point Monument and References: Good		
Date: 10/8/1997	**Time:** 12:30 PM	**Weather:** Cloudy

VIEW 1	VIEW 2	VIEW 3
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:** 6’ standing
Camera Angle: Vertical	**Camera Angle:** Vertical	**Camera Angle:** Vertical
Azimuth: 25°	**Azimuth:** 105°	**Azimuth:** 339°
Lens: 50 mm **Filter**: None	**Lens**: 50 mm **Filter**: None	**Lens**: 50 mm **Filter**: None
F-stop: 4 **Speed**: 1/100	**F-stop**: 4 **Speed**: 1/80	**F-stop**: 4.5 **Speed**: 1/80
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:** Infinity
Exposure Number: 6	**Exposure Number:** 8	**Exposure Number:** 10
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height: 6’ standing	**Camera Height:**	**Camera Height:**
Camera Angle: Horizontal	**Camera Angle:**	**Camera Angle:**
Azimuth: 359°*	**Azimuth:** °	**Azimuth:** °
Lens: 50 mm **Filter**: None	**Lens**: **Filter**:	**Lens**: **Filter**:
F-stop: 4 **Speed**: 1/125	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance: Infinity	**Focal Distance:**	**Focal Distance:**
Exposure Number: 12	**Exposure Number:**	**Exposure Number:**

Retake Number: 2	**Photographer:** Earle Rother	
Camera: Minolta Maxxum 7000	**Film:** Kodachrome Slide	**ASA:** 64
Condition of Point Monument and References: Good		
Date: 6/19/1998	**Time:** 3:00 PM	**Weather:** Overcast

VIEW 1	VIEW 2	VIEW 3
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:** 6’ standing
Camera Angle: Vertical	**Camera Angle:** Vertical	**Camera Angle:** Vertical
Azimuth: 25°	**Azimuth:** 105°	**Azimuth:** 339°
Lens: 50 mm **Filter**: Skylite	**Lens**: 50 mm **Filter**: Skylite	**Lens**: 50 mm **Filter**: Skylite
F-stop: 6.7 **Speed**: 1/350	**F-stop**: 8 **Speed**: 1/350	**F-stop**: 5.6 **Speed**: 1/250
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:** Infinity
Exposure Number: 9	**Exposure Number:** 10	**Exposure Number:** 11
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height: 6’ standing	**Camera Height:**	**Camera Height:**
Camera Angle: Horizontal	**Camera Angle:**	**Camera Angle:**
Azimuth: 303°	**Azimuth:** °	**Azimuth:** °
Lens: 50 mm **Filter**: Skylite	**Lens**: **Filter**:	**Lens**: **Filter**:
F-stop: 4.5 **Speed**: 1/80	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance: Infinity	**Focal Distance:**	**Focal Distance:**
Exposure Number: 12	**Exposure Number:**	**Exposure Number:**

* Incorrect azimuth was used for this exposure (should have been 303°).

Appendix 1: Camera Point Record; Retake for CP T-96-13

Point Number: T-97-13	**National Forest:** Umatilla	**Ranger District:** North Fork John Day

Retake Number: 3	**Photographer:** Earle Rother	
Camera: Minolta X-700	**Film:** Kodachrome Slide	**ASA:** 64
Condition of Point Monument and References: Good		
Date: 7/2/1999	**Time:** 1:30 PM	**Weather:** Partly cloudy

VIEW 1	**VIEW 2**	**VIEW 3**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:** 6’ standing
Camera Angle: Vertical	**Camera Angle:** Vertical	**Camera Angle:** Vertical
Azimuth: 25°	**Azimuth:** 105°	**Azimuth:** 339°
Lens: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze
F-stop: 22 **Speed**: 1/125	**F-stop**: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:** Infinity
Exposure Number: 12	**Exposure Number:** 13	**Exposure Number:** 14
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height: 6’ standing	**Camera Height:**	**Camera Height:**
Camera Angle: Horizontal	**Camera Angle:**	**Camera Angle:**
Azimuth: 359°*	**Azimuth:** °	**Azimuth:** °
Lens: 28 mm **Filter**: Haze	**Lens**: **Filter**:	**Lens**: **Filter**:
F-stop: 22 **Speed**: 1/125	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance: Infinity	**Focal Distance:**	**Focal Distance:**
Exposure Number: 15	**Exposure Number:**	**Exposure Number:**

Retake Number: 4	**Photographer:** Dave Powell	
Camera: Minolta X-700	**Film:** Kodachrome Slide	**ASA:** 64
Condition of Point Monument and References: Good		
Date: 7/7/2000	**Time:** 2:15 PM	**Weather:** Sunny with high scattered clouds

VIEW 1	**VIEW 2**	**VIEW 3**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:** 6’ standing
Camera Angle: Vertical	**Camera Angle:** Vertical	**Camera Angle:** Vertical
Azimuth: 25°	**Azimuth:** 105°	**Azimuth:** 339°
Lens: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze
F-stop: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:** Infinity
Exposure Number: 12	**Exposure Number:** 13	**Exposure Number:** 14
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height: 6’ standing	**Camera Height:**	**Camera Height:**
Camera Angle: Horizontal	**Camera Angle:**	**Camera Angle:**
Azimuth: 303°	**Azimuth:** °	**Azimuth:** °
Lens: 28 mm **Filter**: Haze	**Lens**: **Filter**:	**Lens**: **Filter**:
F-stop: 22 **Speed**: 1/250	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance: Infinity	**Focal Distance:**	**Focal Distance:**
Exposure Number: 15	**Exposure Number:**	**Exposure Number:**

* Incorrect azimuth was used for this exposure (should have been 303°).

Appendix 1: Camera Point Record; Retake for CP T-96-13

Point Number: T-97-13	**National Forest:** Umatilla	**Ranger District:** North Fork John Day

Retake Number: 5	**Photographer:** Dave Powell	
Camera: Minolta X-700	**Film:** Kodachrome Slide	**ASA:** 64
Condition of Point Monument and References: Good		
Date: 7/18/2001	**Time:** 12:45 PM	**Weather:** Partly cloudy

VIEW 1	**VIEW 2**	**VIEW 3**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:** 6’ standing
Camera Angle: Vertical	**Camera Angle:** Vertical	**Camera Angle:** Vertical
Azimuth: 25°	**Azimuth:** 105°	**Azimuth:** 339°
Lens: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze
F-stop: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:** Infinity
Exposure Number: 4	**Exposure Number:** 5	**Exposure Number:** 6
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height: 6’ standing	**Camera Height:**	**Camera Height:**
Camera Angle: Horizontal	**Camera Angle:**	**Camera Angle:**
Azimuth: 359°*	**Azimuth:** °	**Azimuth:** °
Lens: 28 mm **Filter**: Haze	**Lens**: **Filter**:	**Lens**: **Filter**:
F-stop: 22 **Speed**: 1/250	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance: Infinity	**Focal Distance:**	**Focal Distance:**
Exposure Number: 7	**Exposure Number:**	**Exposure Number:**

Retake Number: 6	**Photographer:** Dave Powell	
Camera: Minolta X-700	**Film:** Kodachrome Slide	**ASA:** 64
Condition of Point Monument and References: Good		
Date: 7/3/2002	**Time:** 2:00 PM	**Weather:** Clear, sunny

VIEW 1	**VIEW 2**	**VIEW 3**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:** 6’ standing
Camera Angle: Vertical	**Camera Angle:** Vertical	**Camera Angle:** Vertical
Azimuth: 25°	**Azimuth:** 105°	**Azimuth:** 339°
Lens: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze
F-stop: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:** Infinity
Exposure Number: 2	**Exposure Number:** 3	**Exposure Number:** 4
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height: 6’ standing	**Camera Height:**	**Camera Height:**
Camera Angle: Horizontal	**Camera Angle:**	**Camera Angle:**
Azimuth: 359°*	**Azimuth:** °	**Azimuth:** °
Lens: 28 mm **Filter**: Haze	**Lens**: **Filter**:	**Lens**: **Filter**:
F-stop: 22 **Speed**: 1/250	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance: Infinity	**Focal Distance:**	**Focal Distance:**
Exposure Number: 5	**Exposure Number:**	**Exposure Number:**

* Incorrect azimuth was used for this exposure (should have been 303°).

Appendix 1: Camera Point Record; Retake for CP T-96-13

Point Number:	T-97-13	**National Forest:**	Umatilla	**Ranger District:**	North Fork John Day

Retake Number:	7	**Photographer:**	Dave Powell		
Camera:	Canon Rebel XT	**Film:**	Digital sensor	**ASA:**	
Condition of Point Monument and References:	Neither RT nor cap was found				
Date:	7/24/2008	**Time:**	12:30 PM	**Weather:**	Sunny

VIEW 1		**VIEW 2**		**VIEW 3**	
Camera Height:	6’ standing	**Camera Height:**	6’ standing	**Camera Height:**	6’ standing
Camera Angle:	Vertical	**Camera Angle:**	Vertical	**Camera Angle:**	Vertical
Azimuth:	25°	**Azimuth:**	105°	**Azimuth:**	339°
Lens: 28 mm	**Filter**:	**Lens**: 28 mm	**Filter**:	**Lens**: 28 mm	**Filter**:
F-stop:	**Speed**:	**F-stop**:	**Speed**:	**F-stop**:	**Speed**:
Focal Distance:		**Focal Distance:**		**Focal Distance:**	
File Name:	Retake7	**File Name:**	Retake7	**File Name:**	Retake7

VIEW 4		**VIEW 5**		**VIEW 6**	
Camera Height:	6’ standing	**Camera Height:**		**Camera Height:**	
Camera Angle:	Horizontal	**Camera Angle:**		**Camera Angle:**	
Azimuth:	303°	**Azimuth:**	°	**Azimuth:**	°
Lens: 28 mm	**Filter**:	**Lens**:	**Filter**:	**Lens**:	**Filter**:
F-stop:	**Speed**:	**F-stop**:	**Speed**:	**F-stop**:	**Speed**:
Focal Distance:		**Focal Distance:**		**Focal Distance:**	
File Name:	Retake7	**File Name:**		**File Name:**	

RT7 comments: with middle portion of road 5510 obliterated, this is now a rough, 2-mile hike from upper barricade of 5510.

Appendix 1: Camera Point Record; Initial Take for CP T-96-14

Point Number: T-97-14 **National Forest:** Umatilla **Ranger District:** North Fork John Day

Retake Frequency: Annual; then 5 years **Due Dates:** Spring of 1998, 1999, 2000, 2001, 2002; 2007

Subject & Purpose: Monitor long-term effects of the Tower wildfire (burned August-September 1996)

Access Description: Point located in a large burned plantation that was replanted in May, 1997. Unit is above the 55 road about 2.35 miles south of the junction of the 52 and 55 roads.

GPS Coordinates: **North** 4987584 **East** 360147 **Corrected?** Yes

Legal Description: **Town** **Range** **Section** **Qtr** **Qtr**

Air Photo Number: **Map Identifier:** **Ecoclass:** CWS211

Photographer: Earle Rother **Elevation:** 4,615 feet **Aspect:** 42° **Slope %:** 45

Camera: Minolta Maxxum 7000 **Film:** Kodachrome Slide **ASA:** 64

Date: 6/23/1997 **Time:** 2:30 PM **Weather:** Overcast; intermittent rain

VIEW 1		VIEW 2		VIEW 3	
Camera Height:	6' standing	**Camera Height:**	6' standing	**Camera Height:**	6' standing
Camera Angle:	Vertical	**Camera Angle:**	Vertical	**Camera Angle:**	Vertical
Azimuth:	340°	**Azimuth:**	28°	**Azimuth:**	128°
Lens: 50 mm	**Filter**: Skylite	**Lens**: 50 mm	**Filter**: Skylite	**Lens**: 50 mm	**Filter**: Skylite
F-stop: 6.7	**Speed**: 1/250	**F-stop**: 11	**Speed**: 1/500	**F-stop**: 5.6	**Speed**: 1/250
Focal Distance:	Infinity	**Focal Distance:**	Infinity	**Focal Distance:**	Infinity
Exposure Number:	15	**Exposure Number:**	16	**Exposure Number:**	17

VIEW 4		VIEW 5		VIEW 6	
Camera Height:	6' standing	**Camera Height:**		**Camera Height:**	
Camera Angle:	Horizontal	**Camera Angle:**		**Camera Angle:**	
Azimuth:	171°	**Azimuth:**	°	**Azimuth:**	°
Lens: 50 mm	**Filter**: Skylite	**Lens**:	**Filter**:	**Lens**:	**Filter**:
F-stop: 9.5	**Speed**: 1/500	**F-stop**:	**Speed**:	**F-stop**:	**Speed**:
Focal Distance:	Infinity	**Focal Distance:**		**Focal Distance:**	
Exposure Number:	18	**Exposure Number:**		**Exposure Number:**	

REFERENCE POINT 1

Description: Large burned stump

Marking: Orange poster

Azimuth: 262° **Feet**: 31.5

REFERENCE POINT 2

Description:

Marking:

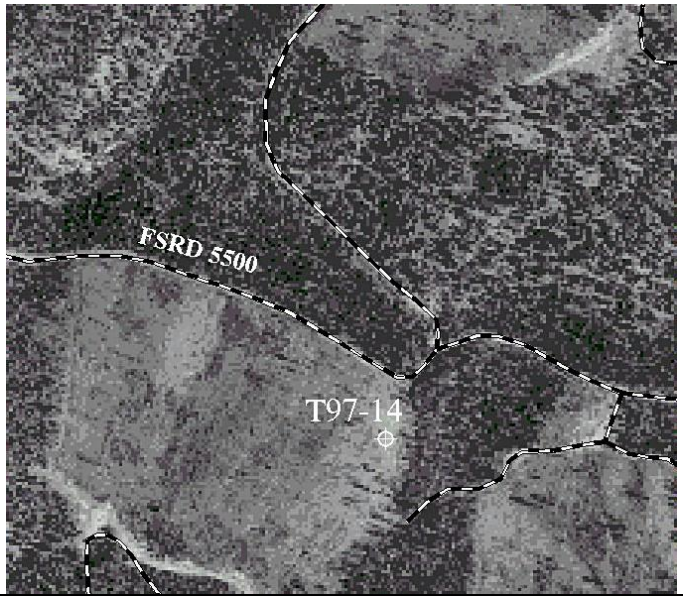
Azimuth: **Feet**:

REFERENCE POINT 3

Description:

Marking:

Azimuth: **Feet**:



Appendix 1: Camera Point Record; Retake for CP T-96-14

Point Number: T-97-14	**National Forest:** Umatilla	**Ranger District:** North Fork John Day

Retake Number: 1	**Photographer:** Earle Rother	
Camera: Minolta Maxxum 7000	**Film:** Kodachrome slide	**ASA:** 64
Condition of Point Monument and References: Good		
Date: 6/19/1998	**Time:** 9:30 AM	**Weather:** Overcast

VIEW 1	**VIEW 2**	**VIEW 3**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:** 6’ standing
Camera Angle: Vertical	**Camera Angle:** Vertical	**Camera Angle:** Vertical
Azimuth: 340°	**Azimuth:** 28°	**Azimuth:** 128°
Lens: 50 mm **Filter**: Skylite	**Lens**: 50 mm **Filter**: Skylite	**Lens**: 50 mm **Filter**: Skylite
F-stop: 6.7 **Speed**: 1/350	**F-stop**: 6.7 **Speed**: 1/250	**F-stop**: 5.6 **Speed**: 1/250
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:** Infinity
Exposure Number: 2	**Exposure Number:** 3	**Exposure Number:** 4
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height: 6’ standing	**Camera Height:**	**Camera Height:**
Camera Angle: Horizontal	**Camera Angle:**	**Camera Angle:**
Azimuth: 171°	**Azimuth:** °	**Azimuth:** °
Lens: 50 mm **Filter**: Skylite	**Lens**: **Filter**:	**Lens**: **Filter**:
F-stop: 4 **Speed**: 1/125	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance: Infinity	**Focal Distance:**	**Focal Distance:**
Exposure Number: 5	**Exposure Number:**	**Exposure Number:**

Retake Number: 2	**Photographer:** Dave Powell	
Camera: Minolta X-700	**Film:** Kodachrome Slide	**ASA:** 64
Condition of Point Monument and References: Good		
Date: 7/30/1999	**Time:** 2:30 PM	**Weather:** Clear, sunny

VIEW 1	**VIEW 2**	**VIEW 3**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:** 6’ standing
Camera Angle: Vertical	**Camera Angle:** Vertical	**Camera Angle:** Vertical
Azimuth: 340°	**Azimuth:** 28°	**Azimuth:** 128°
Lens: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze
F-stop: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:** Infinity
Exposure Number: 14	**Exposure Number:** 15	**Exposure Number:** 16
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height: 6’ standing	**Camera Height:**	**Camera Height:**
Camera Angle: Horizontal	**Camera Angle:**	**Camera Angle:**
Azimuth: 171°	**Azimuth:** °	**Azimuth:** °
Lens: 28 mm **Filter**: Haze	**Lens**: **Filter**:	**Lens**: **Filter**:
F-stop: 22 **Speed**: 1/250	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance: Infinity	**Focal Distance:**	**Focal Distance:**
Exposure Number: 17	**Exposure Number:**	**Exposure Number:**

Appendix 1: Camera Point Record; Retake for CP T-96-14

Point Number: T-97-14	**National Forest:** Umatilla	**Ranger District:** North Fork John Day

Retake Number: 3	**Photographer:** Dave Powell	
Camera: Minolta X-700	**Film:** Kodachrome slide	**ASA:** 64
Condition of Point Monument and References: Good		
Date: 7/7/2000	**Time:** 3:10 PM	**Weather:** Sunny with scattered high clouds

VIEW 1	VIEW 2	VIEW 3
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:** 6’ standing
Camera Angle: Vertical	**Camera Angle:** Vertical	**Camera Angle:** Vertical
Azimuth: 340°	**Azimuth:** 28°	**Azimuth:** 128°
Lens: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze
F-stop: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:** Infinity
Exposure Number: 16	**Exposure Number:** 17	**Exposure Number:** 18
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height: 6’ standing	**Camera Height:**	**Camera Height:**
Camera Angle: Horizontal	**Camera Angle:**	**Camera Angle:**
Azimuth: 171°	**Azimuth:** °	**Azimuth:** °
Lens: 28 mm **Filter**: Haze	**Lens**: **Filter**:	**Lens**: **Filter**:
F-stop: 22 **Speed**: 1/250	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance: Infinity	**Focal Distance:**	**Focal Distance:**
Exposure Number: 19	**Exposure Number:**	**Exposure Number:**

Retake Number: 4	**Photographer:** Dave Powell	
Camera: Minolta X-700	**Film:** Kodachrome slide	**ASA:** 64
Condition of Point Monument and References: Good		
Date: 7/18/2001	**Time:** 2:35 PM	**Weather:** Partly cloudy

VIEW 1	VIEW 2	VIEW 3
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:** 6’ standing
Camera Angle: Vertical	**Camera Angle:** Vertical	**Camera Angle:** Vertical
Azimuth: 340°	**Azimuth:** 28°	**Azimuth:** 128°
Lens: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze
F-stop: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:** Infinity
Exposure Number: 10	**Exposure Number:** 11	**Exposure Number:** 12
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height: 6’ standing	**Camera Height:**	**Camera Height:**
Camera Angle: Horizontal	**Camera Angle:**	**Camera Angle:**
Azimuth: 171°	**Azimuth:** °	**Azimuth:** °
Lens: 28 mm **Filter**: Haze	**Lens**: **Filter**:	**Lens**: **Filter**:
F-stop: 22 **Speed**: 1/250	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance: Infinity	**Focal Distance:**	**Focal Distance:**
Exposure Number: 13	**Exposure Number:**	**Exposure Number:**

Appendix 1: Camera Point Record; Retake for CP T-96-14

Point Number: T-97-14	**National Forest:** Umatilla	**Ranger District:** North Fork John Day

Retake Number: 5	**Photographer:** Dave Powell	
Camera: Minolta X-700	**Film:** Kodachrome slide	**ASA:** 64
Condition of Point Monument and References: Good		
Date: 7/3/2002	**Time:** 3:00 PM	**Weather:** Clear, sunny

VIEW 1	**VIEW 2**	**VIEW 3**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:** 6’ standing
Camera Angle: Vertical	**Camera Angle:** Vertical	**Camera Angle:** Vertical
Azimuth: 340°	**Azimuth:** 28°	**Azimuth:** 128°
Lens: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze
F-stop: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:** Infinity
Exposure Number: 14	**Exposure Number:** 15	**Exposure Number:** 16
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height: 6’ standing	**Camera Height:**	**Camera Height:**
Camera Angle: Horizontal	**Camera Angle:**	**Camera Angle:**
Azimuth: 171°	**Azimuth:** °	**Azimuth:** °
Lens: 28 mm **Filter**: Haze	**Lens**: **Filter**:	**Lens**: **Filter**:
F-stop: 22 **Speed**: 1/250	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance: Infinity	**Focal Distance:**	**Focal Distance:**
Exposure Number: 17	**Exposure Number:**	**Exposure Number:**

Retake Number: 6	**Photographer:** Dave Powell	
Camera: Canon Rebel XT	**Film:** Digital sensor	**ASA:**
Condition of Point Monument and References: Good		
Date: 7/22/2008	**Time:** 10:30 AM	**Weather:** Overcast

VIEW 1	**VIEW 2**	**VIEW 3**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:** 6’ standing
Camera Angle: Vertical	**Camera Angle:** Vertical	**Camera Angle:** Vertical
Azimuth: 340°	**Azimuth:** 28°	**Azimuth:** 128°
Lens: 28 mm **Filter**:	**Lens**: 28 mm **Filter**:	**Lens**: 28 mm **Filter**:
F-stop: **Speed**:	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance:	**Focal Distance:**	**Focal Distance:**
File Name: Retake6	**File Name:** Retake6	**File Name:** Retake6
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height: 6’ standing	**Camera Height:**	**Camera Height:**
Camera Angle: Horizontal	**Camera Angle:**	**Camera Angle:**
Azimuth: 171°	**Azimuth:** °	**Azimuth:** °
Lens: 28 mm **Filter**:	**Lens**: **Filter**:	**Lens**: **Filter**:
F-stop: **Speed**:	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance:	**Focal Distance:**	**Focal Distance:**
File Name: Retake6	**File Name:**	**File Name:**

RT6 comments: good PIMO3 growth; much CEVE and SASC cover; some PIEN & PICO ingrowth; good overall tree density; far slope (background) is shrubfield now.

Appendix 1: Camera Point Record; Initial Take for CP T-96-15

Point Number: T-97-15 **National Forest:** Umatilla **Ranger District:** North Fork John Day

Retake Frequency: Annual; then 5 years **Due Dates:** Spring of 1998, 1999, 2000, 2001, 2002; 2007

Subject & Purpose: Monitor long-term effects of the Tower wildfire (burned August-September 1996)

Access Description: From the junction of the 54 and 5448 roads, proceed south for about 3.2 miles and park; point is located on west side of 5448 about 100 yards up the slope. From Highway 244, it is 8.25 miles to the 54/5448 road junction.

GPS Coordinates: **North** 4991909 **East** 366659 **Corrected?** Yes (6 m.)

Legal Description: **Town** **Range** **Section** **Qtr** **Qtr**

Air Photo Number: **Map Identifier:** **Ecoclass:** CWG112

Photographer: Dave Powell **Elevation:** 4,920 feet **Aspect:** 166° **Slope %:** 30

Camera: Minolta X-700 **Film:** Kodachrome Slide **ASA:** 64

Date: 7/2/1997 **Time:** 11:00 AM **Weather:** Sunny; scattered clouds

VIEW 1	VIEW 2	VIEW 3
Camera Height: 6' standing	**Camera Height:** 6' standing	**Camera Height:** 6' standing
Camera Angle: Horizontal	**Camera Angle:** Horizontal	**Camera Angle:** Vertical
Azimuth: 109°	**Azimuth:** 179°	**Azimuth:** 179°
Lens: 28 mm **Filter**: None	**Lens**: 28 mm **Filter**: None	**Lens**: 28 mm **Filter**: None
F-stop: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:** Infinity
Exposure Number: 9	**Exposure Number:** 10	**Exposure Number:** 11

VIEW 4	VIEW 5	VIEW 6
Camera Height: 6' standing	**Camera Height:**	**Camera Height:**
Camera Angle: Vertical	**Camera Angle:**	**Camera Angle:**
Azimuth: 12°	**Azimuth:** °	**Azimuth:** °
Lens: 28 mm **Filter**: None	**Lens**: **Filter**:	**Lens**: **Filter**:
F-stop: 22 **Speed**: 1/250	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance: Infinity	**Focal Distance:**	**Focal Distance:**
Exposure Number: 12	**Exposure Number:**	**Exposure Number:**

REFERENCE POINT 1

Description: 25.5" DBH PIPO

Marking: Orange poster

Azimuth: 45° **Feet**: 13.8

REFERENCE POINT 2

Description:

Marking:

Azimuth: **Feet**:

REFERENCE POINT 3

Description:

Marking:

Azimuth: **Feet**:

Appendix 1: Camera Point Record; Retake for CP T-96-15

Point Number: T-97-15	**National Forest:** Umatilla	**Ranger District:** North Fork John Day

Retake Number: 1	**Photographer:** Dave Powell	
Camera: Minolta X-700	**Film:** Kodachrome slide	**ASA:** 64
Condition of Point Monument and References: Good		
Date: 6/26/1998	**Time:** 2:30 PM	**Weather:** Partly cloudy

VIEW 1	**VIEW 2**	**VIEW 3**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:** 6’ standing
Camera Angle: Horizontal	**Camera Angle:** Horizontal	**Camera Angle:** Vertical
Azimuth: 109°	**Azimuth:** 179°	**Azimuth:** 179°
Lens: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze
F-stop: 22 **Speed**: 1/125	**F-stop**: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:** Infinity
Exposure Number: 6	**Exposure Number:** 7	**Exposure Number:** 8
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height: 6’ standing	**Camera Height:**	**Camera Height:**
Camera Angle: Vertical	**Camera Angle:**	**Camera Angle:**
Azimuth: 12°	**Azimuth:** °	**Azimuth:** °
Lens: 28 mm **Filter**: Haze	**Lens**: **Filter**:	**Lens**: **Filter**:
F-stop: 22 **Speed**: 1/125	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance: Infinity	**Focal Distance:**	**Focal Distance:**
Exposure Number: 9	**Exposure Number:**	**Exposure Number:**

Retake Number: 2	**Photographer:** Dave Powell	
Camera: Minolta X-700	**Film:** Kodachrome slide	**ASA:** 64
Condition of Point Monument and References: Good		
Date: 7/30/1999	**Time:** 1:15 PM	**Weather:** Clear, sunny

VIEW 1	**VIEW 2**	**VIEW 3**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:** 6’ standing
Camera Angle: Horizontal	**Camera Angle:** Horizontal	**Camera Angle:** Vertical
Azimuth: 109°	**Azimuth:** 179°	**Azimuth:** 179°
Lens: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze
F-stop: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:** Infinity
Exposure Number: 10	**Exposure Number:** 11	**Exposure Number:** 12
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height: 6’ standing	**Camera Height:**	**Camera Height:**
Camera Angle: Vertical	**Camera Angle:**	**Camera Angle:**
Azimuth: 12°	**Azimuth:** °	**Azimuth:** °
Lens: 28 mm **Filter**: Haze	**Lens**: **Filter**:	**Lens**: **Filter**:
F-stop: 22 **Speed**: 1/250	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance: Infinity	**Focal Distance:**	**Focal Distance:**
Exposure Number: 13	**Exposure Number:**	**Exposure Number:**

Appendix 1: Camera Point Record; Retake for CP T-96-15

Point Number: T-97-15	**National Forest:** Umatilla	**Ranger District:** North Fork John Day

Retake Number: 3	**Photographer:** Dave Powell	
Camera: Minolta X-700	**Film:** Kodachrome slide	**ASA:** 64
Condition of Point Monument and References: Good		
Date: 7/27/2000	**Time:** 10:30 AM	**Weather:** Clear, sunny

VIEW 1	**VIEW 2**	**VIEW 3**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:** 6’ standing
Camera Angle: Horizontal	**Camera Angle:** Horizontal	**Camera Angle:** Vertical
Azimuth: 109°	**Azimuth:** 179°	**Azimuth:** 179°
Lens: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze
F-stop: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:** Infinity
Exposure Number: 20	**Exposure Number:** 21	**Exposure Number:** 22
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height: 6’ standing	**Camera Height:**	**Camera Height:**
Camera Angle: Vertical	**Camera Angle:**	**Camera Angle:**
Azimuth: 12°	**Azimuth:** °	**Azimuth:** °
Lens: 28 mm **Filter**: Haze	**Lens**: **Filter**:	**Lens**: **Filter**:
F-stop: 22 **Speed**: 1/250	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance: Infinity	**Focal Distance:**	**Focal Distance:**
Exposure Number: 23	**Exposure Number:**	**Exposure Number:**

Retake Number: 4	**Photographer:** Dave Powell	
Camera: Minolta X-700	**Film:** Kodachrome slide	**ASA:** 64
Condition of Point Monument and References: Good		
Date: 7/19/2001	**Time:** 10:30 AM	**Weather:** Clear, sunny

VIEW 1	**VIEW 2**	**VIEW 3**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:** 6’ standing
Camera Angle: Horizontal	**Camera Angle:** Horizontal	**Camera Angle:** Vertical
Azimuth: 109°	**Azimuth:** 179°	**Azimuth:** 179°
Lens: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze
F-stop: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:** Infinity
Exposure Number: 22	**Exposure Number:** 23	**Exposure Number:** 24
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height: 6’ standing	**Camera Height:**	**Camera Height:**
Camera Angle: Vertical	**Camera Angle:**	**Camera Angle:**
Azimuth: 12°	**Azimuth:** °	**Azimuth:** °
Lens: 28 mm **Filter**: Haze	**Lens**: **Filter**:	**Lens**: **Filter**:
F-stop: 22 **Speed**: 1/250	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance: Infinity	**Focal Distance:**	**Focal Distance:**
Exposure Number: 25	**Exposure Number:**	**Exposure Number:**

Appendix 1: Camera Point Record; Retake for CP T-96-15

Point Number: T-97-15	**National Forest:** Umatilla	**Ranger District:** North Fork John Day

Retake Number: 5	**Photographer:** Dave Powell	
Camera: Minolta X-700	**Film:** Kodachrome slide	**ASA:** 64
Condition of Point Monument and References: Reference tree was blown over		
Date: 7/12/2002	**Time:** 9:45 AM	**Weather:** Clear, sunny

VIEW 1	**VIEW 2**	**VIEW 3**
Camera Height: 6' standing	**Camera Height:** 6' standing	**Camera Height:** 6' standing
Camera Angle: Horizontal	**Camera Angle:** Horizontal	**Camera Angle:** Vertical
Azimuth: 109°	**Azimuth:** 179°	**Azimuth:** 179°
Lens: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze
F-stop: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:** Infinity
Exposure Number: 18	**Exposure Number:** 19	**Exposure Number:** 20
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height: 6' standing	**Camera Height:**	**Camera Height:**
Camera Angle: Vertical	**Camera Angle:**	**Camera Angle:**
Azimuth: 12°	**Azimuth:** °	**Azimuth:** °
Lens: 28 mm **Filter**: Haze	**Lens**: **Filter**:	**Lens**: **Filter**:
F-stop: 22 **Speed**: 1/250	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance: Infinity	**Focal Distance:**	**Focal Distance:**
Exposure Number: 21	**Exposure Number:**	**Exposure Number:**

Retake Number: 6	**Photographer:** Dave Powell	
Camera: Canon Rebel XT	**Film:** Digital sensor	**ASA:**
Condition of Point Monument and References: RT down; poster and cap OK		
Date: 7/24/2008	**Time:** 9:30 AM	**Weather:** Sunny

VIEW 1	**VIEW 2**	**VIEW 3**
Camera Height: 6' standing	**Camera Height:** 6' standing	**Camera Height:** 6' standing
Camera Angle: Horizontal	**Camera Angle:** Horizontal	**Camera Angle:** Vertical
Azimuth: 109°	**Azimuth:** 179°	**Azimuth:** 179°
Lens: 28 mm **Filter**:	**Lens**: 28 mm **Filter**:	**Lens**: 28 mm **Filter**:
F-stop: **Speed**:	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance:	**Focal Distance:**	**Focal Distance:**
File Name: Retake6	**File Name:** Retake6	**File Name:** Retake6
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height: 6' standing	**Camera Height:**	**Camera Height:**
Camera Angle: Vertical	**Camera Angle:**	**Camera Angle:**
Azimuth: 12°	**Azimuth:** °	**Azimuth:** °
Lens: 28 mm **Filter**:	**Lens**: **Filter**:	**Lens**: **Filter**:
F-stop: **Speed**:	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance:	**Focal Distance:**	**Focal Distance:**
File Name: Retake6	**File Name:**	**File Name:**

Appendix 1: Camera Point Record; Initial Take for CP T-96-16

Point Number: T-97-16 **National Forest:** Umatilla **Ranger District:** North Fork John Day

Retake Frequency: Annual; then 5 years **Due Dates:** Fall of 1998, 1999, 2000, 2001, 2003; 2008

Subject & Purpose: Monitor long-term effects of the Tower wildfire (burned August-September 1996)

Access Description: Point, located beneath a rock outcrop, is about 230' at an azimuth of 146° from a pullout in road 5226/300, about 0.7 miles north of the junction of the 300 spur and road 5226. The 300 road, now closed, is about 1.1 miles east of the junction of the 52 road and 5226.

GPS Coordinates: **North** 4985821 **East** 375244 **Corrected?** Yes (8.8 m)

Legal Description: **Town** **Range** **Section** **Qtr** **Qtr**

Air Photo Number: **Map Identifier:** **Ecoclass:** CES411

Photographer: Dave Powell **Elevation:** 5,315 feet **Aspect:** 324° **Slope %:** 31

Camera: Minolta X-700 **Film:** Kodachrome Slide **ASA:** 64

Date: 7/2/1997 **Time:** 2:45 PM **Weather:** Sunny; occasionally cloudy

VIEW 1	VIEW 2	VIEW 3
Camera Height: 6' standing	**Camera Height:** 6' standing	**Camera Height:** 6' standing
Camera Angle: Horizontal	**Camera Angle:** Vertical	**Camera Angle:** Horizontal
Azimuth: 331°	**Azimuth:** 331°	**Azimuth:** 270°
Lens: 28 mm **Filter**: None	**Lens**: 50 mm **Filter**: None	**Lens**: 28 mm **Filter**: None
F-stop: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:** Infinity
Exposure Number: 14	**Exposure Number:** 15	**Exposure Number:** 16

VIEW 4	VIEW 5	VIEW 6
Camera Height: 6' standing	**Camera Height:**	**Camera Height:**
Camera Angle: Horizontal	**Camera Angle:**	**Camera Angle:**
Azimuth: 34°	**Azimuth:** °	**Azimuth:** °
Lens: 28 mm **Filter**: None	**Lens**: **Filter**:	**Lens**: **Filter**:
F-stop: 22 **Speed**: 1/250	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance: Infinity	**Focal Distance:**	**Focal Distance:**
Exposure Number: 17	**Exposure Number:**	**Exposure Number:**

REFERENCE POINT 1

Description: 15.2" DBH PSME

Marking: Orange poster

Azimuth: 280° **Feet**: 21.4

REFERENCE POINT 2

Description:

Marking:

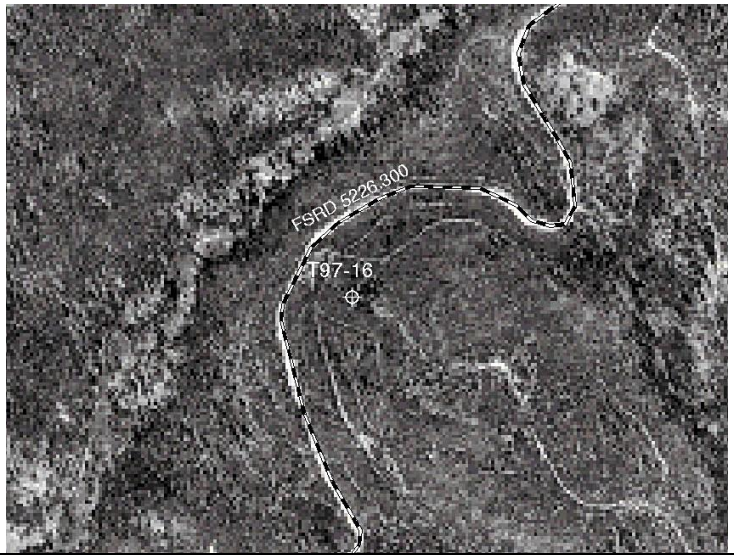
Azimuth: **Feet**:

REFERENCE POINT 3

Description:

Marking:

Azimuth: **Feet**:



Appendix 1: Camera Point Record; Retake for CP T-96-16

Point Number: T-97-16	**National Forest:** Umatilla	**Ranger District:** North Fork John Day

Retake Number: 1	**Photographer:** Dave Powell	
Camera: Minolta X-700	**Film:** Kodachrome slide	**ASA:** 64
Condition of Point Monument and References: Good		
Date: 6/26/1998	**Time:** 1:00 PM	**Weather:** Partly cloudy

VIEW 1	VIEW 2	VIEW 3
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:** 6’ standing
Camera Angle: Horizontal	**Camera Angle:** Vertical	**Camera Angle:** Horizontal
Azimuth: 331°	**Azimuth:** 331°	**Azimuth:** 270°
Lens: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze
F-stop: 22 **Speed**: 1/125	**F-stop**: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:** Infinity
Exposure Number: 2	**Exposure Number:** 3	**Exposure Number:** 4
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height: 6’ standing	**Camera Height:**	**Camera Height:**
Camera Angle: Horizontal	**Camera Angle:**	**Camera Angle:**
Azimuth: 34°	**Azimuth:** °	**Azimuth:** °
Lens: 28 mm **Filter**: Haze	**Lens**: **Filter**:	**Lens**: **Filter**:
F-stop: 22 **Speed**: 1/250	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance: Infinity	**Focal Distance:**	**Focal Distance:**
Exposure Number: 5	**Exposure Number:**	**Exposure Number:**

Retake Number: 2	**Photographer:** Dave Powell	
Camera: Minolta X-700	**Film:** Kodachrome slide	**ASA:** 64
Condition of Point Monument and References: Good		
Date: 9/24/1999	**Time:** 10:45 AM	**Weather:** Clear, sunny

VIEW 1	VIEW 2	VIEW 3
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:** 6’ standing
Camera Angle: Horizontal	**Camera Angle:** Vertical	**Camera Angle:** Horizontal
Azimuth: 331°	**Azimuth:** 331°	**Azimuth:** 270°
Lens: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze
F-stop: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:** Infinity
Exposure Number: 1	**Exposure Number:** 2	**Exposure Number:** 3
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height: 6’ standing	**Camera Height:**	**Camera Height:**
Camera Angle: Horizontal	**Camera Angle:**	**Camera Angle:**
Azimuth: 34°	**Azimuth:** °	**Azimuth:** °
Lens: 28 mm **Filter**: Haze	**Lens**: **Filter**:	**Lens**: **Filter**:
F-stop: 22 **Speed**: 1/250	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance: Infinity	**Focal Distance:**	**Focal Distance:**
Exposure Number: 4	**Exposure Number:**	**Exposure Number:**

Appendix 1: Camera Point Record; Retake for CP T-96-16

Point Number: T-97-16	**National Forest:** Umatilla	**Ranger District:** North Fork John Day

Retake Number: 3	**Photographer:** Earle Rother	
Camera: Minolta Maxxum 7000	**Film:** Kodachrome slide	**ASA:** 64
Condition of Point Monument and References: Good		
Date: 9/27/2000	**Time:** 10:00 AM	**Weather:** Clear, sunny

VIEW 1	**VIEW 2**	**VIEW 3**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:** 6’ standing
Camera Angle: Horizontal	**Camera Angle:** Vertical	**Camera Angle:** Horizontal
Azimuth: 331°	**Azimuth:** 331°	**Azimuth:** 270°
Lens: 28 mm **Filter**: Skylite	**Lens**: 28 mm **Filter**: Skylite	**Lens**: 28 mm **Filter**: Skylite
F-stop: 8 **Speed**: 1/125	**F-stop**: 8 **Speed**: 1/125	**F-stop**: 8 **Speed**: 1/125
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:** Infinity
Exposure Number: 1	**Exposure Number:** 2	**Exposure Number:** 3
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height: 6’ standing	**Camera Height:**	**Camera Height:**
Camera Angle: Horizontal	**Camera Angle:**	**Camera Angle:**
Azimuth: 34°	**Azimuth:** °	**Azimuth:** °
Lens: 28 mm **Filter**: Skylite	**Lens**: **Filter**:	**Lens**: **Filter**:
F-stop: 8 **Speed**: 1/100	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance: Infinity	**Focal Distance:**	**Focal Distance:**
Exposure Number: 4	**Exposure Number:**	**Exposure Number:**

Retake Number: 4	**Photographer:** Dave Powell	
Camera: Minolta X-700	**Film:** Kodachrome slide	**ASA:** 64
Condition of Point Monument and References: Good		
Date: 10/2/2001	**Time:** 10:00 AM	**Weather:** Clear, sunny

VIEW 1	**VIEW 2**	**VIEW 3**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:** 6’ standing
Camera Angle: Horizontal	**Camera Angle:** Vertical	**Camera Angle:** Horizontal
Azimuth: 331°	**Azimuth:** 331°	**Azimuth:** 270°
Lens: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze
F-stop: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:** Infinity
Exposure Number: 21	**Exposure Number:** 22	**Exposure Number:** 23
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height: 6’ standing	**Camera Height:**	**Camera Height:**
Camera Angle: Horizontal	**Camera Angle:**	**Camera Angle:**
Azimuth: 34°	**Azimuth:** °	**Azimuth:** °
Lens: 28 mm **Filter**: Haze	**Lens**: **Filter**:	**Lens**: **Filter**:
F-stop: 22 **Speed**: 1/250	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance: Infinity	**Focal Distance:**	**Focal Distance:**
Exposure Number: 24	**Exposure Number:**	**Exposure Number:**

Appendix 1: Camera Point Record; Retake for CP T-96-16

Point Number: T-97-16	**National Forest:** Umatilla	**Ranger District:** North Fork John Day

Retake Number: 5	**Photographer:** Dave Powell	
Camera: Minolta X-700	**Film:** Kodachrome slide	**ASA:** 64
Condition of Point Monument and References: Good		
Date: 9/30/2003	**Time:** 9:45 AM	**Weather:** Clear, sunny

VIEW 1	**VIEW 2**	**VIEW 3**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:** 6’ standing
Camera Angle: Horizontal	**Camera Angle:** Vertical	**Camera Angle:** Horizontal
Azimuth: 331°	**Azimuth:** 331°	**Azimuth:** 270°
Lens: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze
F-stop: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:** Infinity
Exposure Number: 4	**Exposure Number:** 5	**Exposure Number:** 6
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height: 6’ standing	**Camera Height:**	**Camera Height:**
Camera Angle: Horizontal	**Camera Angle:**	**Camera Angle:**
Azimuth: 34°	**Azimuth:** °	**Azimuth:** °
Lens: 28 mm **Filter**: Haze	**Lens**: **Filter**:	**Lens**: **Filter**:
F-stop: 22 **Speed**: 1/250	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance: Infinity	**Focal Distance:**	**Focal Distance:**
Exposure Number: 7	**Exposure Number:**	**Exposure Number:**

Retake Number: 6	**Photographer:** Dave Powell	
Camera: Canon Rebel XT	**Film:** Digital sensor	**ASA:**
Condition of Point Monument and References: RP good; cap not found		
Date: 7/23/2008	**Time:** 10:30 AM	**Weather:** Sunny

VIEW 1	**VIEW 2**	**VIEW 3**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:** 6’ standing
Camera Angle: Horizontal	**Camera Angle:** Vertical	**Camera Angle:** Horizontal
Azimuth: 331°	**Azimuth:** 331°	**Azimuth:** 270°
Lens: 28 mm **Filter**:	**Lens**: 28 mm **Filter**:	**Lens**: 28 mm **Filter**:
F-stop: **Speed**:	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance:	**Focal Distance:**	**Focal Distance:**
File Name: Retake6	**File Name:** Retake6	**File Name:** Retake6
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height: 6’ standing	**Camera Height:**	**Camera Height:**
Camera Angle: Horizontal	**Camera Angle:**	**Camera Angle:**
Azimuth: 34°	**Azimuth:** °	**Azimuth:** °
Lens: 28 mm **Filter**:	**Lens**: **Filter**:	**Lens**: **Filter**:
F-stop: **Speed**:	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance:	**Focal Distance:**	**Focal Distance:**
File Name: Retake6	**File Name:**	**File Name:**

RT6 comments: high cover of ARNE and VASC; some SASC and EPAN also present.

Appendix 1: Camera Point Record; Initial Take for CP T-96-17

Point Number: T-98-17 **National Forest:** Umatilla **Ranger District:** North Fork John Day

Retake Frequency: Annual; then 5 years **Due Dates:** Spring of 1999, 2000, 2001, 2002, 2003; 2008

Subject & Purpose: Monitor long-term effects of the Tower wildfire (burned August-September 1996)

Access Description: Point located in southern part of 1986 Long Meadows fire, reburned by Tower in 1996. Park at trailhead for Whoop De Doo trail (52/5507 road junction); go east on trail for app. ¼ mile to Cut-Across Trail (#3158); go north on Cut-Across for app. 200 yards to bend in trail (to the west); proceed from bend at 340° azimuth for app. 6.5 chains to CP stake.

GPS Coordinates: **North** 4986983 **East** 367658 **Corrected?** Yes (9 m.)

Legal Description: **Town** **Range** **Section** **Qtr** **Qtr**

Air Photo Number: **Map Identifier:** **Ecoclass:** CWS211

Photographer: Earle Rother **Elevation:** 5,438 feet **Aspect:** 140° **Slope %:** 23

Camera: Minolta Maxxum 7000 **Film:** Kodachrome Slide **ASA:** 64

Date: 6/19/1998 **Time:** 10:45 AM **Weather:** Cloudy; cold

VIEW 1	VIEW 2	VIEW 3
Camera Height: 6' standing	**Camera Height:** 6' standing	**Camera Height:** 6' standing
Camera Angle: Horizontal	**Camera Angle:** Horizontal	**Camera Angle:** Horizontal
Azimuth: 88°	**Azimuth:** 181°	**Azimuth:** 242°
Lens: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze
F-stop: 8 **Speed**: 1/125	**F-stop**: 8 **Speed**: 1/125	**F-stop**: 6.7 **Speed**: 1/100
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:** Infinity
Exposure Number: 6	**Exposure Number:** 7	**Exposure Number:** 8

VIEW 4	VIEW 5	VIEW 6
Camera Height:	**Camera Height:**	**Camera Height:**
Camera Angle:	**Camera Angle:**	**Camera Angle:**
Azimuth: °	**Azimuth:** °	**Azimuth:** °
Lens: **Filter**:	**Lens**: **Filter**:	**Lens**: **Filter**:
F-stop: **Speed**:	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance:	**Focal Distance:**	**Focal Distance:**
Exposure Number:	**Exposure Number:**	**Exposure Number:**

REFERENCE POINT 1

Description: 30.2" DBH LAOC

Marking: Orange poster

Azimuth: 63° **Feet**: 127.2

REFERENCE POINT 2

Description:

Marking:

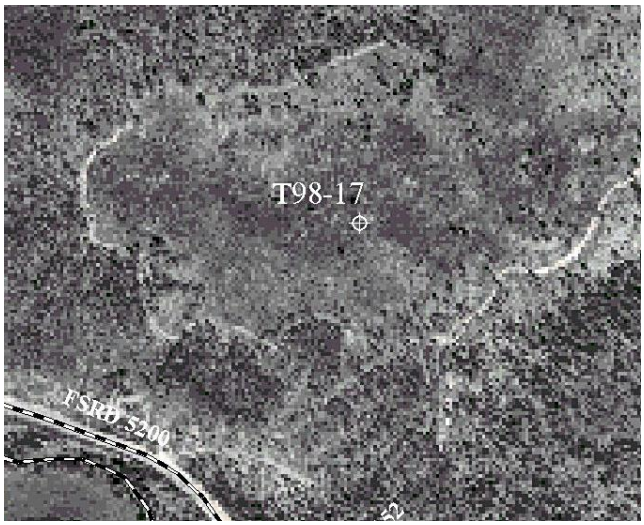
Azimuth: **Feet**:

REFERENCE POINT 3

Description:

Marking:

Azimuth: **Feet**:



Appendix 1: Camera Point Record; Retake for CP T-96-17

Point Number: T-98-17	**National Forest:** Umatilla	**Ranger District:** North Fork John Day

Retake Number: 1	**Photographer:** Earle Rother	
Camera: Minolta X-700	**Film:** Kodachrome Slide	**ASA:** 64
Condition of Point Monument and References: Good		
Date: 7/2/1999	**Time:** 11:30 AM	**Weather:** Partly cloudy

VIEW 1	**VIEW 2**	**VIEW 3**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:** 6’ standing
Camera Angle: Horizontal	**Camera Angle:** Horizontal	**Camera Angle:** Horizontal
Azimuth: 88°	**Azimuth:** 181°	**Azimuth:** 242°
Lens: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze
F-stop: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:** Infinity
Exposure Number: 1	**Exposure Number:** 2	**Exposure Number:** 3
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height:	**Camera Height:**	**Camera Height:**
Camera Angle:	**Camera Angle:**	**Camera Angle:**
Azimuth: °	**Azimuth:** °	**Azimuth:** °
Lens: **Filter**:	**Lens**: **Filter**:	**Lens**: **Filter**:
F-stop: **Speed**:	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance:	**Focal Distance:**	**Focal Distance:**
Exposure Number:	**Exposure Number:**	**Exposure Number:**

Retake Number: 2	**Photographer:** Dave Powell	
Camera: Minolta X-700	**Film:** Kodachrome Slide	**ASA:** 64
Condition of Point Monument and References: Good		
Date: 7/7/2000	**Time:** 10:00 AM	**Weather:** Sunny, clear

VIEW 1	**VIEW 2**	**VIEW 3**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:** 6’ standing
Camera Angle: Horizontal	**Camera Angle:** Horizontal	**Camera Angle:** Horizontal
Azimuth: 88°	**Azimuth:** 181°	**Azimuth:** 242°
Lens: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze
F-stop: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:** Infinity
Exposure Number: 16	**Exposure Number:** 17	**Exposure Number:** 18
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height:	**Camera Height:**	**Camera Height:**
Camera Angle:	**Camera Angle:**	**Camera Angle:**
Azimuth: °	**Azimuth:** °	**Azimuth:** °
Lens: **Filter**:	**Lens**: **Filter**:	**Lens**: **Filter**:
F-stop: **Speed**:	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance:	**Focal Distance:**	**Focal Distance:**
Exposure Number:	**Exposure Number:**	**Exposure Number:**

Appendix 1: Camera Point Record; Retake for CP T-96-17

Point Number: T-98-17	**National Forest:** Umatilla	**Ranger District:** North Fork John Day

Retake Number: 3	**Photographer:** Dave Powell	
Camera: Minolta X-700	**Film:** Kodachrome Slide	**ASA:** 64
Condition of Point Monument and References: Good		
Date: 7/18/2001	**Time:** 3:10 PM	**Weather:** Partly cloudy

VIEW 1	**VIEW 2**	**VIEW 3**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:** 6’ standing
Camera Angle: Horizontal	**Camera Angle:** Horizontal	**Camera Angle:** Horizontal
Azimuth: 88°	**Azimuth:** 181°	**Azimuth:** 242°
Lens: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze
F-stop: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:** Infinity
Exposure Number: 14	**Exposure Number:** 15	**Exposure Number:** 16
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height:	**Camera Height:**	**Camera Height:**
Camera Angle:	**Camera Angle:**	**Camera Angle:**
Azimuth: °	**Azimuth:** °	**Azimuth:** °
Lens: **Filter**:	**Lens**: **Filter**:	**Lens**: **Filter**:
F-stop: **Speed**:	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance:	**Focal Distance:**	**Focal Distance:**
Exposure Number:	**Exposure Number:**	**Exposure Number:**

Retake Number: 4	**Photographer:** Dave Powell	
Camera: Minolta X-700	**Film:** Kodachrome Slide	**ASA:** 64
Condition of Point Monument and References: Good		
Date: 7/3/2002	**Time:** 9:40 AM	**Weather:** Sunny; slight overcast

VIEW 1	**VIEW 2**	**VIEW 3**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:** 6’ standing
Camera Angle: Horizontal	**Camera Angle:** Horizontal	**Camera Angle:** Horizontal
Azimuth: 88°	**Azimuth:** 181°	**Azimuth:** 242°
Lens: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze
F-stop: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:** Infinity
Exposure Number: 12	**Exposure Number:** 13	**Exposure Number:** 14
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height:	**Camera Height:**	**Camera Height:**
Camera Angle:	**Camera Angle:**	**Camera Angle:**
Azimuth: °	**Azimuth:** °	**Azimuth:** °
Lens: **Filter**:	**Lens**: **Filter**:	**Lens**: **Filter**:
F-stop: **Speed**:	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance:	**Focal Distance:**	**Focal Distance:**
Exposure Number:	**Exposure Number:**	**Exposure Number:**

Appendix 1: Camera Point Record; Retake for CP T-96-17

Point Number: T-98-17	**National Forest:** Umatilla	**Ranger District:** North Fork John Day

Retake Number: 5	**Photographer:** Dave Powell	
Camera: Minolta X-700	**Film:** Kodachrome Slide	**ASA:** 64
Condition of Point Monument and References: Good		
Date: 7/2/2003	**Time:** 10:30 AM	**Weather:** Clear and sunny

VIEW 1	**VIEW 2**	**VIEW 3**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:** 6’ standing
Camera Angle: Horizontal	**Camera Angle:** Horizontal	**Camera Angle:** Horizontal
Azimuth: 88°	**Azimuth:** 181°	**Azimuth:** 242°
Lens: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze
F-stop: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:** Infinity
Exposure Number: 28	**Exposure Number:** 29	**Exposure Number:** 30
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height:	**Camera Height:**	**Camera Height:**
Camera Angle:	**Camera Angle:**	**Camera Angle:**
Azimuth: °	**Azimuth:** °	**Azimuth:** °
Lens: **Filter**:	**Lens**: **Filter**:	**Lens**: **Filter**:
F-stop: **Speed**:	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance:	**Focal Distance:**	**Focal Distance:**
Exposure Number:	**Exposure Number:**	**Exposure Number:**

Retake Number: 6	**Photographer:** Dave Powell	
Camera: Canon Rebel XT	**Film:** Digital sensor	**ASA:**
Condition of Point Monument and References: Good		
Date: 7/23/2008	**Time:** 11:45 AM	**Weather:** Sunny

VIEW 1	**VIEW 2**	**VIEW 3**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:** 6’ standing
Camera Angle: Horizontal	**Camera Angle:** Horizontal	**Camera Angle:** Horizontal
Azimuth: 88°	**Azimuth:** 181°	**Azimuth:** 242°
Lens: 28 mm **Filter**:	**Lens**: 28 mm **Filter**:	**Lens**: 28 mm **Filter**:
F-stop: **Speed**:	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance:	**Focal Distance:**	**Focal Distance:**
File Name: Retake6	**File Name:** Retake6	**File Name:** Retake6
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height:	**Camera Height:**	**Camera Height:**
Camera Angle:	**Camera Angle:**	**Camera Angle:**
Azimuth: °	**Azimuth:** °	**Azimuth:** °
Lens: **Filter**:	**Lens**: **Filter**:	**Lens**: **Filter**:
F-stop: **Speed**:	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance:	**Focal Distance:**	**Focal Distance:**
File Name:	**File Name:**	**File Name:**

Appendix 1: Camera Point Record; Initial Take for CP T-96-18

Point Number: T-98-18 **National Forest:** Umatilla **Ranger District:** North Fork John Day

Retake Frequency: Annual; then 5 years **Due Dates:** Spring of 1999, 2000, 2001, 2002, 2003; 2007

Subject & Purpose: Monitor long-term effects of the Tower wildfire (burned August-September 1996)

Access Description: Point located about 4.8 miles below (west) of junction of 5507 and 5510 roads where Oriental Creek meets 5507. Point shows effects of massive washout occurring in May 1998. Note that 5507 is closed with a barricade 4.1 miles below 5507/5510 junction, requiring a 0.7-mile walk-in to camera point.

GPS Coordinates: **North** 4983605 **West** 364025 **Corrected?** Yes

Legal Description: **Town** **Range** **Section** **Qtr** **Qtr**

Air Photo Number: **Map Identifier:** **Ecoclass:** N.A.

Photographer: Earle Rother **Elevation:** 3,854 feet **Aspect:** 40° **Slope %:** 60

Camera: Minolta Maxxus 7000 **Film:** Kodachrome Slide **ASA:** 64

Date: 6/19/1998 **Time:** 2:00 PM **Weather:** Cloudy and overcast

VIEW 1	VIEW 2	VIEW 3
Camera Height: 6' standing	**Camera Height:** 6' standing	**Camera Height:**
Camera Angle: Horizontal	**Camera Angle:** Horizontal	**Camera Angle:**
Azimuth: 10°	**Azimuth:** 50°	**Azimuth:** °
Lens: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze	**Lens**: **Filter**:
F-stop: 9.5 **Speed**: 1/80	**F-stop**: 5.6 **Speed**: 1/60	**F-stop**: **Speed**:
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:**
Exposure Number: 1	**Exposure Number:** 2	**Exposure Number:**

VIEW 4	VIEW 5	VIEW 6
Camera Height:	**Camera Height:**	**Camera Height:**
Camera Angle:	**Camera Angle:**	**Camera Angle:**
Azimuth: °	**Azimuth:** °	**Azimuth:** °
Lens: **Filter**:	**Lens**: **Filter**:	**Lens**: **Filter**:
F-stop: **Speed**:	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance:	**Focal Distance:**	**Focal Distance:**
Exposure Number:	**Exposure Number:**	**Exposure Number:**

REFERENCE POINT 1
Description: 17” DBH PSME stump
Marking: Orange poster
Azimuth: 170° **Feet**: 34 (slope)

REFERENCE POINT 2
Description:
Marking:
Azimuth: **Feet**:

REFERENCE POINT 3
Description:
Marking:
Azimuth: **Feet**:

Appendix 1: Camera Point Record; Retake for CP T-96-18

Point Number: T-98-18	**National Forest:** Umatilla	**Ranger District:** North Fork John Day

Retake Number: 1	**Photographer:** Earle Rother	
Camera: Minolta X-700	**Film:** Kodachrome Slide	**ASA:** 64
Condition of Point Monument and References: Good		
Date: 7/2/1999	**Time:** 2:30 PM	**Weather:** Partly cloudy

VIEW 1	**VIEW 2**	**VIEW 3**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:**
Camera Angle: Horizontal	**Camera Angle:** Horizontal	**Camera Angle:**
Azimuth: 10°	**Azimuth:** 50°	**Azimuth:** °
Lens: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze	**Lens**: **Filter**:
F-stop: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/125	**F-stop**: **Speed**:
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:**
Exposure Number: 21	**Exposure Number:** 22	**Exposure Number:**
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height:	**Camera Height:**	**Camera Height:**
Camera Angle:	**Camera Angle:**	**Camera Angle:**
Azimuth: °	**Azimuth:** °	**Azimuth:** °
Lens: **Filter**:	**Lens**: **Filter**:	**Lens**: **Filter**:
F-stop: **Speed**:	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance:	**Focal Distance:**	**Focal Distance:**
Exposure Number:	**Exposure Number:**	**Exposure Number:**

Retake Number: 2	**Photographer:** Dave Powell	
Camera: Minolta X-700	**Film:** Kodachrome Slide	**ASA:** 64
Condition of Point Monument and References: Good		
Date: 7/7/2000	**Time:** 1:25 PM	**Weather:** Sunny with scattered high clouds

VIEW 1	**VIEW 2**	**VIEW 3**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:**
Camera Angle: Horizontal	**Camera Angle:** Horizontal	**Camera Angle:**
Azimuth: 10°	**Azimuth:** 50°	**Azimuth:** °
Lens: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze	**Lens**: **Filter**:
F-stop: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250	**F-stop**: **Speed**:
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:**
Exposure Number: 10	**Exposure Number:** 11	**Exposure Number:**
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height:	**Camera Height:**	**Camera Height:**
Camera Angle:	**Camera Angle:**	**Camera Angle:**
Azimuth: °	**Azimuth:** °	**Azimuth:** °
Lens: **Filter**:	**Lens**: **Filter**:	**Lens**: **Filter**:
F-stop: **Speed**:	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance:	**Focal Distance:**	**Focal Distance:**
Exposure Number:	**Exposure Number:**	**Exposure Number:**

Appendix 1: Camera Point Record; Retake for CP T-96-18

Point Number: T-98-18	**National Forest:** Umatilla	**Ranger District:** North Fork John Day

Retake Number: 3	**Photographer:** Dave Powell	
Camera: Minolta X-700	**Film:** Kodachrome Slide	**ASA:** 64
Condition of Point Monument and References: Good		
Date: 7/18/2001	**Time:** 1:40 PM	**Weather:** Partly cloudy

VIEW 1	**VIEW 2**	**VIEW 3**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:**
Camera Angle: Horizontal	**Camera Angle:** Horizontal	**Camera Angle:**
Azimuth: 10°	**Azimuth:** 50°	**Azimuth:** °
Lens: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze	**Lens**: **Filter**:
F-stop: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250	**F-stop**: **Speed**:
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:**
Exposure Number: 8	**Exposure Number:** 9	**Exposure Number:**
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height:	**Camera Height:**	**Camera Height:**
Camera Angle:	**Camera Angle:**	**Camera Angle:**
Azimuth: °	**Azimuth:** °	**Azimuth:** °
Lens: **Filter**:	**Lens**: **Filter**:	**Lens**: **Filter**:
F-stop: **Speed**:	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance:	**Focal Distance:**	**Focal Distance:**
Exposure Number:	**Exposure Number:**	**Exposure Number:**

Retake Number: 4	**Photographer:** Dave Powell	
Camera: Minolta X-700	**Film:** Kodachrome Slide	**ASA:** 64
Condition of Point Monument and References: Good		
Date: 7/3/2002	**Time:** 1:00 PM	**Weather:** Clear, sunny

VIEW 1	**VIEW 2**	**VIEW 3**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:**
Camera Angle: Horizontal	**Camera Angle:** Horizontal	**Camera Angle:**
Azimuth: 10°	**Azimuth:** 50°	**Azimuth:** °
Lens: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze	**Lens**: **Filter**:
F-stop: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250	**F-stop**: **Speed**:
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:**
Exposure Number: 23	**Exposure Number:** 24	**Exposure Number:**
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height:	**Camera Height:**	**Camera Height:**
Camera Angle:	**Camera Angle:**	**Camera Angle:**
Azimuth: °	**Azimuth:** °	**Azimuth:** °
Lens: **Filter**:	**Lens**: **Filter**:	**Lens**: **Filter**:
F-stop: **Speed**:	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance:	**Focal Distance:**	**Focal Distance:**
Exposure Number:	**Exposure Number:**	**Exposure Number:**

Appendix 1: Camera Point Record; Retake for CP T-96-18

Point Number: T-98-18	**National Forest:** Umatilla	**Ranger District:** North Fork John Day

Retake Number: 5	**Photographer:** Dave Powell	
Camera: Minolta X-700	**Film:** Kodachrome Slide	**ASA:** 64
Condition of Point Monument and References: Good		
Date: 7/2/2003	**Time:** 11:30 AM	**Weather:** Clear, with high scattered clouds

VIEW 1	**VIEW 2**	**VIEW 3**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:**
Camera Angle: Horizontal	**Camera Angle:** Horizontal	**Camera Angle:**
Azimuth: 10°	**Azimuth:** 50°	**Azimuth:** °
Lens: 28 mm **Filter**: Haze	**Lens**: 28 mm **Filter**: Haze	**Lens**: **Filter**:
F-stop: 22 **Speed**: 1/250	**F-stop**: 22 **Speed**: 1/250	**F-stop**: **Speed**:
Focal Distance: Infinity	**Focal Distance:** Infinity	**Focal Distance:**
Exposure Number: 33	**Exposure Number:** 34	**Exposure Number:**
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height:	**Camera Height:**	**Camera Height:**
Camera Angle:	**Camera Angle:**	**Camera Angle:**
Azimuth: °	**Azimuth:** °	**Azimuth:** °
Lens: **Filter**:	**Lens**: **Filter**:	**Lens**: **Filter**:
F-stop: **Speed**:	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance:	**Focal Distance:**	**Focal Distance:**
Exposure Number:	**Exposure Number:**	**Exposure Number:**

Retake Number: 6	**Photographer:** Dave Powell	
Camera: Canon Rebel XT	**Film:** Digital sensor	**ASA:**
Condition of Point Monument and References: Good		
Date: 7/22/2008	**Time:** 2:00 PM	**Weather:** Overcast

VIEW 1	**VIEW 2**	**VIEW 3**
Camera Height: 6’ standing	**Camera Height:** 6’ standing	**Camera Height:**
Camera Angle: Horizontal	**Camera Angle:** Horizontal	**Camera Angle:**
Azimuth: 10°	**Azimuth:** 50°	**Azimuth:** °
Lens: 28 mm **Filter**:	**Lens**: 28 mm **Filter**:	**Lens**: **Filter**:
F-stop: **Speed**:	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance:	**Focal Distance:**	**Focal Distance:**
File Name: Retake6	**File Name:** Retake6	**File Name:**
VIEW 4	**VIEW 5**	**VIEW 6**
Camera Height:	**Camera Height:**	**Camera Height:**
Camera Angle:	**Camera Angle:**	**Camera Angle:**
Azimuth: °	**Azimuth:** °	**Azimuth:** °
Lens: **Filter**:	**Lens**: **Filter**:	**Lens**: **Filter**:
F-stop: **Speed**:	**F-stop**: **Speed**:	**F-stop**: **Speed**:
Focal Distance:	**Focal Distance:**	**Focal Distance:**
File Name:	**File Name:**	**File Name:**

APPENDIX 2: SILVICULTURE WHITE PAPERS

White papers are internal reports, and they are produced with a consistent formatting and numbering scheme – all papers dealing with Silviculture, for example, are placed in a silviculture series (Silv) and numbered sequentially. Generally, white papers receive only limited review and, in some instances pertaining to highly technical or narrowly focused topics, the papers may receive no technical peer review at all. For papers that receive no review, the viewpoints and perspectives expressed in the paper are those of the author only, and do not necessarily represent agency positions of the Umatilla National Forest or the USDA Forest Service.

Large or important papers, such as two papers discussing active management considerations for dry and moist forests (white papers Silv-4 and Silv-7, respectively), receive extensive review comparable to what would occur for a research station general technical report (but they don't receive blind peer review, a process often used for journal articles).

White papers are designed to address a variety of objectives:

(1) They guide how a methodology, model, or procedure is used by practitioners on the Umatilla National Forest (to ensure consistency from one unit, or project, to another).
(2) Papers are often prepared to address ongoing and recurring needs; some papers have existed for more than 20 years and still receive high use, indicating that the need (or issue) has long standing – an example is white paper #1 describing the Forest's big-tree program, which has operated continuously for 25 years.
(3) Papers are sometimes prepared to address emerging or controversial issues, such as management of moist forests, elk thermal cover, or aspen forest in the Blue Mountains. These papers help establish a foundation of relevant literature, concepts, and principles that continuously evolve as an issue matures, and hence they may experience many iterations through time. [But also note that some papers have not changed since their initial development, in which case they reflect historical concepts or procedures.]
(4) Papers synthesize science viewed as particularly relevant to geographical and management contexts for the Umatilla National Forest. This is considered to be the Forest's self-selected 'best available science' (BAS), realizing that non-agency commenters would generally have a different conception of what constitutes BAS – like beauty, BAS is in the eye of the beholder.
(5) The objective of some papers is to locate and summarize the science germane to a particular topic or issue, including obscure sources such as master's theses or Ph.D. dissertations. In other instances, a paper may be designed to wade through an overwhelming amount of published science (dry-forest management), and then synthesize sources viewed as being most relevant to a local context.
(6) White papers function as a citable literature source for methodologies, models, and procedures used during environmental analysis – by citing a white paper, specialist reports can include less verbiage describing analytical databases, techniques, and so forth, some of which change little (if at all) from one planning effort to another.
(7) White papers are often used to describe how a map, database, or other product was developed. In this situation, the white paper functions as a 'user's guide' for the new product. Ex-

amples include papers dealing with historical products: (a) historical fire extents for the Tucannon watershed (WP Silv-21); (b) an 1880s map developed from General Land Office survey notes (WP Silv-41); and (c) a description of historical mapping sources (24 separate items) available from the Forest's history website (WP Silv-23).

The following papers are available from the Forest's website: Silviculture White Papers

Paper #	Title
1	Big tree program
2	Description of composite vegetation database
3	Range of variation recommendations for dry, moist, and cold forests
4	Active management of Blue Mountains dry forests: Silvicultural considerations
5	Site productivity estimates for upland forest plant associations of Blue and Ochoco Mountains
6	Blue Mountains fire regimes
7	Active management of Blue Mountains moist forests: Silvicultural considerations
8	Keys for identifying forest series and plant associations of Blue and Ochoco Mountains
9	Is elk thermal cover ecologically sustainable?
10	A stage is a stage is a stage…or is it? Successional stages, structural stages, seral stages
11	Blue Mountains vegetation chronology
12	Calculated values of basal area and board-foot timber volume for existing (known) values of canopy cover
13	Created opening, minimum stocking, and reforestation standards from Umatilla National Forest Land and Resource Management Plan
14	Description of EVG-PI database
15	Determining green-tree replacements for snags: A process paper
16	Douglas-fir tussock moth: A briefing paper
17	Fact sheet: Forest Service trust funds
18	Fire regime condition class queries
19	Forest health notes for an Interior Columbia Basin Ecosystem Management Project field trip on July 30, 1998 (handout)
20	Height-diameter equations for tree species of Blue and Wallowa Mountains
21	Historical fires in headwaters portion of Tucannon River watershed
22	Range of variation recommendations for insect and disease susceptibility
23	Historical vegetation mapping
24	How to measure a big tree
25	Important Blue Mountains insects and diseases
26	Is this stand overstocked? An environmental education activity
27	Mechanized timber harvest: Some ecosystem management considerations
28	Common plants of south-central Blue Mountains (Malheur National Forest)
29	Potential natural vegetation of Umatilla National Forest
30	Potential vegetation mapping chronology

Paper #	Title
31	Probability of tree mortality as related to fire-caused crown scorch
32	Review of “Integrated scientific assessment for ecosystem management in the interior Columbia basin, and portions of the Klamath and Great basins” – Forest vegetation
33	Silviculture facts
34	Silvicultural activities: Description and terminology
35	Site potential tree height estimates for Pomeroy and Walla Walla Ranger Districts
36	Stand density protocol for mid-scale assessments
37	Stand density thresholds related to crown-fire susceptibility
38	Umatilla National Forest Land and Resource Management Plan: Forestry direction
39	Updates of maximum stand density index and site index for Blue Mountains variant of Forest Vegetation Simulator
40	Competing vegetation analysis for southern portion of Tower Fire area
41	Using General Land Office survey notes to characterize historical vegetation conditions for Umatilla National Forest
42	Life history traits for common Blue Mountains conifer trees
43	Timber volume reductions associated with green-tree snag replacements
44	Density management field exercise
45	Climate change and carbon sequestration: Vegetation management considerations
46	Knutson-Vandenberg (K-V) program
47	Active management of quaking aspen plant communities in northern Blue Mountains: Regeneration ecology and silvicultural considerations
48	Tower Fire…then and now. Using camera points to monitor postfire recovery
49	How to prepare a silvicultural prescription for uneven-aged management
50	Stand density conditions for Umatilla National Forest: A range of variation analysis
51	Restoration opportunities for upland forest environments of Umatilla National Forest
52	New perspectives in riparian management: Why might we want to consider active management for certain portions of riparian habitat conservation areas?
53	Eastside Screens chronology
54	Using mathematics in forestry: An environmental education activity
55	Silviculture certification: Tips, tools, and trip-ups
56	Vegetation polygon mapping and classification standards: Malheur, Umatilla, and Wallowa-Whitman National Forests
57	State of vegetation databases for Malheur, Umatilla, and Wallowa-Whitman National Forests
58	Seral status for tree species of Blue and Ochoco Mountains

REVISION HISTORY

May 2013: In May 2013, this white paper was initially compiled in draft form. However, it was never posted to the White Papers website (http://www.fs.usda.gov/detail/umatilla/land-management/resourcemanagement/?cid=stelprdb5326230) because the press of ongoing activity prevented its distribution for comment and review.

November 2016: Wholesale revisions were made to the original text, and additional photographs and other graphics were added. In recognition of the 20th anniversary of Tower Fire, this revision was circulated for comment and review, emphasizing its distribution to those current and former Umatilla NF employees who had direct experience with Tower Fire.

November 2019: Text revisions and formatting modifications were made throughout, and new drone photographs of stand development in Tower Fire (provided by John Marshall) were added to a Summary section.