SUSTAINING CULTURAL CONTEXTS IN THE CASCADIA BIOREGION: APPLYING THE SECRETARY OF THE INTERIOR'S STANDARDS FOR HISTORIC PRESERVATION TO PROCESSES

by

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A THESIS

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"Sustaining Cultural Contexts in the Cascadia Bioregion: Applying the Secretary of the Interior's Standards for Historic Preservation to Processes," a thesis prepared by Matthew Andy Meacham in partial fulfillment of the requirements for the Master of Science degree in the Interdisciplinary Studies Program of Historic Preservation. This thesis has been approved and accepted by:

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Cultural resources such as buildings or landscapes degrade, disintegrate, or disappear when the processes which created and sustained them are interrupted or discontinued. These processes may respond to interventions usually intended for artifacts. This hypothesis is tested by applying the Secretary of the Interior's Guidelines for the Treatment of Historic Properties to processes which have created and sustained a resource of accepted cultural significance: The Government Mineral Springs, in the Wind River and Columbia River watersheds. The preservation principles are examined, and processes described. Principles are then matched to appropriate processes. These applications demonstrate that culturally significant artifacts and contexts can be protected by using modifications of existing tools and methodologies to address those processes which created and sustain the artifacts and contexts.

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Brambly, M., M. A. Meacham, R.Quadrel, and S. Selkowitz, Advanced Energy Design and Operations Technology (AEDOT) ASHRAE Conference, Chicago IL 1993

Brown, G. Z., and M. A. Meacham, Predicting Architects Plan Preferences ACSA 1995 (Association of Collegiate Schools of Architecture, Seattle, WA 1995

Brown, G. Z., Don Hubbard, and M. A. Meacham, Evaluation and Calibration of The Building Massing Intelligent Design Tool,The Energy Studies in Buildings Laboratory, University of Oregon, 1994

Brown, G. Z., and M. A. Meacham, Advanced Energy Design and Operations Technologies: A Building Massing Intelligent Design Tool,Baden-Baden, Germany October 1992

Brown, G. Z., and M. A. Meacham, J. Kline, B. Sastry, et al. A Building Massing Intelligent Design Tool - Final Report The Center For Housing Innovation University of Oregon, 1992

Brown, G. Z., Peter A. Miller, and M. A. Meacham, Functional Specification for a Building Massing Intelligent Design Tool The Center For Housing Innovation, University of Oregon, 1992

Brown, G. Z., M. McDonald, and M. Meacham, Computer Use in Industrialized Housing Sales, Design and Manufacturing Building Systems Automation–Integration Symposium University of Wisconsin Madison 1991

Kellett, R., M. Meacham, and G Skalangya Trends in Planning and Regulation, The Center For Housing Innovation University of Oregon, Eugene, Oregon 1990.

Meacham. M. "The CRM Index Database," CRM Cultural Resource Management Information for Parks, Federal Agencies, Indian Tribes, States, Local Governments, and the Private Sector, Ron Greenberg, editor; Peting, Donald, and M. Meacham Co-Editors. U. S. Department of the Interior, National Park Service, Washington D. C., Volume 18, No. 5, 1995.

Peting, Donald, and M. Meacham Co-Editors, CRM Cultural Resource Management Information for Parks, Federal Agencies, Indian Tribes, States, Local Governments, and the Private Sector, Ron Greenberg, editor; U. S. Department of the Interior, National Park Service, Washington D. C., Volume 18, No. 5, 1995.

Peting, Donald, and M. Meacham "The University as Partner," CRM Cultural Resource Management Information for Parks, Federal Agencies, Indian Tribes, States, Local Governments, and the Private Sector, Ron Greenberg, editor; Peting, Donald, and M. Meacham Co-Editors. U. S. Department of the Interior, National Park Service, Washington D. C., Volume 18, No. 5, 1995.

Sauer, L (FAIA), Perla Korosec Serfaty, M. Meacham, et al. Low Cost Housing in Boulder, Colorado The College of Environmental Design, University of Colorado, Boulder 1987.

Sauer, L (FAIA), Perla Korosec Serfaty, M. Meacham, et al. Housing for Single Parent Families Boulder Housing Authority, Boulder, Colorado 1986.

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More than a few others have been instrumental in helping me find and focus upon this subject. Wim Aspeslagh helped me focus upon issues of sustainability in the early stages of the research, and encouraged me to follow my passion despite the difficulty. Robert Melnick consistently provided the opportunity to regain my focus with his insightful observations, as did David Hulse. Kimberly Dunn summed up the thesis in one sentence for me in the early stages. Sue Anne Donaldson encouraged me to acknowledge and explore the comprehensive nature of preservation in both example and conversation.

The author wishes to express sincere appreciation and heartfelt thanks to all of the people noted above. To the extent this thesis is good work, much is owed to them.

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INTRODUCTION

> We always enter the story of a place through the narrative of our individual lives.
>
> - John Elder
> "Inheriting Mt. Tom"
> Orion Spring 1997

> If there is such a thing as being conditioned by climate and geography, and I think there is, it is the West that has conditioned me. It has the forms and lights and colors that I respond to in nature and in art. If there is a western speech, I speak it; if there is a western character or personality, I am some variant of it; if there is a western culture in the small-c, anthropological sense, I have not escaped it. It has to have shaped me. I may even have contributed to it in minor ways, for culture is a pyramid to which each of us brings a stone.
>
> Therefore I ask your indulgence if I sometimes speak in terms of my personal experience, feelings, and values, and put the anecdotal and normative ahead of the statistical, and emphasize personal judgments and trial syntheses rather than the analyses that necessarily predate them. In doing so, I shall be trying to define myself as well as my native region.
>
> - Wallace Stegner
> "Living Dry"
> Where The Bluebird Sings To The Lemonade Springs

Overview

This thesis is directed research which examines the implications of applying the Secretary of the Interiors Standards for Stabilization and

Protection, Preservation, Restoration and Rehabilitation to processes which have created and sustained cultural resources as a possible means of protecting the existence and context of those resources. This chapter is based upon the thesis preparation process, which extended over four academic terms and included the proposal and selection of an appropriate case study area .

The observation which informs this research is that cultural resources such as buildings or landscapes either degrade or disappear when the processes which created and sustained them are interrupted or discontinued. My hypothesis is that those processes which create and sustain cultural resources can be buttressed by the same Secretary of the Interiors Guidelines for Treatment which are usually intended to address culturally significant artifacts such as buildings or landscapes. I am, in effect, proceeding from the assumption that the processes which create and sustain artifacts such as landscapes or buildings are themselves structured entities capable of responding to intervention. The hypothesis has been tested by applying the Secretarys' guidelines to a set of processes which have created and sustained a resource of recognized and accepted cultural significance.

I intended this research to be as holistic as possible given the limited scope of investigation. The investigation has therefore focused upon a resource which includes and integrates many phenomena within a single watershed. The area chosen for this case study area is the Government Mineral Springs area which is located in the vicinity of the Columbia River Gorge, just upstream of Trapper Creek's confluence with the Wind River.

Goals and Format of the Investigation

This thesis was intended to demonstrate that Historic Preservation (HP) can achieve some of its more difficult (and often unstated) goals of conserving cultural resources by addressing the processes which create and sustain those culturally significant resources, instead of focusing merely upon the resources themselves. In particular, the thesis proposal suggested the investigation use conceptual models and tools (The Secretary's Standards and Recommendations) to:

1) describe and relate cultural resources and structures which have been crucial to the perception, settlement and historic character of the Government Mineral Spring area;

2) identify the processes which created and sustained those resources;

3) examine the applicability of appropriate standards of treatment for those processes;

4) identify the implications of applying those conceptual models of preservation and sustainability to those processes as a means of protecting resource integrity;

and thereby demonstrate (or not) that HP can use existing tools and methodologies to protect culturally significant artifacts by addressing those processes which create and sustain those artifacts.

Figure 1. Diagrammatic Location of Case Study Area within the Bioregional Context. The word "bioregion" is adopted from The Rain Forests of Home (page xiv of the Preface), and is defined as "a place where coastal forest and Native cultures developed together, each shaped by the dynamics of change and adaptation over a relatively short period of time and tied by a distinctive set of physical and biological conditions that distinguish it from other regions in the world."

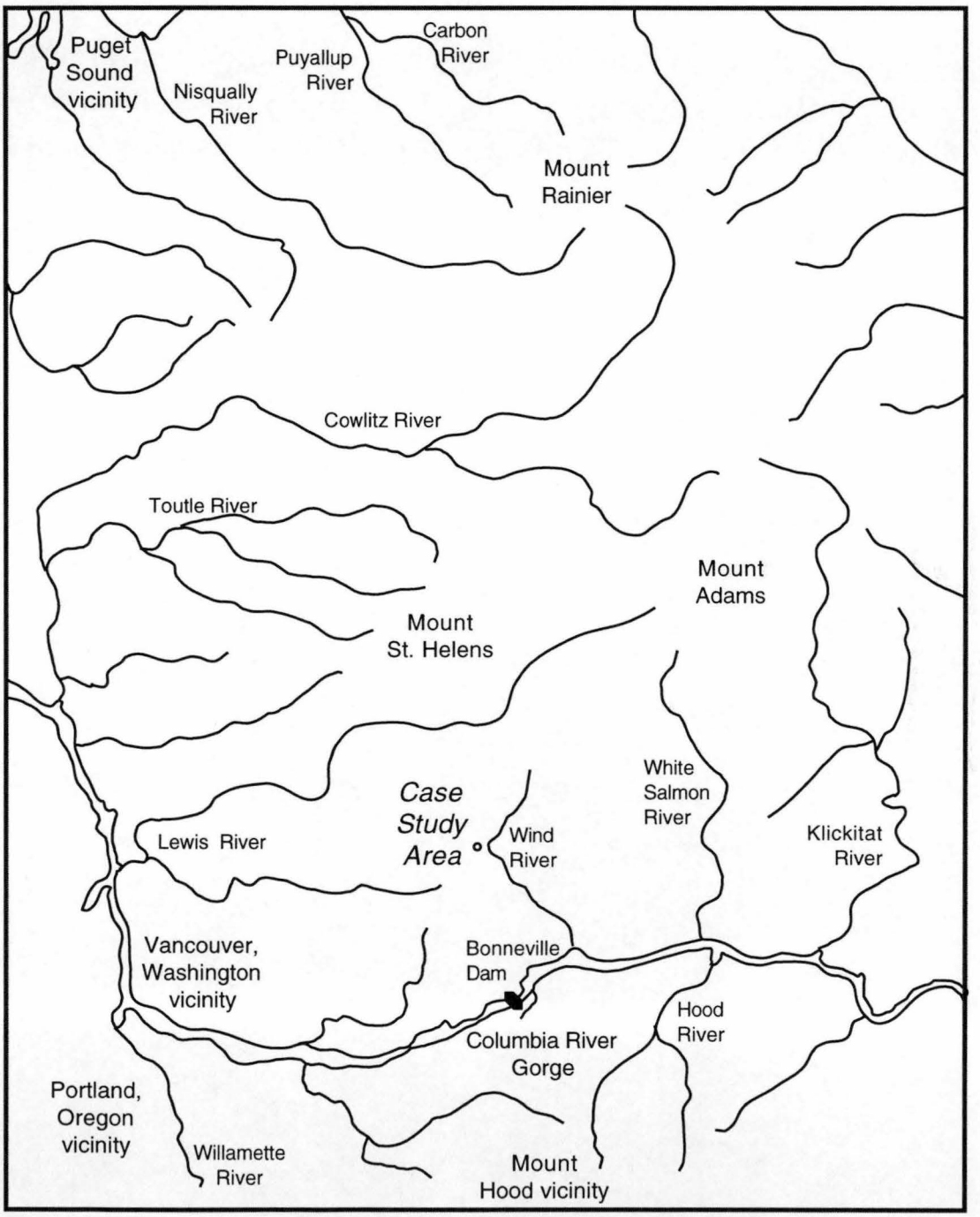

Figure 2. Diagrammatic Location of Case Study Area in the Regional Context.

As the investigation developed, I found it necessary to divide the research into three major tasks. For reasons of clarity and comprehensibility, that research has been summarized in the second, third, and fourth chapters of this thesis. The full text of these separate investigations will be found in Appendices A, B, and C. These appendices contain miscellaneous supportive documentation, much of which is often quoted at length from sources as a means of preserving and disseminating the data contained in the original sources, including manuscripts or unique, singular documents.

Reason for Engaging This Particular Topic

My family has lived in and returned to the Columbia Gorge and the White Salmon River watershed for five generations. I am familiar with the subject area and have feelings of affection, concern, and hope for it. I first became acquainted with the watersheds of the Wind River and White Salmon as a child, when my parents took me there to camp, fish, and gather berries, as my grandparents had done with their children. Over the last few years, I have taken my family to those valleys. I hope that this thesis will assist in protecting those places, enabling the cycle of visitation, appreciation, and stewardship to continue in my family as well as others.

Research in architectural energy efficiency and the development of sustainability has helped me realize that preservation (and design) involve issues of propriety and morality. As a preservationist, designer, and native of the Cascadian bioregion, I would like to help sustain those landscapes and ways of life which make dwelling here a vital and rewarding experience. This

thesis is another step on my own life-long quest and education in how to be a responsible professional, and a good neighbor and steward.

Key Questions and Issues

Context of Investigation

It was clear that the subject area had to be examined and described at several scales or according to several means of definition to provide context for the investigation. The resource which provides the context of the investigation itself was identified and described. The processes which created and sustained that resource were identified and described.

Given the resources, land uses, settlement patterns, land plans, and land tenure in the Government Mineral Springs area, the following questions were developed to guide the initial investigation.

1) What are the cultural resources which support and give meaning to (or provide a context for) dwelling in this portion of the watershed? Which historic features exist (what and where are they), and what is their status? How are those features related to the resource under investigation?

2) What are the processes which have created and sustained the resource under investigation? How are those processes structured - both individually and in relation to each other (natural setting, resource development, settlement patterns, etc.) ?

Investigation

After the resources and associated processes had been identified and placed in context, they were matched to conventional modes of treatment intended to protect or conserve artifacts. It was expected that some resources would not fit into given categories because of their composite and complex nature as dynamic entities For example, the Civilian Conservation Corps (CCC) era structures represent a cultural resource which demonstrate human values systems and behaviors and ways of life which have changed in location and intensity over time; and the springs themselves interact with the land forms, and with the riparian communities along Trapper Creek.

Given that the Secretary's Standards have recently been revised and apply directly to landscapes (as well as singularities like buildings), the following questions were also developed to guide the initial investigation.

3) Which of the Secretary's Standards apply to which features of the processes which created and sustain these cultural resources in the Wind River watershed?

4) Which aspects are not covered by these conventional means of treatment?

Evaluation and Implication of Investigation

As stated before, my hypothesis is that those processes which create and sustain cultural resources can be buttressed by the same Secretary's guidelines for Treatment which are usually intended to address culturally

significant artifacts such as buildings or landscapes. Given that, the following issue was identified as being crucial to evaluating the quality of the investigation.

5) Has the investigation shown that the Secretary's guidelines can be applied to processes as a means of protecting a cultural resource?

Preparation for this Topic

Research initially focused upon becoming acquainted with the literature and finding a suitable place for a case study. The literature search included developing an annotated bibliography (6 credit hours). The case study search included surveying four watersheds for eligibility: two watersheds in the Cascade Mountains of North Central Washington State and two watersheds in the Columbia Gorge (3 credit hours). After surveying both the Methow valley and the Stehekin valley, the Methow was rejected due to its size and complexity, and research was begun in-depth on the Stehekin. That valley was abandoned as a study vehicle as its constraints became more evident: despite many cultural resources and some private ownership, most of the land is in the hands of the National Park Service, and already tightly defined and controlled according to Park Service guidelines. The Wind River valley and the White Salmon River valleys in the Columbia Gorge, by contrast, contained a highly fertile mix of tenure, and growth and development pressures and opportunities, combined with a remarkable absence of conventionally defined cultural and historic resources (i.e., relatively few resources were listed in the National

Register of Historic Places). The White Salmon watershed was initially more interesting because of its climate and settlement patterns. Two terms of investigation revealed that the dispersed resources in the White Salmon River watershed required documentation and provenance to the point of obscuring the investigation (i.e., I had to define and defend the resource before I could investigate the subject). Finally, another term of research proved the Government Mineral Springs was a good candidate for the case study; it included recognized and documented cultural resources, and was confined to a single, readily perceived area.

General Description of the Method Employed

The study area (the Government Mineral Springs) was defined both verbally and graphically. Context was provided by a description of the watershed. Historic and other cultural resources were identified through both secondary and tertiary research methods common to the historic preservation and related disciplines.

Culturally and historically important resources were related to the Secretarys Standards in a series of matrices that organized the core investigation. The cells of the matrices relate potential applications of the standards to the pertinent processes.

The conclusion summarizes the findings of the investigation: the feasibility and implications of applying the preservation Standards to processes which have created and sustained the resource.

Project Scope and Limits

This thesis was not intended to be a planning exercise, nor a landscape architecture exercise. It was intended to serve as a way of investigating the relationship between two sets of processes - those of preservation practice, and those which create and sustain culturally significant resources. It was intended to demonstrate how an understanding of those relationships can allow both of those evolving sets of processes to work not only symbiotically, but synergistically.

Assumptions and Limitations of This Investigation

The course of investigation was based upon several ideas which are either widely accepted or seem reasonable, and which are supportive of the general hypothesis. It also is limited in its scope.

Assumptions

I assumed that artifacts such as buildings, and the organization and development of infrastructure and landscape can be understood and characterized as manifestations of those processes which create and either sustain or do not sustain them. Furthermore, I have assumed that processes, like buildings and landscapes, may be highly structured; and that the structure of a process which creates and sustains artifacts at these scales is open to

investigation, definition and intervention.

I assumed that processes which operate at the spatial and temporal scales required to create and sustain buildings and landscapes may be more pervasive and resilient than the artifacts they create. And that those processes and associated artifacts should be treated most carefully, as any intervention may have unforeseen consequences. In some degree, I am arguing for a recognition and development of cultural literacy.

I assumed that many processes are self organizing and self regulating. This does not mean that the processes are static, or stable. In fact, processes are usually dynamic, by definition; and may deteriorate and become destabilized to the point of destruction under some circumstances (particularly in the presence of feedback loops or other influences that push the system or process further from a state of equilibrium).

I recognized that equilibrium exists at different scales and according to different criteria and definitions. In the case of the GMS, it is clear that the many of the individual redcedar trees in the stand of redcedars are dying - but those events occupy only a certain area and time. Stands of redcedars have come into existence at other places and times in the temperate rain forest which has been developing into its present form only over the last 3 or 4 millennia.[1]

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[1] R. J. Hebda and C. Whitlock, "Environmental History," in The Rain Forests of Home, ed. P. Schoonmaker, B. von Hagen and E.C. Wolf (Washington DC : Island Press, 1997). While the temporal scale of 3-4 millennia seems quite large at first glance, comparing the estimated life of redcedars (800 to 1400 years per individual) to this recent period of forest development makes it clear that the redcedar forest as we understand it, has only existed for 3 to 5 generations.

Nonetheless, it is clear that many disturbance regimes as well as human intervention have impacted the redcedar forest during that time. And it is also clear that the forests have been altered at a very large scale by humans in just the last one hundred fifty years in general, and the last fifty years in particular.

I assumed that the context of any cultural artifact is important to understanding and appreciating that artifact. That preservation or protection of contextual elements and relationships may be as critical to the preservation of the artifact as measures directed at the artifact itself.

I assumed that the context may reasonably include and at times be be critically dependent upon natural and biological elements such as flora and fauna, physiography, geology and climate, especially over time.

I assumed that the process, artifact, and context may be so intertwined as to create an indivisible whole which can only be diminished or even destroyed by the diminution or loss of the process, artifact or context.

I am stating, for the purposes of this investigation, that the context of the GMS is critical to understanding, appreciating, and protecting the GMS. For instance, there may be many stands of redcedars in the temperate rain forest of the north east Pacific; but the stand of redcedars at the GMS is special because of its association with and backdrop for the Springs. The existence of the redcedar grove may be critical not only to the experience of the GMS, but also to its actual existence (due to factors such as riparian soil stabilization, groundwater circulation and uptake, and the like).

I assert that the context of the GMS exists at many different temporal scales, and levels of aggregation or perception (most particularly at many

spatial scales). These contextual elements have analogous structures at different scales. For instance, the location of the GMS in the stand of redcedars along Trapper Creek watershed may be reflected in the relationship of the Trapper Creek watershed and Wilderness in relation to the rest of the Wind River watershed, and the Wind River watershed to other watersheds in the temperate rain forest.

The contextual elements present at the GMS may be seen as singular and unique to the GMS; that is to say, they have a unique configuration because of resource, topography and other geographical factors (e.g., the springs, the hotel site, the site infrastructure, the guard station, and so forth). But the contextual elements may also be seen as representations of classes of extended contextual information. In this light, the guard station may be seen as an endangered remnant of the family of cascadian / rustic structures built by the CCC.

The relative scarcity or abundance of resources and contextual material exists at many scales at the GMS. For instance, there is only one main spring, and one Guard Station. And while there is just one stand of redcedars, there are many individual redcedars in that stand (although the number of mature cedars is decreasing). The relative scarcity or abundance of these resources may be hard to place in context, however.

Landscape elements in the GMS are connected to processes and things at larger spatial scales, and at larger temporal scales than the EuroAmerican association with the GMS might suggest. For example, climate affects flora and fauna, and changes in flora and fauna affect climate (but not necessarily at the same scales). Structures can be seen as part of a larger

context or ecology of building contexts, such as cascadian rustic architecture and other structures built by the CCC. Design of structures can be understood as manifestations of subcultural processes, e.g., the evolutionary understanding of how to build campgrounds at certain places and times.

Finally, I must note that the temperate rain forest landscapes of the Pacific Northwest in general and the Government Mineral Springs in particular are not pristine natural environments, but have been shaped by human activity as well as have shaped human activity.

Limitations of this Investigation

This investigation does not assert nor seek to prove the GMS is a historic or cultural landscape. It does not seek to place the GMS or any of its components on the National Register of Historic Places (NRHP) nor prove that any of the resources in the case study area are eligible for listing on the NRHP. It is solely concerned with the feasibility of preservation resource and context by the application of preservation principles to processes. The GMS is only serving as a case study area, and the GMS landscape and components will not be documented as rigorously as suggested in conventional preservation or cultural resource management literature (especially those sources concerned with documenting the eligibility of a resource for the National Register of Historic Places). However, some the criteria used in determining eligibility, significance, and integrity have been used to identify and select artifacts and associated processes for this investigation.

CHAPTER II

DESCRIPTION AND HISTORY OF THE GOVERNMENT

MINERAL SPRINGS CASE STUDY AREA

> I would like my country to be seen and known with an attentiveness that is schooled and skilled. I would like it to be loved with a minutely particular affection and loyalty. I would like the work in it to be practical and loving and respectful and forbearing. In order for these things to happen, the sciences and the humanities are going to have to come together again in the presence of practical problems of individual places, and of local knowledge and local love in individual people – people who are able to see, know, think, feel and act coherently and well
>
> - Wendell Berry
> "An Argument for Diversity"
> What Are People For?

Narrative and Graphical Description and History

Overview

This chapter is a based upon the investigation into the GMS area history, which is related in full in Appendix A. It summarizes natural history and cultural history in both narrative and graphical formats.

Natural History

The Government Mineral Springs case study area is located along a mountain creek in the temperate rain forest of the north east coast of the Pacific Ocean. At the highest elevations of the watershed, the creek begins with rain and snowmelt; this surface water is supplemented by ground water which circulates through permeous volcanic bedrock, and moves along bedding planes between lava flows. The surface water collects in hollows and avalanche chutes, forming rivulets that join into the headwaters of the creek and its tributaries. The springs themselves are seeps located where the bedding plane located above less permeable rock intersects with the erosional topography.

The highest peaks on the ridges forming the south, west, and north walls of the watershed have been shaped by both volcanic and glacial processes, like most of this northeastern Pacific mountain range which extends from northern California to Alaska. One eroded horn peak is surrounded by cirques dating back to the last era of glaciation, only ten or twelve thousand years prior to the present. Near another peak, a small lake may be either a tarn located in a former cirque basin; or it may be a lake in the caldera of a cinder cone which has become eroded nearly beyond recognition.

At the upper elevations of the watershed, the ground is covered with tundra-like alpine and subalpine plant communities, similar to those found at lower elevations thousands of kilometers further north. The plants above the timberline include berries and other sub alpine flora. At and just below timberline, silver fir and spruce forests cover the upper hillslopes of the

watershed, stabilizing the deepening soil, and retarding the flow of water into the adjacent hollows. Alder, willow, vine maple, and other fast growing plants fill the hollows and avalanche chutes. Grouse, ground squirrels, and marmots inhabit the rocks and woods.

The lower, more protected slopes of the watershed are covered with evergreen trees, mostly Douglas fir trees. While fire and other disturbances have played a great part in forming this temperate rain forest as a whole, this particular watershed has not burned in many centuries, and in many places, stands of hemlock have replaced the firs. The trees are old, and tall. Spotted owl, marten, and other species that prefer this kind of habitat can still be seen here. The channel of the creek becomes larger in these lower elevations, and the rocky bottom is clearly visible through water filtered by the living forest. The lack of sediment keeps the interstitial spaces of the gravel beds open, providing spawning areas for anadromous fish, and habitat for other stream dwellers. Groundwater held by the forest soils continues to flow into the creek during the arid, sunny summers. The riparian zone adjacent to the creek provides shelter for larger mammals, and shades the creek, keeping it cool during hotter weather. Trees in this zone fall to the ground and into the stream, providing habitat and recycling nutrients to the terrestrial ecosystem. The trees also fall into and across the creek, redirecting the flow of the water in the channel and creating diverse habitat such as deep pools and shallow riffles.

As the floor of the watershed flattens out, the creek begins to meander through the floodplain. Changes in channel alignment over time have left side channels which may or may not remain connected to the main channel. During times of high water, these side channels may provide refuge habitat for

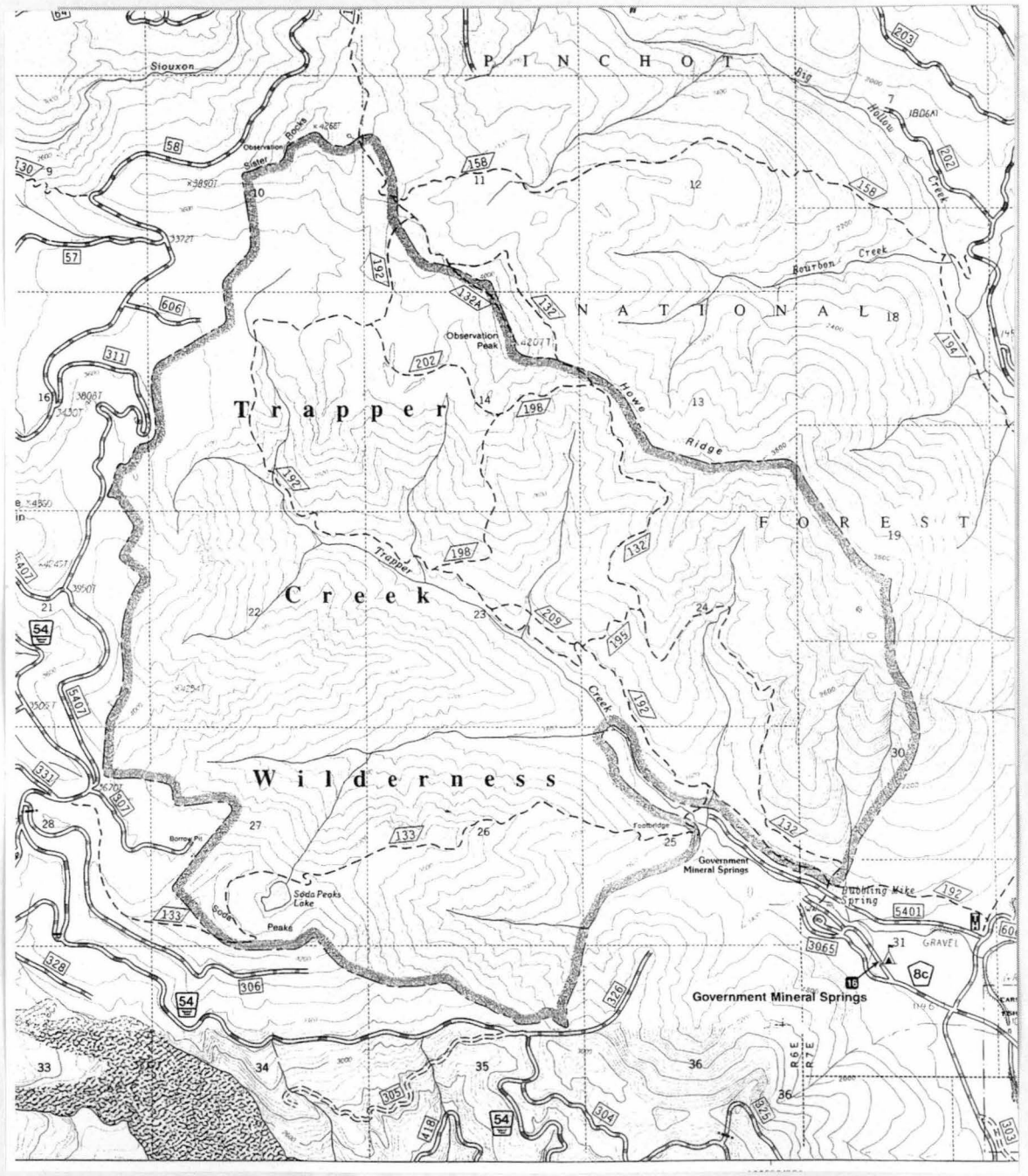

Figure 3. Map of the Trapper Creek Watershed and Case Study Area· Not to scale; reduced 64% from a USDA Forest Service map of the Trapper Creek and Indian Heaven Wilderness Areas.

inhabitants of the stream, or may become the main channel. The riparian zone here includes cottonwoods and other plants that are well suited to growing quickly along a waterway which may change its course every few years or decades. This broader section of the valley also creates ideal conditions for the long lived, moisture dependent redcedar. A mature grove of these cypresses blankets the southern shore of the creek, extending to the foot of the north facing slopes. In this grove, one finds the effervescent mineral springs, and signs of human inhabitation. A little to the east of the cedar grove, the hillsides of the watershed have been cut away by a larger river. At the confluence of creek and river, the longer lived cedars and firs are more rare, and the woods are composed largely of cottonwood and alder.

The presence of of both the redcedar grove and the anadromous fish in this watershed are extremely significant, even if their presence has decreased over the last few human generations. It is worth quoting one author at length regarding the character of the temperate rain forest and the connection between fish and forest, as it is the forest which gives much of the case study area its unique character.

> "At first glance, the most impressive thing about the forest is the sheer size of its trees. Except for a few redwoods and sequoia further south on the Pacific rim, they are the tallest trees on the face of the earth..."
>
> "The overwhelming impact of the rain forest cannot be conveyed by cold statistics, however, for the big trees are only the skeleton upon which the great body of the forest is hung. Research ... has shown that the variety of mosses, lichens and ferns increases at the trees grow taller. ... Typically, the trees of the rain forest carry 20 percent additional weight

> in extravagant living draperies, and some, ... are festooned with huckleberries and wild flowers for more than 100 feet up their trunks.[2]

The author, writing further about the relationship of fish and forest, notes how the forest provides habitat for fish, and the fish nutrients for the forest:

> "In a region that has been reworked by waves of glaciers for the last million years and which otherwise counts leaching rains as its predominant meteorological phenomenon, the wild salmon serve as nature's principal means of returning nutrients from the sea to the land. Through their passionate, seemingly perverse death, the give life not only to their own progeny, but also to a host of predators and other dependent species. They are, in short, an engine of general enrichment, and an important element in the long range stability of the Pacific Coast ecosystem."[3]
>
> "The salmon, too, receive benefits from the forest they helped create. In the winter, when the rains roll off the Pacific, the forest soaks up and retains immense amounts of water, thereby blunting the natural tendency of the ... rivers to flood and destroy the salmon's redds. Later in the year, when there is a danger that lethally warm water will kill the young salmon before they are ready to go to sea, the forest releases its cool store of moisture and shades the rivers and streams from direct sunlight for at least part of the day."[4]

While the presence of forests or trees which were not planned nor planted by humans may not usually be considered to be cultural resources, in the case of the GMS, they are no less a part of the scenery and experience of place than the inclusion of a parterre or pollarded limes in a garden. The fish are also as critical to the sense of place as koi may be to a water feature in a

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[2] Bruce Brown, Mountain in the Clouds - A Search for the Wild Salmon (Seattle: University of Washington Press, 1995), 28 - 29.

[3] Ibid., 231.

[4] Ibid., 29.

garden. Further more, the quotations from Brown (above) make it clear that the trees do not exist in a vacuum, but are integral parts of a system that includes the anadromous fish; and that the fish are integral to the forest. The whole is more than the sum of its parts.

Cultural History

The springs known to us as the Government Mineral Springs are located along a creek in what is now known as the Trapper Creek Wilderness watershed, a tributary of the Wind River, located in the heart of the Cascade Mountains just north of the Columbia River Gorge. The Wind River is the first major northern tributary of the Columbia River east of Bonneville Dam. The temperate rain forest which covers this part of the mountain range is one of the most heavily logged portions of the forest, but the extent of the forest was such that it took nearly four generations to turn the Wind River watershed into mostly second and third growth managed forests. The Trapper Creek watershed and Wilderness are one of the last stands of uncut trees in the Wind River watershed.

Some of the reasons that the Trapper Creek watershed remained uncut, are paradoxically enough, its once remote location; continued human habitation; and the visual and experiential values associated with its recreational status - which in no small way rested upon the presence of the springs. As the Columbia Gorge and tributary streams became more settled by EuroAmericans between one hundred and one hundred fifty years ago, the trees closer to the bigger river were easier to extract and utilize.

But even though the Trapper Creek area forest was not cut at that time, it was accessible, and was used for both commercial and recreational activities. Sheep were driven up trails to the high meadows in the summer time, and visitors to the springs would also hike or ride on horseback to the alpine and subalpine areas.[5] The U.S. Forest Service,[6] which controls most of the Wind River watershed, encouraged inhabitation and use by leasing summer cottage sites near the Springs; by granting a special use permit to construct and run a hotel at the Springs; and by building a campground and other recreational structures in the redcedar grove. By the time logging had reached the Trapper Creek area, the visual and recreational values were well enough established to justify passing it by.

By the middle of this century, qualities associated with wilderness, environment, and ecosystem were becoming valued. The Trapper Creek watershed was recognized and proclaimed a wilderness area, in part because of it roadless nature, but also for its relative lack of human impact. But in the area immediately adjacent to the Springs, the hotel had been destroyed by fire, and the cedars had begun to die and fall. The campground was subsequently closed, and the structures associated with the development of the springs began to be hidden and reclaimed by the forest and the stream.

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[5] "History of the Government Mineral Springs" MS in USDA Forest Service file on the Government Mineral Springs, Wind River Ranger District, Carson, Washington.

[6] Original name; now the USDA (United States Department of Agriculture) Forest Service.

Figure 4. Photograph of the Government Mineral Springs Hotel. Photograph copied from a print in the Government Mineral Springs file, USDA Forest Service office, Wind River Ranger District archive. Photograph is undated, but appears to be circa late 1920s or early 1930s.

Implications of the Description and History

The cultural significance of the GMS area rests upon many physical manifestations of interlocking and interdependent processes which exist at a wide range of spatial and temporal scales. Of primary importance are those which created and sustain the Springs themselves - the presence of sufficient

precipitation, of intact bedding planes along which ground water circulates, and the erosion which exposed the ground water to the surface. From a more conventional standpoint, the setting and development of the GMS embody much significance. The setting of the springs within a mature redcedar grove along the relatively gentle topography and attractions of a fluvial riparian zone, in relatively close proximity to an urban area gave the GMS potential for conservative development. The social and economic processes which made "taking the cure" at springs or spas, and the development of resort hotels and recreational campgrounds in places of natural scenic values also coincided with the emergence of a middle class having both leisure time and financial resources to go to those places. Social and political processes created the CCC, which built many rustic Cascadian style structures throughout the American Pacific Northwest, including many structures at the GMS.

Figure 5. Site Map of the Government Mineral Springs Case Study Area. Not to scale; map is reduction of a copy of a USFS map ca.1955 entitled GOV'T. MINERAL SPG'S Summer Home Tracts. Notes indicate original scale was 1"=200' and based on surveys dated 1919, and 1949. Original copy (also not to scale) located in Wind River District office of the USDA Forest Service. Used by permission.

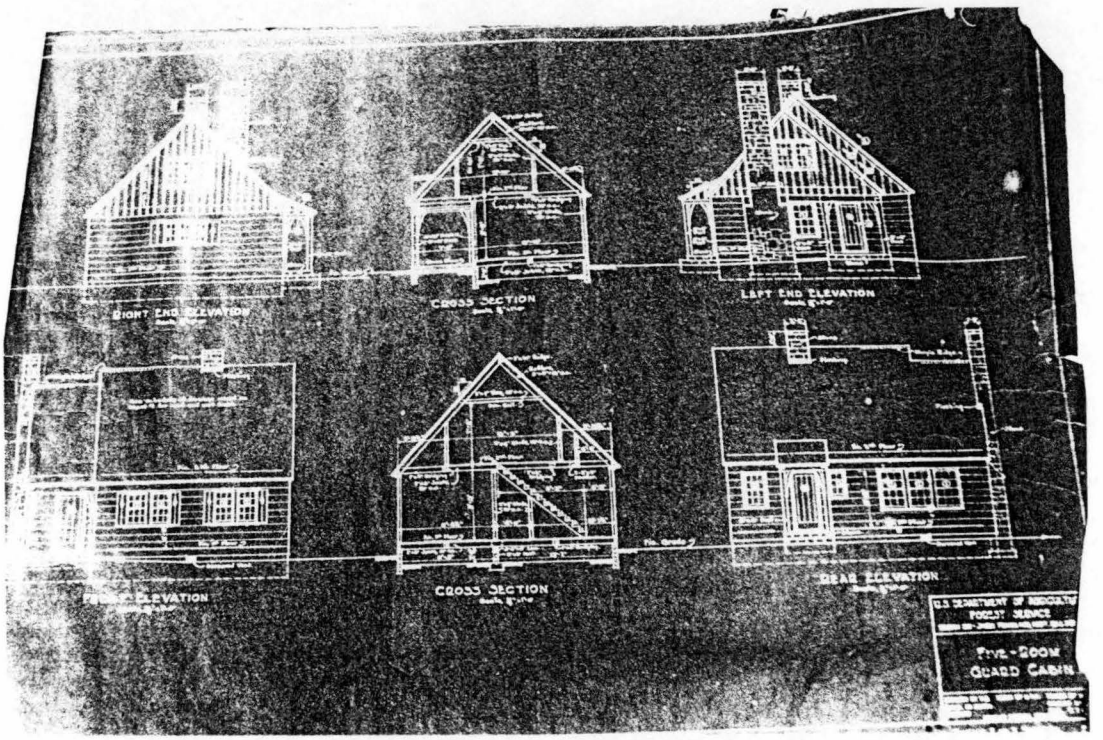

Figure 6. Photograph of Government Mineral Springs Guard Station Blueprints (Elevations). Original blueprint located in the Government Mineral Springs file in the office archives of the Wind River Ranger District (USDA Forest Service), Carson (Stabler vicinity) Washington. Photographed November 1995 by the author.

CHAPTER III

HISTORIC PRESERVATION PRINCIPLES, STANDARDS, AND GUIDELINES WHICH MAY APPLY TO PROCESSES

Overview

As noted elsewhere, the observation which informs this thesis is that cultural resources such as buildings or landscapes either degrade or disappear when the processes which created and sustained them are interrupted or discontinued. The hypothesis is that those processes which create and sustain cultural resources can be buttressed by the same Secretary of the Interior's Treatment Standards, which are usually intended to address culturally significant artifacts such as buildings or landscapes. I am, in effect, proceeding from the assumption that the processes which create and sustain artifacts such as landscapes or buildings are themselves structured entities capable of responding to intervention.

One clearly needs to have an explicit understanding of the implications of any given principle or standard in order to apply the principle or standard to any given process. Most preservation principles are intended to apply to material objects, however, and their applicability to processes and other intangibles has not yet been fully explored (except in the examples of certain landscape scale

processes).[7] This chapter will summarize research into the implications which preservation principles may hold for processes.

Preservation Principles

Principles guiding the preservation of cultural resources flow from a values system that proceeds from a moral impulse.[8] This values system may be characterized by the intent to preserve that which is culturally significant, and to do no harm in the practice of the preservation effort. Individual preservation principles are clearly based on these two fundamental notions. Consequently, they will be examined before proceeding to an examination of individual preservation principles.

Basic Preservation Principles

The determination of what is culturally significant requires some means of making decisions and assigning priorities to what is to be recorded and or

[7] Linda Flint McClelland, J.T. Keller ASLA, G.P. Keller, and R. Z. Melnick, ASLA, National Register Bulletin No.30Guidelines for Evaluating and Documenting Rural Historic Districts, (Washington D.C., U.S. Department of the Interior). NRB 30 recognizes four processes which operate at the scale of landscape, but those definitions seem to apply more to the descriptions and relative relationships of material objects, especially those resulting from human activity. See also Chapter 3 and Appendix B.

[8] Joseph Sax, Mountains Without Handrails, (Ann Arbor, University of Michigan Press : 1980).

preserved. The related concepts of *significance* and *integrity* are guiding lights, enabling the preservation movement to ask "what is historically significant," and "does this significant thing retain enough integrity (i.e., how far has it degraded) to adequately convey its significance and justify the effort of preservation." Once these issues have been clarified, one can develop a plan for doing preservation.

Much of what we do (our actions) as preservationists is intended to protect or restore the integrity of some thing, so that it significance can be recognized, and its continued existence protected. The processes of determining significance and assessing integrity are, of course, fraught with pragmatic and political peril. While people in general seem to value most what they know best, much of the preservation literature has been increasingly cognizant of other cultures and their values systems. But at the most fundamental level, I think what we are trying to do is to protect or restore the capability of the significant thing to do its significant function as a whole. It means doing what is necessary to restore integrity, to restore wholeness.

But our action must also be formulated with respect for the limitations of our values systems and possible current lack of adequate information. The notion of *reversibility* also informs our actions by acknowledging our interventions may be harmful in ways that we may not anticipate, comprehend, or perceive. The concept and goal of reversibility reminds us that our present interventions, though well intentioned, may be found inappropriate at a later date, and should therefore be reversible.

Treatment Modalities and Preservation Standards

The National Park Service document number 28 (NPS 28)[9] recognizes four modes of treatment which may be applied to historic properties. These treatment modalities have become codified, and each includes several standards which may be appropriate and should be considered when utilizing a given mode of treatment. The modes and standards include:

Preservation	(with 8 standards to consider)
Rehabilitation	(with 10 standards to consider)
Restoration	(with 10 standards to consider)
Reconstruction	(with 6 standards to consider)

These treatments are distinct, yet interrelated. Any given historic property could include interventions which defer to more than one mode of treatment, and are guided by any of the standard points of consideration.

Treatment Modalities and Processes

The four treatment modalities - preservation, rehabilitation, restoration, and reconstruction - differ in that they are intended to guide the preservation or conservation of cultural resources according to the historic significance and

[9] U.S Department of the Interior, National Park Service, NPS 28 - Cultural Resource Management Guidelines, Release 4, July 1994 (Washington D.C. 1994). See Appendix C, especially pages 236-238.

level of integrity possessed by the resource at issue. And as noted above, different treatment modalities may apply to different parts of the same project: one part may require preservation, and another part may require restoration.

For the purposes of this investigation, the feasibility of applying any particular modality to a given process is may also rest upon the integrity and significance of the process or part(s) of the process in question. Likewise, the choice of appropriate treatment modality will depend upon the attributes of the individual process or process element.

Preservation Standards and Processes

The thirty four individual preservation standards that comprise the four treatment modalities have been examined at some length as a separate part of this thesis (see Appendix B). In general, the standards have been developed to have broad applicability to a wide range of situations and actions intended to protect culturally significant resources.

The standards are clearly intended to apply to material objects, for the most part. The applicability of these standards to processes may seem impossible or nonsensical. However, an examination of their fundamental intent indicates ways in which they may be modified to apply to processes. For instance, the seventh standard for the Rehabilitation treatment modality (which is also the eighth standard of Restoration) states that:

> Chemical or physical treatments, if appropriate, shall be undertaken using the gentlest means possible. Treatments that cause damage to historic materials shall not be used.[10]

The intent of this standard is to protect the integrity of the historic fabric or material. Sand blasting, for instance, may remove not only accumulations of undesirable grime or paint, but may also harm the substrate upon which the upper layers are deposited. In effect, one is cautioned to avoid unintended collateral damage, and to even question the propriety of actions that removes layers or elements that have accumulated over time.

The issue for this investigation is therefore how does one *treat* a process. In the example quoted above, the word treatment clearly refers to an action which changes the nature of the object (hopefully for the better). Processes are not objects; but the nature of a process may be changed by *interventions* which act upon the part(s) of a process or upon the process as a whole . As may be applied to processes, the fundamental notion from which this standard is derived could be stated as follows:

> Interventions to historic processes, if appropriate, shall be undertaken using extreme caution. Interventions that damage historic processes shall not be used.[11]

One of the key elements of this emendation is the phrase "if appropriate." This revised standard should not be interpreted as prohibiting interventions to

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[10] NPS 28, 237-238.

[11] This emendation of the original standard typifies how preservation standards may be modified to better apply to processes. See Appendix B for more information on the applicability of standards to processes.

processes, but considered and chosen carefully when necessary. And of course, the principles of "do no harm" and "reversibility" still apply.

Revision of Standards for Application to Processes

For the purposes of this investigation, I have assumed that the four treatment modalities may be appropriately applied to processes without deletion or addition; modification may be necessary, however. I have not investigated nor propose other modes which might also be appropriately applied to processes. The individual standards, however, clearly may require modification in order to apply more appropriately to processes. In this section, I will present one such possible set of modified standards. While many of the standards repeat for different modes of treatment (and therefore have different implications), in this chapter the fundamental standards are presented and a revision suggested.

Standard One

Standard one mandates continuity of historic use, and /or protection until an appropriate action can be taken. As applied to processes, we might expect a similar course of action (or non action).

Standard Two

Standard two cautions against removing historic features or elements. As applied to processes, care should be exercised in removing elements which may be critical components of processes.

Standard Three

Standard three asserts that changes over time constitute an historic record. Processes change nature over time as well as over distance; the changes should be identified and documented as a record of significance.

Standard Four

Standard four notes that changes that have acquired significance should be protected. However, in restoration, even historic changes may be removed if the objective of restoration has more value or a higher degree of integrity than the change.

Standard Five

Standard five notes that distinctive or distinguishing features should be retained and protected. This should hold true for features of processes as well.

Standard Six

Standard six advocates evaluation of integrity or condition, and if necessary replacement in kind. Components of processes may also need to be "replaced in kind."

Standard Seven

From the previous page Interventions to historic processes, if appropriate, shall be undertaken using extreme caution. Interventions that damage historic processes shall not be used.

Standard Eight

Standard eight applies to archeological resources. One way to view archeological resources is that they are non-functioning remnants of historic systems or processes which can tell us about those historic entities. We might look at process remnants in a similar manner.

Standard Nine

Standard nine notes that new stuff shall not harm old stuff. We might consider the "ecological niche" of processes and process components.

Standard Ten

Standard ten mandates removability - an argument against irreversible interventions which could affect the significance or integrity of processes.

CHAPTER IV

IDENTIFICATION AND DESCRIPTION OF PROCESSES

Overview

As noted elsewhere, the observation which informs this thesis is that cultural resources such as buildings or landscapes either degrade or disappear when the processes which created and sustained them are interrupted or discontinued. The hypothesis is that those processes which create and sustain cultural resources can be buttressed by accepted preservation treatment standards (or some variant appropriate to processes).

One clearly needs to have an explicit understanding and description of what a given process includes in order to describe that process with both clarity and accuracy. The components or attributes of environmental processes include primarily (but not exclusively) those which operate at the scale of the landscape (discussed in more detail in Appendix C).

The critical tasks at this stage of this investigation, then, derive from: 1) the need to define what is meant by the word process; and 2), the need to identify and describe the processes operating at the GMS.

Literature Search for Process Descriptions

The initial search for the definition and description of processes focused upon traditional sources of preservation knowledge. After some limitations of that subject area became known, the search expanded to include the literature of landscape ecology. Much of this literature dealt with subject matter too specialized to apply to this thesis, but many articles initially discussed the fundamental notions upon which the specialized knowledge rested. Those ideas helped establish the parameters for further investigation. In addition, the readings in ecology lead to a review of the general systems theory literature which buttressed ideas of both ecology and preservation. Again, much of the subject matter was too specialized to apply to this thesis, but the fundamental ideas were germane. Finally, a reference to the oceanographer Henry Stommel led to a method of diagraming relationships between phenomena at many temporal and spatial scales simultaneously.

General Process Definitions

The most accessible definition of process comes from dictionaries. In this setting, process is presented as a noun meaning:

1) "course of action or proceeding, especially as a series of stages."
2) "progress or course of action (in process of construction)."
3) "natural evolution or change (process of growing old)."

The word process may also be used as a transitive verb, as in "to handle or deal with by a particular process" or to "treat (food, especially to prevent

decay)." Synonyms of the word process include: "operation, system, method, approach" and "take care of, manage, look after; prepare, make or get ready; answer."[12]

It is clear that the definitions and concepts related to "process" include systematic or structured relationships, and actions and incorporation of feedback. The systems theorists have also investigated these notions of structure and feedback. While much of that literature is too specialized to use, some of the ideas are briefly presented in Appendix C.

Processes in the Historic Preservation Literature

Cultural and historic processes are noted in the Secretary of the Interiors Standards for Historic Preservation. The National Register [of Historic Places] Bulletin No. 30 (NRB 30) recognizes four types of processes which affect historic properties.[13] The processes are a subset of a larger group of characteristics which define identify a cultural or historic landscape. The set of characteristics include:

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[12] The Oxford Desk Dictionary and Thesaurus (American Edition, 1997)., s.v. "process."

[13] Patricia L. Parker and Thomas F. King, National Register Bulletin 30 - Guidelines for Evaluating and Documenting Traditional Cultural Properties, U.S. Department of the Interior, Washington D.C., 3-5. Please see Appendix C for a more comprehensive discussion of these four landscape processes.

Four Processes	and	Seven Components
Land Uses and Activities		Circulation Networks
Patterns of Spatial Organization		Boundary Demarcations
Response to Natural Environment		Vegetation Related to Land Use
Cultural Traditions		Buildings, Structures and Objects
		Clusters
		Archeological Sites
		Small Scale Elements

Note that all characteristics need not be present to define a landscape, nor will they necessarily exist at all scales. Further more, the seven landscape components themselves may have both physical and intangible attributes, and be manifestations of their own causal processes; but at the scale of the landscape, it is the combination of object or landscape component and process that constitute a whole.

The issue for this investigation, then, is whether the processes as defined are both general enough and particular enough to represent the wide range of things which may fit within the domain of historic preservation practice. The processes certainly apply to landscapes, but may also apply to a building, a bridge, a statue, or other historic and cultural resources. For instance, a building or complex of building may be representative of a kind of land use; exhibit a pattern of spatial organization, and response to the environment; and also embody cultural traditions - of construction, or even of other processes. Note that both the Secretary's Standards and the cultural / historic processes can therefore apply to artifacts such as buildings or landscapes at many scales, and that interventions based on the Standards may also be applied at many scales. Application and intervention of any one principle need not be exclusive to any

scale, but may occur concurrently at any of several scales as well.

The four processes described in NRB 30 deserve some in depth review. The following paragraphs are taken directly from the Bulletin (pages 3-5)..

> Land Uses and Activities:
> Land uses are the major human forces that shape and organize rural communities. Human activities, such as farming, mining, ranching, recreation, social events, commerce, or industry, have left an imprint on the landscape. An examination of changing and continuing land uses may lead to a general understanding of how people have interacted with their environment and provide clues about the kinds of physical features and historic properties that should be present.
>
> Patterns of Spatial Organization:
> The organization of land on a large scale depends on the relationship among major physical components, predominant landforms, and natural features. Politics, economics, and technology, as well as the natural environment, have influenced the organization of communities by determining settlement patterns, proximity to markets, and the availability of transportation.
>
> Response to the Natural Environment:
> Major natural features, such as mountains, prairies, rivers, lakes, forests, and grasslands, influenced both the location and organization of rural communities Climate, similarly, influenced the siting of buildings, construction materials, and the location of clusters of buildings and structures. Traditions in land use, construction methods, and social customs commonly evolved as people responded to the physiography and ecological systems of the area where they settled.
>
> Cultural Traditions:
> Cultural traditions affect the ways that land is used, occupied, and shaped. Religious beliefs, social customs, ethnic identity, and trades and skills may be evident today in both physical features and uses of the land. Ethnic customs, predating the origins of a community, were often transmitted by early settlers and perpetuated by successive generations. Others originated during a community's early development and evolution. Cultural groups have interacted with the natural environment, manipulating and perhaps altering it, and sometimes modifying their

traditions in response to it.

Despite the level of specificity within these definitions,[14] the processes are still described only in general terms, depending on individual observation, insight, and investigation (expertise) to determine which processes are in fact in operation at a given site. And by both implication and extension, that expertise is also relied upon to understand and ascertain which processes and characteristics are critical to the experience or description of that given site.

The processes which operate at the landscape scale of the GMS still require identification, and the issue of how one perceives, defines, and selects a process for subsequent intervention is critical. One conservation theorist has asserted that what is worthy of preservation is nothing less than the whole - that is, the object and its context, in their historic place, and integrally located within a temporal continuum.[15] This notion is strikingly similar to theoretical and empirical frames of reference used by ecologists and systems theorists.

Processes Definitions in Other Disciplines

The literature of both the ecologist and the systems theorist deal explicitly with issues and phenomena of significance at diverse spatial and temporal

[14] Parker, NRB 30, 3-5.

[15] Paul Philipott, "Historic Preservation: Philosophy, Criteria, Guidelines I," in Historical and Philosophical Issues in the Conservation of Cultural Heritage, ed. N.S Price, M.K. Talley, Jr., and A.M. Vaccaro, Readings in Conservation (Los Angeles, The Getty Conservation Institute: 1997), 270 - 273.

scales. Systems theorists note that systems are wholes, and wholes are not reducible (even though they may include components that are wholes themselves).[16] Design process theorists and practitioners recognize that many processes include various domains of sub processes (lower in the hierarchy) associated with any given processes.[17] The ecologists and systems theorists note that processes at one level in a hierarchy are bounded by phenomena at levels both higher and lower in the hierarchy. The preservation literature and these other sources note that some components may be intangible. But perhaps the most cogent direction comes from Bateson: that the most critical kind of information, and the simplest system of phenomena and context, is based upon "a difference that makes a difference."[18]

Processes at the Government Mineral Springs Case Study Area

In this case study area there are indeed several differences that make a difference. Compared to all other springs in this area of the Cascade mountain

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[16] Gregory Bateson, "Form, Substance, and Difference" in Steps Toward an Ecology of Mind, (New York, Ballantine Books: 1973), 451-53. See also Gail Hanson, General Systems Theory Beginning With Wholes, (Toronto, Taylor and Francis: 1995), Chapters 1 and 2.

[17] G. Z. Brown and Margot McDonald, Activity Decomposition for the Building Design Process and Conceptual Design Subdomain Model, (Eugene, University of Oregon Department of Architecture: 1990).

[18] Bateson, 453.

range, only this set of spring was developed in this way. Compared to all other Cascadian or rustic style architecture, the Guard Station cabin at the GMS is not particularly impressive; but in itself, and in its context it is noteworthy. The redcedar grove and its location in its watershed is not particularly unique (despite loss of other similar low elevation groves due to logging or other events) - but coupled with its context in space and time, it is noteworthy and unique. The creek and the denizens of the riparian and aquatic habitats are also not particularly unique at first glance; but as noted by Bruce Brown, the very nature of the stream is particularly important to the anadromous fish which return to it not only for spawning, but to return nutrients that nourish the forest ecosystem[19] and thereby help maintain the context of the GMS. The infrastructural items (the water and road system, for example) at the GMS are in the generic sense, not unique: there are other water distribution and vehicular access systems in the forest. But the actual layout - the choice of materials, dimensions and orientation - are unique to the specific topography and resources of this particular place: unlike the Guard Station cabin, the infrastructure could not be moved to another site - it is site specific. The site of the hotel and it's associated improvements (the ponds, for instance), are unique to this place, and to their time.

All of these components of the GMS are different from similar components at other sites in a way that makes a difference. They are defined by their unique context, and in turn help define that unique context. In the view of the systems theorists, this intertwined relationship of two or more things has

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[19] Brown, Mountain in the Clouds, 62-3.

defined a whole in which the whole is more than the sum of its parts.[20]

Finally, we should recognize that the seven physical components of landscape (circulation networks, boundary demarcations, vegetation related to land use, buildings, structures and objects, clusters, archeological sites, and small scale elements) can also function as pointers toward particular processes. For instance, buildings may reflect both cultural traditions and response to natural environment.

Process Identification and Selection

The historic development of the springs, the residential inholdings, and the CCC era structures are the most obvious components (and the culturally derived differences that make a difference) which enable the identification and selection of processes operating in the landscape of the case study area. Specifically, we can lists some of the significant processes (both historic and contemporary) at the GMS as including:

Land Uses and Activities
1. Going to the Springs.
2. Day Hiking, fishing, and other recreational activities
3. Dwelling - including staying at the hotel, in cabins, and camping.
4. Resource Conservation and Use (fishing, berry picking, etc.).

Patterns of Spatial Organization
5. Layout of roads, campsites and leased lots (inholdings)

Response to the Natural Environment
6. Design standards for roads, buildings, campsites, etc.
7. Natural resource management (and specifically conservation)

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[20] Hanson, 22.

Cultural Traditions
8. Building Tradition
9. Conservation and historic preservation (structures on National Forest land are subject to review and protection under Section 106 and Section 110 of the National Historic Preservation Act).

The nine processes listed above are not definitively described simply by listing them, however. Any process may, by definition, be found within a spectrum of related processes. It may include other processes at different (smaller) scales, and be part of larger scale processes. For instance, the patterns of spatial organization manifest in the alignment of the campground roads and campsites derives from a process that recognized and embodied a particular set of values. The design and construction of the Guard Station by the CCC takes place within not only a particular place and time, but also within a related set of social and political processes and values systems.

The process hierarchies presented in Tables 1, 2, and 3 map the processes according to conventional classifications of landscape scale processes and by scale. The scales may be temporal or spatial, or they may be organizational. The processes noted in Tables 1, and 2, however, still do not include some of the most significant elements of the case study area, while the processes listed in Table 3 begin to hint at them. The springs themselves, the red cedar grove, and the stream and its inhabitants are not specifically included in the first three tables, although they are integral parts of the whole.

TABLE 1.--GMS Guard Station Process Hierarchy

Lsc. Process	*SubProcess.1*	*SubProcess.2*	*SubProcess.3*	*SubProcess.4*	*SubProcess.5*
Response to Natural Environment					
	Commission and Design Process				
		Stylistic Choice			
		Materials of Construction Choice			
		Site Development			
	Construction Process				
		Builder / Crew Choice			
		Materials Acquisition			
		Materials Transformation			
		Site Protection			
		Assembly			
		Finish			
Land Use and Activities					
	USFS Service Provision				
		Organization Mission			
			Mission Related Requirements		
				Resource Stewardship	
				Public Service	
			Mission Related Tasks		
				Lodging USFS Personnel	
				Site Stewardship Activities	
				Public Service Activities	

TABLE 2. GMS Campground Process Hierarchy

Lsc. Process	*SubProcess.1*	*SubProcess.2*	*SubProcess.3*	*SubProcess.4*	*SubProcess.5*
Response to Natural Environment					
	Commission and Design Process				
		Site Development			
			Infrastructural Alignment Choices		
		Materials of Construction Choice			
			Local Materials		
	Construction Process				
		Builder / Crew Choice (CCC)			
		Materials Acquisition			
		Materials Transformation			
			Craft application (rustic masonry and wood)		
		Site Repair and Protection			
		Finish			
Land Use and Activities					
	USFS Service Provision				
		Organization Mission			
			Mission Related Requirements		
				Resource Stewardship	
				Public Service	
					Camping
			Mission Related Tasks		
				Camping and Assoc. Facilities	
					Camping
					Recreation
					Springs

TABLE 3. Other Process Hierarchies

Lsc. Process	*SubProcess.1*	*SubProcess.2*	*SubProcess.3*	*SubProcess.4*	*SubProcess.5*
Patterns of Spatial Organization					
	Litho-Topo Units				
		Process Subdomains (watershed features)			
			Hollows		
			Hillslopes		
			--		
			--		
	Site Organization				
		Infrastructural alignment and placement			
			Road alignment		
			Service system placement processes		
				Water diversion systems	
				Water distribution systems	
				Other service distribution	
			Vacation cabin lot allocation		
				Lot configuration	
				Design standards	
				Maintenance standards	
				Review standards	
Cultural Traditions					
	Resource appreciation (more interactive)				
		Balneotherapy ("taking the cure / drinking the water")			
		Fishing			
		Hiking, riding			
		Berry picking			
	Resource appreciation (less interactive)				
		Dwelling (vacation cabins)			
		Dwelling (site stewards)			
		Dwelling (camping)			
	Social activities				
		Family / extended family, and friends gathering			
	Historic / cultural appreciation				
		Interpreted activities			
		Non-interpreted activities			

Just as the *physical* components of the cultural landscape point toward (or can be mapped into) processes, certain natural features point toward

processes as well. The list of processes might therefore be modified by inclusion of natural (i.e., non - human initiated) processes in order to protect the context of the acknowledged cultural resources.

TABLE 4. GMS Natural Processes Hierarchy

Lsc. Process	*SubProcess.1*	*SubProcess.2*	*SubProcess.3*	*SubProcess.4*	*SubProcess.5*
Mineral Springs					
	Geologic Process				
		Intact lava bedding plane			
	Climate Processes				
		Wind, Rain			
	Hydrological Cycle				
		Groundwater Presence			
		Surface Water Presence			
			Erosion / Retention processes		
			Stream erosion / migration		
Red Cedar Grove					
	Topographical Suitability				
		Slope			
		Exposure			
	Climatalogical Suitability				
		Moisture			
		Temperature			
	Ground and surface water				
	Nutrient availability				
		Nutrient cycling from anadromous fish			
Anadromous Fish					
	Biological Processes				
	Presence of Habitable Stream				
		Clear water source			
			Forest filtering		
			Forest retention of water		
			Forest release of water		
		Shade			
			Presence of big trees		
			Healthy riparian communities		
		Stream physiography			
			Woody debris		
			Intact riparian zone		

In Table 4, the inclusion of natural components and processes has captured some of the significant portions of the case study area and its context. As in the first three tables, the processes are organized hierarchically, according to scale and process domains.

Natural Processes and the Problem of Intangibles

The inclusion of natural resources and other processes in Tables 3 and 4 raises the issue of protecting intangibles. The authors of the National Register Bulletin Number 38 (NRB 38) have noted that some cultural resources may be entirely intangible in nature, that is, they have no property referents. These intangible cultural resources seem to have significance and value not because of human intervention, but due to human values systems. Most preservation literature, especially those sources relating to listing or determining eligibility for listing on the National Register of Historic Places, focus upon tangible things like buildings or landscapes. But the authors of NRB 38 assert that intangible resources should be "fully considered in planning and decision making... . Historic properties represent only some aspects of culture, and many other aspects, not necessarily reflected in properties as such, may be of vital importance..." The authors of NRB 38 go on to say:

> ...the National Register is not the appropriate vehicle for recognizing cultural values that are purely intangible in nature, nor is there legal authority to address them under Section 106 [of the National Historic Preservation Act] unless they are somehow related to a historic property. The National Register lists, and Section 106 requires review of effects on, tangible cultural resources–that is, historic properties. However, the attributes that give such properties significance, such as their association

> with historical events, often are intangible in nature. Such attributes cannot be ignored in evaluating and managing historic properties; properties and their intangible attributes must be considered together."[21]

The similarity between the assertion by Philipott[22] that the object of conservation is the whole; the notion of process and component being inextricably linked; and the observation within this passage from NRB 38 that "properties and their intangible attributes must be considered together" is striking, and should not be overlooked. It seems clear that while a process may not be eligible for listing on the Register, it is crucial that it be recognized for contributing to the sense of place, time, or significance. In fact, we will see that some of the processes significant to the GMS can be described as intangible. Other processes that lend significance to the GMS are so wide spread and pervasive that the GMS is only one aspect of their complete range of influence, one place among many; but no less significant despite being only one part of a larger whole.

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[21] Parker, NRB 38, 3.

[22] Philipott, 273.

Processes and the Problem of Lacunae

The observation that Tables 1, 2, and 3 were missing significant elements of the case study area also raises the issue of lacunae. According to one source, lacunae are gaps or blanks spaces, especially in cultural artifacts like manuscripts or texts.[23] Cultural artifacts such as paintings or statues often exhibit lacunae, and depending on extent, they both affect and refer to the state of integrity embodied in the resource.

The presence (or absence) of lacunae may also provide valuable reference to the significance of the resource. In preservation practice at the building and landscape scale, the absence of something may be highly significant, especially when the knowledgeable and perceptive conservator expects to see something.[24] Lacunae in the realm of landscape scale processes may also be highly significant.

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[23] Webster's New World Dictionary Second College Edition (William Collins + World Publishing, New York : 1974).

[24] Of course, the operative phrase here is "knowledgeable and perceptive." As noted in the section on significance and integrity in Chapter 3 and Appendix B, cultural or professional inexperience or shortsightedness may prevent one from seeing or perceiving qualities of significance or integrity. Nonetheless, the dog that did not bark, or the absence of children's noise may be highly significant. See also Philipott.

CHAPTER V

APPLYING PRESERVATION PRINCIPLES TO PROCESSES OF THE CASE STUDY AREA

Having discussed both preservation principles as they might apply to processes, and processes that create and sustain culturally significant artifacts, we now come to the intersection of these ideas, and to the heart of this investigation: applying principle to process.

The set of possible relationships between the treatment modalities listed in the Secretary's Standards[25] and the four basic processes noted in NRB 30 can be described within a series of matrices. The most basic matrix correlates the four treatment modalities with the four processes; the diagram in Figure 7 illustrates this set of relationships, and incorporates the proposed fifth process identified in Chapter 4.

Note that for just the most basic extension of this approach - multiplying the number of sub cells implied within the basic matrix - yields at least thirty four potential zones of investigation for each and any process (based on the total of thirty four standards for each of the treatments). Figures 8, 9, 10, and 11 illustrate the extension of the matrices to the standards within each of the four

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[25] U.S. Department of the Interior, The Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes Final Draft March 1996, Washington D.C., 1996. Also known simply (and hereinafter) as "The Secretary's Standards."

treatment modes noted in Figure 7, as applied to hypothetical sets of processes.

	Treatment Modality			
Historic / Cultural Processes	Preservation (8 Stds)	Rehabilitation (10 Stds)	Restoration (10 Stds)	Reconstruction (6 Stds)
Land Uses and Activities				
Patterns of Spatial Organization				
Response to Natural Environment				
Cultural Traditions				
Natural Processes				

Figure 7. Intersection of processes and treatment modalities.

	Preservation Treatment Standards							
Historic and Cultural Process: Patterns of Land Use and Activities	Cont. Historic Use	Protect Historic Character	Record of Time, Place, and Use	Recog-nize Signif. / Change	Craft, Mat'ls and Other Features	Repair / Replace in Kind	Gentle Tech-niques	Protect in Place / Mitigate
Natural Features (springs, creek) (cedar grove) (wetlands								
Siting of Structures (pumphouse, hotel) (campground)								
Aesthetic climate (Cascadian Rusticity)								

Figure 8. Hypothetical application of preservation standards to processes. Note that preservation is defined in part as "...the act or process of applying measures necessary to sustain the existing form, integrity and materials of an historic property... ...additions are not within the scope of the treatment; however, ...limited and sensitive upgrading ... to make properties functional is appropriate..." (The Secretary's Standards, 15).

Of course, it is unlikely that any single process will call for all thirty four kinds of intervention (including all four treatment modalities and all subsequent thirty four standards). And the actual number of potential zones of investigation will actually depend upon how many processes are identified. But the possibility exists that just as some parts of a building or district may need preservation and other parts might require rehabilitation, portions of any given process may call for one kind of treatment such as restoration, and others parts may reasonably require some other treatment modality.

Rehabilitation Treatment Standards

Historic / Cultural Process: Response to Natural Environment	Cont. Appro-priate Use	Protect Historic Character	Record of Time, Place, and Use	Recog-nize Signif. / Change	Craft, Mat'ls and Other Features	Repair / Replace in Kind	Gentle Tech-niques	Protect in Place / Mitigate	Compat-ible Additions	Retro / Remov-ability
Natural Features (springs, creek) (cedar grove) (wetlands										
Siting of Structures (springs, hotel) (campground)										
Aesthetic climate (Cascadian Rusticity)										

Figure 9. Hypothetical application of rehabilitation standards to processes. Rehabilitation is defined in part as "...the act or process of making possible an efficient compatible use for a property through repair, alterations and additions while preserving those portions or features which convey its historical, cultural or architectural values." (The Secretary's Standards, 35).

Historic / Cultural Process: Patterns of Spatial Organization	Restoration Treatment Standards									
	Cont. Appro-priate Use	Protect Historic Character	Record of Time, Place, and Use	Recog-nize Signif. / Change	Craft, Mat'ls and Other Features	Repair / Replace in Kind	Gentle Tech-niques	Protect in Place / Mitigate	Compat-ible Additions	Retro / Remov-ability
Physical Setting (landforms,esp.)										
Settlement Patterns (structures) (site design)										
Infrastructural Organization (distributed systems)										

Figure 10. Hypothetical application of restoration standards to processes. Restoration is defined in part as " ...the act or process of accurately depicting the form, features and character of a property... by removal of [some] features ... and reconstruction of [other] missing features..." (The Secretary's Standards, 61).

The preservation principles of significance, integrity and reversibility can tame this plethora of choices, and enable one to choose which principle to apply to which process. In fact, disciplines other than historic preservation select and apply similar treatment modalities to natural features (i.e., those parts not initiated by humans). Biologists, for instance, may initiate activities intended to restore habitat in a trout stream. They may reconstruct significant structures in the watershed which enable the stream hydraulics to rehabilitate habitat for many creatures, restoring the integrity of the stream to do part of its significant function.[26]

[26] See Christopher Hunter, Better Trout Habitat. Washington DC, Island Press, 1991.

Historic / Cultural Process: Cultural Traditions	Reconstruction Treatment Standards: Essential and Accurate	Archeo-logic Investig. and Doc'mnt	Preserve / Use Remnants	Based on Specific Physical Evidence	Identify as a Re-Creation	Don't Do if was Never Done
Sustainable Resource Use (berry fields, fish)						
Balneotherapy (taking "the cure" at the waters)						
Tourism (camping, traveling)						
USFS sub-culture (designed lsc) ("non-designed" lsc						

Figure 11. Hypothetical application of reconstruction standards to processes. Reconstruction is defined in part as "...the act or process of depicting, by means of new construction, the form, features and detailing of a non-surviving site, landscape, building, structure or object for the purpose of replicating its appearance at a specific period of time and in its historic location." (The Secretary's Standards, 87.)

Proposed Application to Typical Case Study Processes

The application of principle to process can therefore be understood as assessing the significance and integrity of any given process or sub process, and then selecting an appropriate mode of treatment and related standards to inform the level of intervention. This may be clearly demonstrated using the example of processes associated with the Guard Station.

In the conventional practice of preservation, the relative significance of an artifact is dependent upon cultural associations and values. Of course, the

significance of an artifact may not be well understood and may not even be evident, depending on relative degree of cultural understanding or myopia.[27] For instance, one author relates how the presence and alignment of a certain group of rocks in the landscape at Yellowstone National Park seemed random and remarkable for many years; but have now been understood to be the result of human activity.

But in a sense, significance is relatively constant, while integrity is more variable, dependent upon condition. These conventional interpretations of significance and integrity are based upon phenomena from a relatively narrow slices of time known as the historic period. Consequently, the traditional notion of significance removes the artifact or process from its temporal context by focusing upon the degree of significance at one or more points in time.

The relative significance of a process (for this study, the four conventional landscape processes and the proposed class of natural processes presented in Chapter Three), however, is not so easily defined. Since by definition a process is *procedural* in nature, it may be defined by how it affects both the artifacts it has created and maintained (or not), and by how it affects related artifacts and processes at other spatial and temporal scales. This modified view of significance (as applied to process) also affects the notion of integrity: instead of being focused upon physical condition, the integrity of a process shifts to *functional* integrity, i.e., the ability to sustain artifact and process, and contribute to the integrity of related processes and artifacts at other spatial and temporal scales.

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[27] Paul Schullery, "Before The Park - Yellowstone Through The Millenia," Orion, Spring 1997, 24.

The significance of processes therefore can be viewed in at least two ways: as *having significance at some point in time* (historic significance, which is the traditional view of the preservation movement); and as *having significance or importance for maintaining the integrity of the whole* (regardless of the actual physical integrity of the process or of the artifact which manifests the process).The integrity of the whole by definition also includes the capability to maintain the significant function of the process as a whole (see Chapter Four and Appendix C). This modified view retains the holistic relationship between artifact or process and its context over time - through the past, *and* in the present. It also places the artifact or process in a hypothetical future which is consistent with the moral position of preservation in general (i.e., advocating an "ought" condition).

As noted in Chapter 2 and Appendix B, preservation treatments and standards are usually applied to artifacts (although they have been applied to processes as well). In the tables that follow, however, the treatment modalities and associated standards should be understood as applying to the processes that created and sustained artifacts, and not to the artifacts themselves.

For the purposes of this study, not all the processes at the GMS will be examined, but a representative set of hierarchically related processes will be investigated, and the implications of applying principle to process detailed. The first set of processes, concern the Guard Station (as defined in Table 1--GMS Guard Station Process Hierarchy), and are chosen because the Guard Station is a readily perceived artifact having well documented formative (architectural) processes. The processes which affect the significance and integrity of the Guard Station also exist at many spatial and temporal scales.

In Table 5, the processes which apparently created and have sustained the Guard Station are hierarchically arranged at the left. The significance and integrity of the individual processes were ranked by assigning values which reflect the relative degree of historic significance and present integrity. In the rather arbitrary values system used in Table 5, the highest degrees of historic significance and present integrity were given a value of three; and lesser degrees assigned a lower value. These values were multiplied to yield a combined score which indicated the relative order of importance which might govern a preservation plan.[28]

Table 6 summarizes the first set of rankings within Table 5. Of the fourteen given processes, six achieved the highest possible score. Note that the highest scoring processes (those with values of nine and six) tend toward the conservation of the material object; and that the lower scoring processes (particularly those including a zero rank) deal with either things that no longer exist or seem to be nonessential to the integrity of the USDA Forest Service mission at the GMS case study area.

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[28] Note that multiplication by zero yields a product of zero.

TABLE 5. Significance and Integrity of Processes Associated with the GMS Guard Station

Processes Specific To Local Resources						Relative Historic Importance			Relative Wholistic Importance			Combined Ranking
Lsc. Proc.	*SbP - 1*	*SbP - 2*	*SbP - 3*	*SbP - 4*	*SbP (SubProcess Level) -5*	Historic Signif.	Phys. Integ.	*Com-bined*	Signif.	Integ.	*Com-bined*	(combined scores multiplied)
Response to Natural Environment												
	Commission & Design Process											
		Stylistic Choice				●●●	●●●	❾	◆◆◆	◆◆◆	❾	(81)
		Choice: Materials of Construction				●●●	●●●	❾	◆◆◆	◆◆◆	❾	(81)
		Site Development				●●●	●●	❻	◆◆◆	◆◆◆	❾	(54)
	Construction Process											
		Builder / Crew Choice (CCC)				●●●	●	❸	◆	◆	❶	(3)
		Materials Acquisition (local source)				●●●	●●●	❾	◆◆	◆◆	❹	(36)
		Materials Transformation (craft)				●●●	●●●	❾	◆◆◆	◆◆◆	❾	(81)
		Site Transformation (protection, repair)				●●●	●●	❻	◆◆◆	◆◆◆	❾	(54)
		Assembly				●●●	●●	❻	◆◆	◆◆	❹	(24)
		Finish				●●●	●	❸	◆◆	◆◆	❹	(12)
Land Use & Activities												
	USDA FS Organization Mission											
		Mission Related Requirements										
			Resource Stewardship			●●●	●	❸	◆◆◆	◆◆◆	❾	(27)
			Public Service			●●●	○	○	◆◆◆	◆◆◆	❾	0
		Mission Related Tasks										
			Lodging of Site Stewards			●●●	●	❸	◆◆◆	◆◆◆	❾	(27)
			Site Stewardship Activities			●●●	●●	❻	◆◆◆	◆◆◆	❾	(54)
			Public Service Activities			●●●	●	❸	◆◆	◆◆◆	❻	(18)

Key: [High Significance or Integrity = 3 objects] [Medium = 2 objects] [Low = 1 object] [None = 0 object]

TABLE 6.--Summary of Initial Ranking Process According to Conventional Notions of Significance and Integrity (as in Table 5)

Processes with Highest Rank (9)	*Processes with Med. High Rank (6)*	*Processes with Med. Low Rank (3)*	*Processes with Lowest Rank (0)*
Stylistic Choice	Site Development	Crew Choice	Res. Stewardship
Mat'ls of Const.	Site Transformation	Finish	Public Service
Local Mat'l Source	Const. Assembly	Public Svc. Act.s	Lodging Stewards
Mat'l Transform. (craft)	Finish		

One limitation of the conventional means of defining and assessing significance and integrity which became evident during construction of this table was the finite slice of time (i.e., limited temporal scale) within which significance and integrity are usually located. For instance, the design and construction processes which are part of the response to natural environment process did not take place in a vacuum, but were related to and derived from regional and national social and cultural contexts which also led to the creation of other rustic or cascadian style structures. The table was consequently modified to include the holistic notions of significance and integrity.[29] The middle right columns also rank significance and integrity, but according to these more holistic notions.

[29] This reflects the *significance or importance for maintaining the integrity of the whole* (regardless of the actual physical integrity of the artifact which manifests the process).The integrity of the whole by definition also includes the capability to maintain the significant function of the process as a whole, as noted in Chapter Four and Appendix C.

TABLE 7.--Summary of Initial Ranking Process According to Modified Notions of Significance and Integrity (as in Table 5)

Processes with Highest Rank (9)	*Processes with Higher Rank (6)*	*Processes with Lower Rank (3 or 4)*	*Processes with Lowest Rank (0 to 2)*
Stylistic Choice	Site Development	Local Mat'l Source	Crew Choice
Mat'ls of Const.	Public Svc. Activities	Assembly	
Site Development	Finish		
Mat'l Transform. (craft)			
Site Transformation			
Res. Stewardship			
Public Service			
Lodging of Site Stewards			

Note that in this modified system of ranking, the highest priority items (those having the highest scores) now include processes that have more intangible components which relate to issues at larger temporal and spatial scales. The processes which include choice of style, materials of construction, and craft are also recognized for their ability to convey a sense of place and location within the larger historic and natural region. Note that while the processes relating to resource conservation had previously been recognized as less essential to the integrity of the whole, in this set they are described as integral to the function of the GMS object/context system. Note also that the stewards, in this scenario, need not be USDA Forest Service personnel, but might include others having a similar mission.[30]

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[30] This may be understood as a kind of "replacement in kind" strategy.

Finally, the two combined rankings are multiplied (in the far right columns) to see if combining the conventional notions of significance and integrity with the modified notions can yield a more comprehensive view of process importance or relative quality. As may be expected, this formula simply dilutes the salient positions of both the conventional and modified views of significance and integrity.

Having determined the relative degree of significance and integrity of processes inherent in the GMS Guard Station (in the holistic sense), the next step is to select appropriate treatment modalities and standards for application to processes. In Table 8, likely matches between treatment and process are noted. In the three subsequent Tables (numbered 9, 10, and 11), standards associated with the first three treatment modality are matched to the given processes. The selection of treatment modalities follows from the modified notions of significance and integrity. Individual modes of treatment are matched to processes according to how likely they will support the continued significance and integrity of the process.

In the case of the GMS Guard Station, preservation will protect the artifacts which were derived from the processes leading to stylistic choice, materials of construction, and site development. But those processes were historic processes, and have to a large extent, disappeared. What will be preserved to varying degrees is the artifact, and the various descriptions of the processes that created and sustained the artifacts (such as in the thesis by Throop, and the history by McClelland).

Note that rehabilitation, restoration, or reconstruction of these processes associated with the Guard Station design are either nonsensical, or not

applicable. Specifically, reconstruction of the processes which created and sustained the Guard Station is not applicable for several reasons. Most obviously, the structure exists, and does not need to be reconstructed. Even if reconstruction of the building was necessary, some the processes that originally formed it could not be reconstructed without extraordinary effort (e.g., reforming the CCC or forming a similar organization). Finally, many of the processes that have sustained the building still exist, and can be addressed by treatment modalities other than reconstruction. Therefore, an investigation of the possible application of reconstruction principles is excluded.

The processes by which materials were acquired from local sources, the processes of craft, and of site transformation should and can be preserved to varying degrees. The processes associated with finishing the Guard Station can be restored as part of an on-going maintenance plan. The process of assembly cannot be preserved or otherwise treated, as it concluded some years ago. The preservation of builder and crew choice is also not applicable in this case, as the CCC no longer exists as a functional entity. Both of these historic processes, however, may serve as models for contemporary or future interventions.

Finally, resource stewardship and public service processes can be preserved to varying degrees, and also may be restored or rehabilitated to other degrees.[31] The processes of lodging site stewards, and those processes associated with site stewardship may be best served by rehabilitation, which is

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[31] As noted elsewhere, preservation projects may include different modes of treatments which may apply to different parts at different temporal and spatial scales.

TABLE 8. Possible Applications of Treatment to Processes Associated with the GMS Guard Station

Processes Specific To Local Resources						*Wholistic Importance*			*Treatment Modalities*			
Lsc. Proc.	*SbP - 1*	*SbP - 2*	*SbP - 3*	*SbP - 4*	*SubProcess -5*	Signif.	Integ.	*Combined*	Preserv-ation	Rehabili-tation	Restor-ation	Recon-struction
Response to Natural Environment												
	Commission & Design Process											
		Stylistic Choice				◆◆◆	◆◆◆	❾	✧✧✧			
		Choice: Materials of Construction				◆◆◆	◆◆◆	❾	✧✧✧			
		Site Development				◆◆◆	◆◆◆	❾	✧✧			
	Construction Process											
		Builder / Crew Choice (CCC)				◆	◆	❷	n/a			
		Materials Acquisition (local source)				◆◆	◆◆	❹	✧✧			
		Materials Transformation (craft)				◆◆◆	◆◆◆	❾	✧✧✧			
		Site Transformation (protection, repair)				◆◆◆	◆◆◆	❾	✧✧✧			
		Assembly				◆◆	◆◆	❹	n/a			
		Finish				◆◆	◆◆	❹			✧✧✧	
Land Use & Activities												
	USDA FS Organization Mission											
		Mission Related Requirements										
			Resource Stewardship			◆◆◆	◆◆◆	❾	✧✧✧	✧✧	✧✧	
			Public Service			◆◆◆	◆◆◆	❾	✧✧	✧✧	✧✧	
		Mission Related Tasks										
			Lodging of Site Stewards			◆◆◆	◆◆◆	❾		✧✧✧		
			Site Stewardship Activities			◆◆◆	◆◆◆	❾		✧✧✧		
			Public Service Activities			◆◆	◆◆◆	❻	✧✧			

Key: [Highly Likely Application = 3 objects] [Medium = 2 objects] [Low = 1 object] [None = no object]

TABLE 9. Application of Preservation Standards to Processes Associated with the GMS Guard Station

Processes Specific To Local Resources						*Wholistic Importance*			*Preservation Standards*							
Lsc. Proc.	*SbP - 1*	*SbP - 2*	*SbP - 3*	*SbP - 4*	*SbP (SubProcess Level) - 5*	Signif.	Integ.	*Applicability*	Std. 1	Std. 2	Std. 3	Std. 4	Std. 5	Std. 6	Std. 7	Std. 8
Response to Natural Environment																
	Commission & Design Process															
		Stylistic Choice				◆◆◆	◆◆◆	✧✧✧						●	●	
		Choice: Materials of Construction				◆◆◆	◆◆◆	✧✧✧	●							
		Site Development				◆◆◆	◆◆◆	✧✧		○	●	●				
	Construction Process															
		Builder / Crew Choice (CCC)				◆	◆	n/a								
		Materials Acquisition (local source)				◆◆	◆◆	✧✧	●							
		Materials Transformation (craft)				◆◆◆	◆◆◆	✧✧✧	●	●	●		●	●		
		Site Transformation (protection, repair)				◆◆◆	◆◆◆	✧✧✧	●							
		Assembly				◆◆	◆◆	n/a								
		Finish				◆◆	◆◆	(restore)								
Land Use & Activities																
	USDA FS Organization Mission															
		Mission Related Requirements														
			Resource Stewardship			◆◆◆	◆◆◆	✧✧✧	●				●			
			Public Service			◆◆◆	◆◆◆	✧✧	●				●			
		Mission Related Tasks														
			Lodging of Site Stewards			◆◆◆	◆◆◆	(rehab)								
			Site Stewardship Activities			◆◆◆	◆◆◆	(rehab)								
			Public Service Activities			◆◆	◆◆◆	✧✧	●					●	●	

Key: [Highly Likely Application = solid circle] [Somewhat Likely = hollow circle] [Unlikely Application = blank]

"making possible an efficient compatible use."[32] The actual process components need not be preserved nor restored, but may change to reflect better understanding of ecological or other processes while still "preserving those portions...which convey its historical, cultural, or architectural values."[33] In this case, the values systems clearly includes natural, scenic, and ecological values embodied in the continued use and protection of the GMS case study area (including the context of Trapper Creek and the Trapper Creek Wilderness area).

Notes on the Preservation of Processes Associated with the Guard Station

Table 9 sets forth some likely applications of preservation standards to the processes which created and sustain the Guard Station. Three possible rankings are shown: the most likely application is denoted by a solid circle; less likely applications by a hollow circle; and unlikely applications have been left blank.

In the process entitled Response to Natural Environment, the Design sub processes include five most likely applications, and one less likely application; the remaining eighteen applications are considered unlikely to be of value in preserving the processes which led to the Guard Station design. Standards six and seven probably apply to the stylistic procedures in that they mandate

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[32] NRB 30, 5.

[33] Ibid.

evaluation and care when intervening in processes that affect the nature of the cascadian style structure. Standard one will safeguard the processes that influence the choice of materials necessary to preserve the character of the structure. Specifically, conservators of the Guard Station will look for and choose designs and indigenous materials of high quality; and any interventions will hew to the same standards. Processes governing site development will be affected by standards three and four, which call conservators to respect the historic development of the case study area, and to recognize that uses have acquired historic significance. Standard two may also apply to processes affecting character and development of the Guard Station site, enabling stewards of the Guard Station to build upon what exists.

Application of preservation standards to processes which characterize the construction of the Guard Station as a response to the natural environment. Seven of the forty eight possible applications are felt to be quite likely; eight possible applications are more appropriately placed in the restoration mode of treatment; seventeen are felt to be unlikely; and sixteen are probably not applicable at all.

Standards which affect the transformation of materials in ways that enable the Guard Station to characterize a certain kind of response to the natural environment are the most probable kind of application in this set, accounting for five of the seven probable applications. These standards govern processes that directly affect issues of craft and form that make the Guard Station an important cultural resource, and hence make the causal processes worthy of preservation as well. The other two probable applications both rely upon standard one, which advocates that the property (process, in this case) be

protected and stabilized until appropriate measures may be taken.

Preservation standards may also be applied to the organic processes that shaped causal forces which led to the creation and continued existence of the Guard Station. Forty applications are possible, but only seven probable. Sixteen possible applications are probably better addressed by rehabilitation standards. Of the seven probable applications, three are based on standard one, advocating protection and stabilization – essentially continuing the existing process of stewardship. Two are based on standard five, advocating the preservation of distinctive features of the processes that promote the related goals of resource stewardship and public service. In the case of the Guard Station, this might mean having people who are involved in stewardship actually live in the structure. The last two standards in this section (six and seven) apply to public service activities, and advocate evaluation to determine appropriate levels of intervention (e.g., public service tasks) and care in intervening in the process of providing public service.

Notes on the Rehabilitation of Processes Associated with the Guard Station

As shown in Table 10, rehabilitation standards may apply to as many as four processes that have created and sustained the Guard Station in the case study area. The processes include resource stewardship and human presence at the GMS. Forty individual applications are possible: thirteen may be pragmatically applicable; eight may be applicable; and nineteen individual applications of rehabilitation standards are probably not useful.

Eleven of the thirteen most probable rehabilitation applications derive from standards one, six, and ten. Standard one advocates either the continuation of process function, or changes that retain the essential characteristics of the process. Standard six stipulates that processes be repaired instead of being replaced; and when needing replacement, be replaced in kind. Standard ten indicates that changes should be reversible. In effect, these applications link and weave site stewardship activities with stewards; people and activities are understood as being located within the realm of the Guard Station. Context, process and place are seen as a whole in space and time, evolving together over time. The current non-inhabitation of the Guard Station can be understood as an interruption or discontinuity which threatens the integrity of the processes made manifest by the Guard Station.

Notes on the Restoration of Processes Associated with the Guard Station

As shown in Table 11, restoration standards may apply to two processes that have created and sustained the Guard Station. The processes which affect the finish (and physical integrity) of the Guard Station may be addressed by eight of ten possible standards (three more likely, five less likely, and two probably not likely to be useful). Nine of ten standards may apply to resource stewardship processes; four of the nine are more likely to apply, and five of the nine are less likely to be applied well.

The processes affecting the finish and physical integrity of the Guard Station may be best supported by standards one, two, and seven. Standards

TABLE 10. Application of Rehabilitation Standards to Processes Associated with the GMS Guard Station

Processes Specific To Local Resources						Wholistic Importance			Rehabilitation Treatment Mode									
Lsc. Proc.	*SbP - 1*	*SbP - 2*	*SbP - 3*	*SbP -4*	*SbP (SubProcess Level) -5*	Signif.	Integ.	*Applic ability*	Std .1	Std .2	Std .3	Std .4	Std .5	Std .6	Std .7	Std .8	Std .9	Std .10
Response to Natural Environment																		
	Commission & Design Process																	
		Stylistic Choice				◆◆◆	◆◆◆	(preserv)										
		Choice: Materials of Construction				◆◆◆	◆◆◆	(preserv)										
		Site Development				◆◆◆	◆◆◆	(preserv)										
	Construction Process																	
		Builder / Crew Choice (CCC)				◆	◆											
		Materials Acquisition (local source)				◆◆	◆◆	(preserv)										
		Materials Transformation (craft)				◆◆◆	◆◆◆	(preserv)										
		Site Transformation (protection, repair)				◆◆◆	◆◆◆	(preserv)										
		Assembly				◆◆	◆◆	(restore)										
		Finish				◆◆	◆◆	(preserv)										
Land Use & Activities																		
	USDA FS Organization Mission																	
		Mission Related Requirements																
			Resource Stewardship				◆◆◆	◆◆◆	✧✧	●	●			○	●	○		○	●
			Public Service				◆◆◆	◆◆◆	✧✧	●								○	●
		Mission Related Tasks																
			Lodging of Site Stewards				◆◆◆	◆◆◆	✧✧✧	●					●			○	●
			Site Stewardship Activities				◆◆◆	◆◆◆	✧✧✧	●	●			○	●	○		○	●
			Public Service Activities				◆◆	◆◆◆	(preserv)										

Key: [Highly Likely Application = solid circle] [Somewhat Likely = hollow circle] [Unlikely Application = blank]

TABLE 11. Application of Restoration Standards to Processes Associated with the GMS Guard Station

Lsc. Proc.	Processes Specific To Local Resources: SbP -1	SbP -2	SbP -3	SbP -4	SbP (SubProcess Level) -5	Wholistic Importance: Signif.	Integ.	Applicability	Restoration Treatment Mode: Std 1	Std 2	Std 3	Std 4	Std 5	Std 6	Std 7	Std 8	Std 9	Std 10
Response to Natural Environment																		
	Commission & Design Process																	
		Stylistic Choice				◆◆◆	◆◆◆	(preserv)										
		Choice: Materials of Construction				◆◆◆	◆◆◆	(preserv)										
		Site Development				◆◆◆	◆◆◆	(preserv)										
	Construction Process																	
		Builder / Crew Choice (CCC)				◆	◆	n/a										
		Materials Acquisition (local source)				◆◆	◆◆	(preserv)										
		Materials Transformation (craft)				◆◆◆	◆◆◆	(preserv)										
		Site Transformation (protection, repair)				◆◆◆	◆◆◆	(preserv)										
		Assembly				◆◆	◆◆	n/a										
		Finish				◆◆	◆◆	✧✧✧	●	●	○		○	○	●	○		○
Land Use & Activities																		
	USDA FS Organization Mission																	
		Mission Related Requirements																
			Resource Stewardship				◆◆◆	◆◆◆	✧✧	○	○	○	○	●	●	●	●		○
			Public Service				◆◆◆	◆◆◆	(rehab)										
		Mission Related Tasks																○
			Lodging of Site Stewards				◆◆◆	◆◆◆	(rehab)										
			Site Stewardship Activities				◆◆◆	◆◆◆	(rehab)										
			Public Service Activities				◆◆	◆◆◆	(preserv)										

Key: [Highly Likely Application = solid circle] [Somewhat Likely = hollow circle] [Unlikely Application = blank]

one and two support historic processes of finish and maintenance of integrity. Standard seven advocates care in intervention. Application of these standards to processes affecting the finished state of the Guard station implies that what has worked has been successful, and should be respected and continued. Therefore, we might expect to see continual and periodic maintenance of the structure utilizing historic methods of treatment.

Processes influencing resource stewardship might also be reasonably addressed by restoration standards, especially standards five, six, seven, and eight. These standards apply to distinctive features (of the processes) for which repair, replacement, or other kinds of treatment may be necessary, depending upon significance and integrity. In the specific example of the Guard Station, those processes relating to resource stewardship may have distinctive features that may need to be restored in order to protect the integrity of resource stewardship. For instance, resumption of inhabitation of the Guard Station may be a mean of repairing the process of resource stewardship. The integrity of other significant stewardship dependent resources associated with the Guard Station might also be supported or restored by repair or replacement of stewardship processes or sub processes.

Notes on Preservation of Natural Processes Associated with the Case Study Area

In the preceding section, preservation principle have been applied to processes associated with a recognized cultural resource (the Guard Station at the Government Mineral Springs). But as noted in Chapter Four, not all

processes that are significant to a place can be identified and described according to the four conventional definitions of landscape processes. For this place in particular natural processes must be recognized as being crucial to the context and as being part of the indivisible whole of the place. A key test of the hypothesis, therefore, involves applying preservation principles to natural processes.

TABLE 12. Assessment of Natural Process Significance, Integrity, and Treatment Applicability

Locally Specific Processes						Wholistic Importance			Treatment Modalities			
Lsc. Proc.	SbP - 1	SbP - 2	SbP - 3	SbP - 4	SubProcess -5	Signif.	Integ.	Com-bined	Preserv-ation	Rehabili-tation	Restor-ation	Recon-struction
Springs												
	Geologic Process											
		Intact lava bedding plane				◆◆◆	◆◆◆	❾	✧✧✧			
	Climate Processes											
		Groundwater Presence				◆◆◆	◆◆◆	❾	✧✧✧			
		Surface Water Presence										
			Erosion			◆◆	◆◆	❹	✧✧			
			Stream erosion / migration			◆◆	◆◆	❹	✧✧			
Red Cedar Grove												
	Topographical Suitability											
		Slope				◆◆	◆◆◆	❻	n/a			
		Exposure/Aspect				◆◆	◆◆◆	❻	n/a			
	Climatalogical Suitability											
		Moisture				◆◆	◆◆◆	❻	✧✧✧			
		Temperature				◆◆	◆◆◆	❻	✧✧✧			
	Ground and surface water											
	Nutrient availability											
		Nutrient cycling from anadromous fish				◆◆◆	◆	❸	✧✧✧	✧✧✧	✧✧✧	

Key: [Highly Likely Application = 3 objects] [Medium = 2 objects] [Low = 1 object] [None = no object]

TABLE 12, continued

Locally Specific Processes						Wholistic Importance			Treatment Modalities			
Lsc. Proc.	SbP - 1	SbP - 2	SbP - 3	SbP - 4	SbP (SubProcess Level) -5	Signif.	Integ.	Com-bined	Preserv-ation	Rehabili-tation	Restor-ation	Recon-struction
Anadromous Fish Presence												
	Biological Processes											
	Presence of Habitable Stream											
		Clear water source										
			Forest filtering			◆◆◆	◆◆◆	❾	✧✧✧			
			Forest retention of water			◆◆◆	◆◆◆	❾	✧✧✧			
			Forest release of water			◆◆◆	◆◆◆	❾	✧✧✧			
		Shade										
			Presence of big trees			◆◆◆	◆◆	❻	✧✧			
		Stream physiography										
			Woody Debris			◆◆◆	◆	❸	✧✧✧	✧✧✧	✧✧✧	✧✧✧
			Intact riparian zone			◆◆◆	◆◆	❻	✧✧✧	✧✧✧	✧✧✧	✧✧✧

Key: [Highly Likely Application = 3 objects] [Medium = 2 objects] [Low = 1 object] [None = no object]

TABLE 13. Application of Preservation Standards to Natural Processes

Locally Specific Processes						Wholistic Importance			Preservation Treatment Modality							
Lsc. Proc.	SbP - 1	SbP - 2	SbP - 3	SbP - 4	SbP (SubProcess Level) -5	Sig nif.	Integ.	Applic ability	Std. 1	Std. 2	Std. 3	Std. 4	Std. 5	Std. 6	Std. 7	Std. 8
Springs																
	Geologic Process															
		Intact lava bedding plane				◆◆◆	◆◆◆	✧✧✧	●	●			●		●	
	Climate Processes															
		Groundwater Presence				◆◆◆	◆◆◆	✧✧✧	●	○			●			
		Surface Water Presence														
			Erosion			◆◆	◆◆	✧✧	○		○				●	
			Stream erosion / migration			◆◆	◆◆	✧✧	●		●				●	
Red Cedar Grove																
	Topographical Suitability															
		Slope				◆◆	◆◆◆	n/a								
		Exposure/Aspect				◆◆	◆◆◆	n/a								
	Climatalogical Suitability															
		Moisture				◆◆	◆◆◆	✧✧✧	○							
		Temperature				◆◆	◆◆◆	✧✧✧	○							
	Ground and surface water															
	Nutrient availability															
		Nutrient cycling from anadromous fish				◆◆◆	◆	✧✧✧	●				●			

Key: [Highly Likely Application = solid circle] [Somewhat Likely = hollow circle] [Unlikely Application = blank]

TABLE 13, continued.

Locally Specific Processes						Wholistic Importance			Preservation Treatment Modality							
Lsc. Proc.	SbP - 1	SbP - 2	SbP - 3	SbP - 4	SbP (SubProcess Level) -5	Sig nif.	Integ.	Applic ability	Std. 1	Std. 2	Std. 3	Std. 4	Std. 5	Std. 6	Std. 7	Std. 8
Anadromous Fish Presence																
	Biological Processes															
		Presence of Habitable Stream														
			Clear water source													
				Forest filtering		◆◆◆	◆◆◆	✧✧✧	●				●			
				Forest retention of water		◆◆◆	◆◆◆	✧✧✧	●				●			
				Forest release of water		◆◆◆	◆◆◆	✧✧✧	●				●			
			Shade													
				Presence of big trees		◆◆◆	◆◆	✧✧	●		●		●	●		
			Stream physiography													
				Woody Debris		◆◆◆	◆	✧✧✧	●	●	●		●	●	●	
				Intact riparian zone		◆◆◆	◆◆	✧✧✧	●	●	●		●	●	●	

Key: [Highly Likely Application = solid circle] [Somewhat Likely = hollow circle] [Unlikely Application = blank]

TABLE 14. Application of Rehabilitation Standards to Natural Processes

Locally Specific Processes						Wholistic Importance			Rehabilitation Treatment Modality									
Lsc. Proc.	*SbP - 1*	*SbP - 2*	*SbP - 3*	*SbP -4*	*SbP -5*	Signif.	Integ.	*Applic ability*	Std. 1	Std. 2	Std. 3	Std. 4	Std. 5	Std. 6	Std. 7	Std. 8	Std. 9	Std. 10
Red Cedar Grove																		
Topographical Suitability																		
Slope						◆◆	◆◆◆											
Exposure/Aspect						◆◆	◆◆◆											
Climatalogical Suitability																		
Moisture						◆◆	◆◆◆											
Temperature						◆◆	◆◆◆											
Ground and surface water																		
Nutrient availability																		
Nutrient cycling/anadromous fish						◆◆◆	◆	✧✧✧	●	●			○	●	●	○	●	
Anadromous Fish Presence																		
Biological Processes																		
Presence of Habitable Stream																		
Clear water source																		
Forest filtering						◆◆◆	◆◆◆											
Forest retention of water						◆◆◆	◆◆◆											
Forest release of water						◆◆◆	◆◆◆											
Shade																		
Presence of big trees						◆◆◆	◆◆											
Stream physiography																		
Woody Debris						◆◆◆	◆	✧✧✧	●	●			○	●	●	○	●	●
Intact riparian zone						◆◆◆	◆◆	✧✧✧	●	●			○	●	●	○	●	●

Key: [Highly Likely Application = solid circle] [Somewhat Likely = hollow circle] [Unlikely Application = blank]

TABLE 15. Application of Restoration Standards to Natural Processes

Locally Specific Processes						Wholistic Importance			Rehabilitation Treatment Modality									
Lsc. Proc.	SbP -1	SbP -2	SbP -3	SbP -4	SbP (SubProcess Level) -5	Signif.	Integ.	Applic ability	Std. 1	Std. 2	Std. 3	Std. 4	Std. 5	Std. 6	Std. 7	Std. 8	Std. 9	Std. 10
Red Cedar Grove																		
	Topographical Suitability																	
		Slope				◆◆	◆◆◆											
		Exposure/Aspect				◆◆	◆◆◆											
	Climatalogical Suitability																	
		Moisture				◆◆	◆◆◆											
		Temperature				◆◆	◆◆◆											
	Ground and surface water																	
	Nutrient availability																	
		Nutrient cycling/anadromous fish				◆◆◆	◆	✧✧✧	●	●			○	●	●	○	●	
Anadromous Fish Presence																		
	Biological Processes																	
	Presence of Habitable Stream																	
		Clear water source																
			Forest filtering			◆◆◆	◆◆◆											
			Forest retention of water			◆◆◆	◆◆◆											
			Forest release of water			◆◆◆	◆◆◆											
		Shade																
			Presence of big trees			◆◆◆	◆◆											
		Stream physiography																
			Woody Debris			◆◆◆	◆	✧✧✧	●	●			○	●	●	○	●	●
			Intact riparian zone			◆◆◆	◆◆	✧✧✧	●	●			○	●	●	○	●	●

Key: [Highly Likely Application = solid circle] [Somewhat Likely = hollow circle] [Unlikely Application = blank]

TABLE 16. Application of Reconstruction Standards to Natural Processes

Locally Specific Processes						Wholistic Importance			Reconstruction Treatment Modality					
Lsc. Proc.	SbP -1	SbP -2	SbP -3	SbP -4	SbP (SubProcess Level) -5	Signif.	Integ.	Applic ability	Std.1	Std.2	Std.3	Std.4	Std.5	Std.6
Red Cedar Grove														
	Topographical Suitability													
		Slope				◆◆	◆◆◆							
		Exposure/Aspect				◆◆	◆◆◆							
	Climatalogical Suitability													
		Moisture				◆◆	◆◆◆							
		Temperature				◆◆	◆◆◆							
	Ground and surface water													
	Nutrient availability													
		Nutrient cycling/anadromous fish				◆◆◆	◆	✧✧✧	●	●	○	○	○	○
Anadromous Fish Presence														
	Biological Processes													
	Presence of Habitable Stream													
		Clear water source												
			Forest filtering			◆◆◆	◆◆◆							
			Forest retention of water			◆◆◆	◆◆◆							
			Forest release of water			◆◆◆	◆◆◆							
		Shade												
			Presence of big trees			◆◆◆	◆◆							
		Stream physiography												
			Woody Debris			◆◆◆	◆	✧✧✧	●	●	○	○	○	
			Intact riparian zone			◆◆◆	◆◆	✧✧✧	●	●	○	○	○	

[Highly Likely Application = solid circle] [Somewhat Likely = hollow circle] [Unlikely Application = blank]

CHAPTER VI

SUMMARY OF FINDINGS

Overview

The purpose of this investigation was to test the hypothetical feasibility of applying historic preservation principles to the processes that create and sustain culturally significant artifacts and their indivisible contexts as a means of protecting both artifact and context. The five initial questions which guided the investigation asked:

1) What are the cultural resources which support and give meaning to (or provide a context for) dwelling in this portion of the watershed? Which historic features exist (what and where are they), and what is their status?

2) What are the processes which have created and sustained the resource under investigation? How are those processes structured - both individually and in relation to each other (natural setting, resource development, settlement patterns, etc.) ?

3) Which of the Secretary's Standards apply to which features of the processes which created and sustain these cultural resources in the Wind River watershed?

4) Which aspects are not covered by these conventional means of treatment?

5) Has the investigation shown that the Secretary's guidelines can be applied to processes as a means of protecting a cultural resource?

The investigation required the selection, and description of a suitable case study area which would enable the five questions noted above to be tested against a real world example. A case study area with bona fide cultural resources in a rich setting provided this opportunity to investigate the implications of this hypothetical method. In order to address the first four of the initial questions, the investigation required:

1) historical and observation description of the resource to enable identification and description of the operative processes (both historic and contemporary) which created and have sustained the case study area;

2) review of historic preservation principles; and if necessary, revision so they could apply to processes ;

3) investigation of the relationship between process components which occur at many spatial and temporal scales, and can be described hierarchically; and definition of the relationship between artifact and context,

and

4) identification and evaluation of appropriate applications of preservation principles to processes.

All of the tasks are complete and the first four questions answered. This chapter will evaluate whether the investigation has shown that the Secretary's guidelines can be applied to processes as a means of protecting a cultural resource.

Findings

Significant cultural resources cannot be considered out of context. The context is pervasive, and persistent over many spatial and temporal scales. The context is always changing, especially over long periods; and the significance of the context and resource will transform over time as well.[34] Nevertheless, the conservation of cultural resources must focus upon both object and context, as they form an indivisible whole extending over many temporal and spatial scales.This assertion is supported not only by conservators of cultural resources, but also in the literature of the ecologists and systems theorists.

The Applicability of Preservation Principle to Process

Preservation principles can and do apply to processes, and can be refined to do so more efficaciously. This is a logical extension of the evolution of the Secretary's Guidelines, and in fact has already begun with the guidelines for landscapes. Another precedent is the accepted preservation practice of specifying on-going maintenance *procedures* at both building and landscape scale; these specifications are generally formulated in response to processes

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[34] Consider the statue known as the Winged Victory of Samothrace. The original context of the Nike Athena has been lost in time, but its present context - at the head of a stair in the Louvre, bathed in a shaft of light - is significant to us. Efforts to protect the integrity of the significant object and significant context must necessarily focus upon the present, as the past is past and gone, and the future is ever receding out of reach.

that threaten integrity.The review of preservation principles (Chapter Three and Appendix B) revealed ways in which preservation standards can be modified to apply more directly to processes.

Some treatment modes and standards were more readily applied (to certain resources of this case study area) than others. One reason may be that some preservation principles are already concerned directly with processes. The scale of intervention and scale of process also need to be matched, but the appropriate match may not be directly proportional. For instance, protecting the springs means both protecting them and their larger context while accepting that natural processes may disrupt the resource. Further study may be helpful in describing the relationship between human and natural disturbance regimes that change contexts over time.

Preservation principles can be modified to apply more directly to the processes that create and sustain culturally significant artifact and context systems. In particular, the notions of significance and integrity as guiding notions seems to be ripe for revisitation and clarification in the context of the emerging more holistic, systems based approach to conservation in general.[35] The problems of intangible resources, lacunae, and biotic components of

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[35] United States Congress, Office of Technology Assessment (OTA) Background Paper: Technologies for the Preservation of Prehistoric and Historic Landscapes; 1983, p. 11. Major issues which hamper preservation activities at the landscape scale have been noted in this source to include "lack of consistent...terminology." While the revision of the Secretary's Standards to address landscapes has partly resolved this issue, the lack of terminology in common with related disciplines, especially natural resource management, may still hamper efforts to approach cultural resource management in a holistic manner. See footnote 38, below.

processes which underlie and transcend boundaries of historic properties and other traditional objects at the focus of traditional preservation practice are clearly revealed by this approach to conservation of cultural resources. The limitations of the National Register as a place of recognition of significance and integrity of these kinds of resources, and the limitations of Section 106 review[36] as a source of legal authority are also implicated by the inclusion of intangible and biotic components.[37]

Definition and Description of Processes

Processes that create and sustain culturally significant artifacts and contexts can be described comprehensively using ideas from the general systems theory, and from ecology. This could be extended and made more robust by looking at cultural resources and associated processes as a kind of ecosystem, wherein individual artifact / context wholes can be described in relation to their larger context.For example, we might describe, track, and treat not only the GMS Guard Station, but all similar structures. This approach could

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[36] Section 106 and 110 of the National Historic Preservation Act mandate review of resources that may be eligible for listing on the National Register of Historic Places.

[37] This is not a newly recognized or currently emergent issue; it is concisely described in NRB 38.

also be extended and related to similar efforts aimed at protecting landscapes and other ecosystem scale resources.

While the artifacts at the GMS case study area can be described using conventional preservation procedures, the processes that created and have sustained those artifacts are not as self-evident, and often are located outside the bounds traditional cultural resource management practice. The complexity of the processes also required clarification (e.g., the explicit notation of the hierarchy of relative process domains) as well as definition.

Process definition and clarification ranged across many disciplines. Selection of the most important processes (those with the most potential for long range and comprehensive application), and the application of (revised) preservation principles depended on the value judgments of one person. Participation of other persons may have changed both definition and choice of processes. The accuracy of process definition would probably be improved by the expertise and insight of a multi-disciplinary team from related disciplines.

The Feasibility of Applying Principle to Process

The investigation has shown that the context of culturally significant artifacts may be protected by applying preservation principles to the processes that create and sustain the artifact and context. This is not really new or novel; but in this investigation, it has been explicitly stated and explored.

Conservation of contexts by applying preservation principles to processes, however, requires certain modifications to traditional preservation theory and practice. Of prime importance is the recognition that processes that create and sustain object / context systems are indivisible and range across many spatial and temporal scales. Nearly as important is the notion that natural systems (including ecological, climatological, and geological processes) and social systems are also indivisible components of context, and may be treated by preservation principles. Given these insights, the notions of significance and integrity can be redefined to include phenomena at both larger and smaller spatial and temporal scales than usually found in preservation practice. This inclusion and consideration of diverse phenomena is crucial to more holistic practice, and the (presumed) successful application of principle to process as a means of protecting the object/context system.

Implications for Further Study

A Possible Interdisciplinary Approach for Applying Principles to Processes

The comprehensive scope of this approach calls for an interdisciplinary approach not possible in this investigatory format. As noted above, the participation of other persons from other disciplines may have change both the definition and choice of processes for the better. In particular, the accuracy of process definition would probably be improved by the expertise and insight of a multi-disciplinary team from related disciplines.

The kind of rigorous methodology and explication of values systems embodied in this investigation may allow conservators of cultural resources to speak the same language as conservators of natural or social resources. The integration of goals and processes with other, similar disciplines concerned with conservation and development could enable consideration and inclusion of significant cultural resources in planning efforts.[38] This methodology may be also be applicable to other conservation practices, such as the objectification of adaptive reuse planning.

Possibilities for Redefinition of Preservation Principle and Practice

The need to revisit preservation principles and to define processes as part of this investigation indicates that conservation minded professions in general, and historic preservation in particular, have potential to move toward a more holistic, systems-based view and application of their respective disciplines. Systems theorists and conservation biologists have mapped such

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[38] Professor D. Peting has related how CCC built structures in the care of the National Park Service have been allowed to deteriorate and disappear because they were located in a "natural area" but "not natural." (Conversation, 26 February 1998). Given present understanding about the mythical nature of pristine wilderness (see Grumbine, and also Schullery, both in Orion, Spring 1997) and a more comprehensive and inclusive view of the resource base, preservationists may be able to argue for protection of similar resources instead of neglect. Conversation, 26 February 1998.

an approach in some detail , and that map may provide an analogous framework for preservation practice.[39]

Historic preservation practice has indeed already begun moving this direction at a coarse scale, by producing historic context statements, and by initiating jurisdiction wide surveys of buildings and other structures. Such efforts clearly indicate potential to move even further into systemic modes of description and understanding of cultural resources in context.

Possibilities for the Revision of Preservation Pedagogy

Finally, there is also the possibility that the way historic preservation is taught and practiced could be changed by incorporating techniques from the ecological sciences. Complex issues in preservation (especially what should be saved and why) may be addressed by processes that recognize that cultural resources may resemble landscapes in a metaphorical sense: that the existence and persistence of resources form a mosaic of patches, which in turn

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[39] In looking to these maps created in other disciplines, we should recall Bateson's warning not to confuse the map with the territory. (See also C. A. Bowers, "The Cultural Aspects of the Ecological Crisis." in Education, cultural myths and the ecological crisis: toward deep changes,.State University New York Press, 1993.) The maps created by ecologists and systems theorists should not be adopted by preservation practitioners and theorists, but should serve as models for making more comprehensive, holistic maps of our own territory.

form patterns. These patterns could be examined using data management tools to track, simulate and predict dynamics affecting the resources. This procedure, as in ecosystem management, can then be used to promulgate sound public policy, and support both public and private action in conserving culturally important resources.

Summary

This investigation has shown that preservation principles can be applied to the processes that create and sustain culturally significant resources as a means of sustaining those resources. The applicability of any given preservation principle to any given process depends partly upon the definition of the principle and the definition of the process.

Preservation principles can be modified so their applicability to processes is more clear. These modifications include not only revision of the principle, but also revision of the preservationist understanding of the principle. The concepts of significance and integrity take on broader meaning in this larger context, and should be carefully considered.

Processes which create and sustain culturally and naturally significant resources should be recognized, and can and should be described at many spatial and temporal scales. The various components of processes can be related not only to each other, but also to the conceptual notions of significance and integrity. Assessment of process significance and integrity can lead to selection of appropriate preservation principles that guide interventions intended to protect the vitality of the cultural resource/context systems.

APPENDICES

APPENDIX A

COMPREHENSIVE HISTORY AND DESCRIPTION OF THE GOVERNMENT MINERAL SPRINGS CASE STUDY AREA

Overview

Location

The Government Mineral Springs area is located on Trapper Creek, just upstream its confluence with the Wind River. The springs are located within a stand of old growth cedars along the south bank of Trapper Creek and have drawn people for generations. The area is administered within the Wind River District of the Gifford Pinchot National Forest, and includes access to the springs, day use picnic areas, archeological sites, leased cabin sites, a guard station built by the Civilian Conservation Corps (CCC), and portions of Trapper Creek.

The Wind River Watershed is a tributary of the Columbia River. Located on the northern side of the Columbia, it's head waters proceed from both Mount St. Helens and Mount Adams. The Wind River flows south to join the Columbia near the western edge of the Columbia River Gorge, and shares the more temperate, moist climate of the Western Cascade mountains. Heavily forested throughout it's length, the river course becomes progressively narrower and steeper as the river flows south, cutting its way to the Columbia.

Context

The immediate context of the study area extends from the headwaters of Trapper Creek to the Wind River (including the site of the Howe Guard Station). On the west side of the Wind River the context extends downstream to the site of the Little Soda Springs near the Carson National Fish Hatchery. East of the Wind River, the site of Tyee Springs is also included (though it is no longer accessible, being the source of water for the Hatchery).[1]

The headwaters of Trapper Creek arise in the Trapper Creek Wilderness, and consisting of some 6,050 acres.[2] Elevations range from 4207' at Observation Peak to about 1100' where Trapper Creek meets the Wind River. The range of elevations are matched by a range of habitat types: the higher elevations include huckleberry fields at Sister Rocks and Observation Peak, and a sub alpine lake at Soda Peaks. Old growth fir and hemlock forests line the watercourses at the lower elevations, and a Silver fir climax forest exists in the Sister Rocks area. The Wilderness is home to spotted owls, barred owls, pileated woodpeckers, goshawks, blacktail deer, elk, bear, cougars, bobcats, and pine marten. The creek itself provides habitat for trout and other year round fish; anadromous fish include salmon and steelhead. Observation Peak also included a lookout in the early part of the 20th century (established 1917).

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1 See Figures 2 and 3 (pages 5 and 19, respectively) for maps of the immediate context of the case study area.

2 Reference text found in the USDA Forest Service Map of the Trapper Creek and Indian Heaven Wildernesses (Gifford Pinchot National Forest, Pacific Northwest Region), Washington D. C.

The extended context includes the watersheds and mountains of the Cascade mountain range which constitute the Columbia River Gorge. The Indian Heaven Wilderness and the Big Lava Field mark the eastern edge of the Wind River watershed and the western edge of the White Salmon River watershed (whose biology and climate is a beautiful blend of both the wet side and dry sides of the Cascades). Further east, the Klickitat River watershed marks the more arid central Washington region. The headwaters of the White Salmon and the Wind River start upon the slopes of Mount Adams north and east of the study area. The Goat Rocks Wilderness lies north of the Wind River, in between Mount Adams, Mount St. Helens and Mount Rainier. To the west are the foothills of the Lewis Rivers which flow west and south west of Mount St. Helens to the Columbia River at the northwestern end of the Gorge. Immediately to the south is the Stabler area, which location includes the Wind River Ranger District headquarters, the Experimental Forest, an Arboretum, a USDA Forest Service (tree) Nursery, and the Canopy Crane. Further south are the Columbia River and Gorge, Bonneville Dam, and the Mount Hood area of the Cascade range. Hood River joins the Columbia to the southeast; still further east in the vicinity of the Dalles, the Deschutes and John Day Rivers join the Columbia in the more arid southeastern edge of the Gorge.

Description

As noted above, the GMS is located in a grove of mature redcedar along a creek running through a temperate rain forest of hemlock and fir at relatively low elevation. The creek is fed by surface and ground water derived from

snowpack and other precipitation falling on both the lowland and upland forests and meadows of the Trapper Creek watershed, and consequently has seasonal variation in volume and velocity. The creek bed is composed of gravels, cobbles and boulders, and the creek runs fairly clear due to the absence of silt from erosion or glacial activity.

The GMS area itself is located on the south side of the creek, at the foot of north facing slopes. The topography of the valley floor at the Springs is fairly flat, and the creek has created meanders and side channels throughout the floodplain as it nears the Wind River. However, given a century of use by visitors, campers, and weekend cottagers, much of the riparian flora has be affected, and the stream somewhat channelized.

The main focus of human interest, of course, has been the mineral springs. The spring with the largest flow, called Big Iron Mike, is located some tens of meters from the present stream channel. Two smaller springs, called Little Iron Mike and Bubbling Mike, respectively, were located much closer to the creek in a side channel. Other mineral springs (named the Little Soda Springs) were located along the west side of Wind River just downstream of Trapper Creek.

During development of the Springs in the 1920s and 1930s, Big Iron Mike was channeled into a gathering chamber and delivered by hand pump, just as one would find it today. The side channel in which the smaller springs surface was blocked upstream at the main channel, and the smaller springs cleared to some distance below the surface, and lined with stones.

Development of the Springs area also included construction of cabins on sites leased from the Forest Service on both sides of Trapper Creek in the GMS

vicinity; the construction of a hotel just up slope from Big Iron Mike; and construction of a pavilion at the hotel which overlooked the creek and springs area. The hotel was destroyed by fire in 1936. In the 1930s, a campground was constructed by the CCC and the Forest Service. The campground development included a Guard Station and picnic shelter in the cascadian or rustic style; an amphitheater and campfire circle; and other infrastructural improvements such as roads water supply, and comfort stations (toilets). The Little Soda Springs springs were also developed, and some improvements made to that site as well; the development was abandoned by the 1960s and the partly obscured by meanderings of the Wind River in the 1970s.

In the late 1960s and early 1970s, the mature redcedars at the GMS began falling, and the campground was closed, and partly restored to native vegetation. The guard station was closed, and the Springs reverted to day use. Access to the cabins has continued.

Geologic and Natural History of the Watershed

- David R. Montgomery
"The Influence of Geological Processes on Ecological Systems"

While geological processes and temporal scales are not usually considered when dealing with cultural resources, they provide a pervasive and persistant basis for natural and cultural structure. As David R. Montgomery notes in The Rain Forests of Home:

> "Land use planning often neglects the patterns that physical environmental processes impose on landscapes. Because much of this template lies beyond human control, this neglect often results in

> decisions made by default–decisions that usually encourage resource degradation. Civilization is unlikely to develop more sustainable land and resource use practices without social institutions capable of addressing complex environmental issues head on. Directly examining the links between human actions and ecological processes over many scales of time and space should help us understand our choices. Evading such issues as habitat loss and unsustainable rates of resource use amounts to a default decision in favor of resource depletion and environmental degradation. In contrast, understanding how human activities fit into the array of geological processes that create the landscape can illuminate two of the most fundamental ethical questions of our time: What kind of environment do we ow future generations? To what extent are we willing to modify present practices in order to preserve their inheritance?"[3]

The Trapper Creek watershed is part of the geologically active volcanic system which forms the Cascade mountains. Bare Mountain, a cinder cone just west of Trapper Creeks headwaters, includes a recognizable crater. South south east of Bare Mountain, Twin Peaks includes two craters, and a few relatively recent lava flows from its flanks. Glaciation has also formed the watershed; at the north boundary of the watershed, the horn shaped Observation Peak includes three aretes (ridges forming the edges of cirque basin which have been eroded by a glacier). On the south edge of the water shed, Soda Lake may be either a tarn (a lake occupying a cirque), or perhaps a crater lake occupying a now eroded crater peak.

The deeper and older lava flows are composed of andesite. Most of the recent lava flows are also composed of andesite, especially those forming the ridge crests. Zones of pyroclastic rock (ash, pumice and molten rock fragments)

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[3] David R. Montgomery, "The Influence of Geological Processes on Ecological Systems" The Rain Forests of Home Washington DC, Island Press, 1997, 66.

are interwoven with the andesitic flows, and although the pyroclastic formations have lithified, they are more porous and less resistant to erosion than the andesite.

The major erosive force since the last ice age (the Pleistocene, ending about 10,000 years ago) has been rain or melting snow. Water flows off the more resistant ridge tops, and erodes the softer material underneath. Water also percolates through these more porous layers until it reaches the layers of older andesitic lava. The water flows along this bedding plain until it reaches the ground surface - at the Springs, for example.[4]

The Trapper Creek watershed and the GMS study area are also part of geological processes which operate at much larger temporal and spatial scales. The spatial scales can be organized hierarchically: one such organization[5] provides a framework for understanding the influence of geological processes upon ecological systems.

The suggested divisions, ranging from the smallest to the largest context, include:

- Habitats or Process Domains
- Landscape Elements
- Lithotopo Units
- Geomorphic Province
- Tectonic Setting

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[4] The chapter by Montgomery is invaluable, and the books by Alt and Hyndman, and by Harris are also very helpful in understanding the processes forming this region. A Forest Service Zone Engineering report dated 11/21/89 (located at the Wind River Ranger Station) is also concise and complete.

[5] Montgomery, 46.

The tectonic setting shapes the form of the region–in this case, the size, configuration, and climate of the mountain ranges along the northeast Pacific Ocean coastal area reflects large scale tectonic processes.

Provincial scale influences are based upon disturbance regimes, and large scale configurations of physical geography. At this scale, variations in elevation and latitude couple with variations in temperature and elevation to support particular plant communities and species.

Geomorphic provinces can be subdivided by individual watersheds, but watersheds often cross geological boundaries.[6] Subdivision of a province according to areas of similar geomorphological processes based upon lithography and topography (lithotopo units) organizes our perception of the landscape into zones having similar ecological influences, and which may extend across several watersheds with similar configurations of topography and ecology; the emphasis is upon structural divisions, not erosional features.

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[6] Watersheds do, however, provide a structure for relating geomorphology and ecological processes, and also relate upstream and downstream processes.

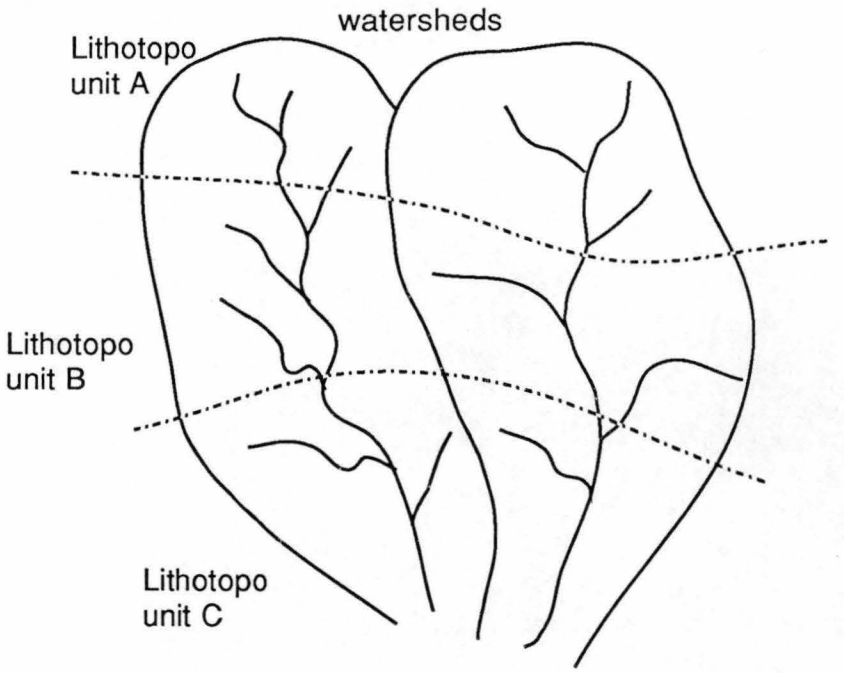

Figure 1A. Lithotopo units in a typical watershed. Redrawn by author from Montgomery, Figure 3.7, (page 55).

In general, landscape elements such as hillslopes, hollows, channels, and floodplains reveal the relationships between geomorphology and ecosystem at finer scales. Human activity is particularly evident at this scale, and impacts can be dramatic.

Habitat definitions change according to the species observed and the scale of the observation. Another way to understand the landscape is in terms of *process domains* which correlate landforms with the disturbance regime(s) which operate at the scale of the landform.

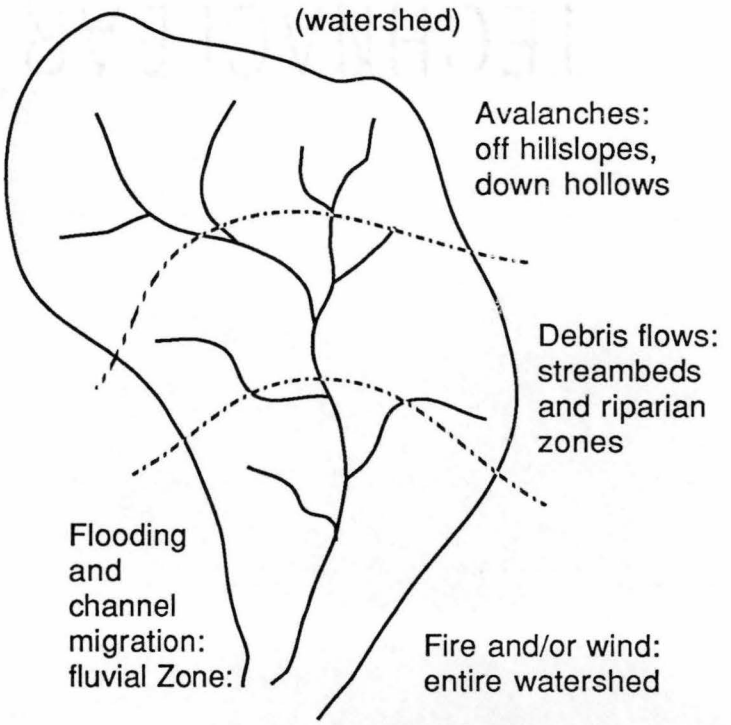

Figure 2A. Process Domains in a Typical Cascadian Bioregion Watershed: Disturbance regimes associated with watershed zones. Redrawn by author from Montgomery, Figure 3.14, (page 65).

Implications of Geological History

Given this framework, Trapper Creek and the GMS can be defined as part of the Cascadian geomorphic province, which is located within the tectonic setting of the active volcanic arch associated with the Cascadia subduction zone. The Trapper Creek watershed includes hollows in the upper elevations, and the GMS is located in the fluvial zone, with attendant flooding and channel migration.

The existence and function of the springs themselves are influenced by processes at all of these spatial scales. The relative influence at the any of the spatial scales is probably inversely proportional to the temporal scale. For instance, the volcanic and climatic events (lava flows and rain) occurring at the largest scales are probably most responsible for creating the springs. At the smallest and most immediate scale, the spring themselves (that is to say, the appearance of ground water at the surface) may be cyclically obscured or revealed by flooding and channel migration over years or decades. This is in fact what has happened over the last century or so. But the percolation and movement of ground water (regardless of where it appears at the surface) would seem t be most closely tied to intermediate spatial and temporal scales, which may have a more directly proportional relationship than at the extremes. And it is at these more intermediate scales that humans probably have the most long term influence.

Biotic or Natural History

Perhaps the most common view of old growth forests in the Cascadia Bioregion is that they are undisturbed, pristine examples of temperate rain forests that have been around forever. Indeed, the age of some individual trees suggests some basis for this view: many trees are over a thousand years old.[7] Analysis of pollen layers in bogs and sediment layers in lakes, however, reveals a slightly different story. The once ubiquitous fir - redcedar - hemlock forests are relatively recent inhabitants of the bioregion, appearing only three to five thousand years ago.[8] Placed in relation to the oldest specimens and in relation to the three hundred to five hundred year old trees at the case study area, this means that the forests are really only between three and ten generations old.

The relatively young age of the forests are due to several factors operating at several scales. Long term climate changes have apparently changed the suitability of the bioregion for certain species (especially the non–mobile flora). Shorter term climate changes affect microclimate as well, as have the cyclical periods of glaciation over the last few hundreds of thousands of years.

In comparison, the anadromous fish that return to the rivers and streams of the bioregion have been around for a long time. Fossil salmon found in

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[7] Brown, Mountain in the Clouds, 29.

[8] Hebda and Whitlock, 237-241; see especially Figures 9.5-9.7.

Oregon date to the Pliocene.[9] But the anadromous fish as we understand them today cannot be described outside of the context provided by the forest and the sea. The presence of of both the redcedar grove and the anadromous fish in this watershed are extremely significant, even if their presence has decreased over the last few human generations. It is worth quoting one author at some length regarding the character of the temperate rain forest, and the connection between fish and forest, as it is the forest which gives much of the GMS area its unique character.

> "At first glance, the most impressive thing about the forest is the sheer size of its trees. Except for a few redwoods and sequoia further south on the Pacific rim, they are the tallest trees on the face of the earth. The worlds largest western red cedar, 19 feet thick at the butt and 180 feet tall where its crown has been snapped by a gale, grows near the town of Forks [Washington], a few miles north of the Queets River. The largest western hemlock is in the Quinalt Valley to the south; and both the champion Sitka spruce and the record-holding Douglas fir grow in the Queets Valley. The latter tree, known simply as the "Queets fir" is more than 14 feet through and 221 feet tall at the point where its crown has been broken.
>
> "The overwhelming impact of the rain forest cannot be conveyed by cold statistics, however, for the big trees are only the skeleton upon which the great body of the forest is hung. Research...has shown that the variety of mosses, lichens and ferns increases at the trees grow taller. ...Typically, the trees of the rain forest carry 20 percent additional weight in extravagant living draperies, and some, like the Queets fir, are festooned with

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[9] Brown, Mountain in the Clouds, 22. The prehistoric salmonids were quite large, nearly ten feet long.

huckleberries and wild flowers for more than 100 feet up their trunks."[10]

The author, writing further about the relationship of fish and forest, goes on to relate how the forest provides habitat for fish, and the fish nutrients for the forest:

> "Gifted with the ability to move from one medium to another and then return again to exactly the place where their lives began, the wild fish of the genera *Oncorhyncus* and *Salmo* have played a crucial role in the development of the general ecology of the Pacific Coast of North America. In a region that has been reworked by waves of glaciers for the last million years and which otherwise counts leaching rains as its predominant meteorological phenomenon, the wild salmon serve as nature's principal means of returning nutrients from the sea to the land. Through their passionate, seemingly perverse death, they give life not only to their own progeny, but also to a host of predators and other dependent species. They are, in short, an engine of general enrichment, and an important element in the long range stability of the Pacific Coast ecosystem. [11]
>
> "The salmon, too, receive benefits from the forest they helped create. In the winter, when the rains roll off the Pacific, the forest soaks up and retains immense amounts of water, thereby blunting the natural tendency of the ... rivers to flood and destroy the salmon's redds. Later in the year, when there is a danger that lethally warm water will kill the young salmon before they are ready to go to sea, the forest releases its cool store of moisture and shades the rivers and streams from direct sunlight for at least part of the day. Spawning spring Chinook are particularly aware of the trees along the rivers where they mate; whenever possible, they dig their nests in dark, shady water."[12]

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[10] Brown, Mountain in the Clouds, 28, 29.

[11] Ibid, 231.

[12] Ibid, 29.

The redcedar grove and the stream which form much of the significant context of the case study area are inextricably intertwined. Woody debris that comes from the forest affects the nature of the stream, changing the current and helping to make the shallow riffles and deep pools that contribute to diverse stream habitat.[13] Loss of woody debris changes the nature of the stream, leading to a decrease in habitat diversity.[14] And loss or degradation of the forest cover itself contributes to destruction of the stream as a habitable place by increasing runoff, and increasing the amount of silt which enters the water from erosional processes.[15]

GMS Cultural History

The natural history of the temperate rain forest also has influenced the cultural history. Indeed, when coupled with the longer term presence of humans (the First Nations) inhabiting the bioregion, the relatively recent emergence of the fir and redcedar forests shows that the cultural patterns based on the forest

[13] Hunter, 26.

[14]Montgomery, 56. I have seen this process in action over my lifetime. I recall that during my childhood in the 1960s, both the Wind River and Trapper Creek had numerous logs and snags in the water, creating pools and shade that helped keep the water cool . When I visited area in the early 1990s, I was struck by the absence of woody debris, the uniformly level character and warm, shallow water of the stream bed, and the growth of algae in large mats over the rocks and gravels. I noticed that at least one vacation property along Trapper Creek had stabilized the stream bank with rocks and cement, and the stream could no longer meander in that section.

[15] See Hunter, and also Montgomery regarding siltation and erosion.

Figure 3A. Stream Channelization at Trapper Creek
(House near Little Bubbling Mike).
Photo September 1995, by author.

were co-emergent with the forests.[16] The cedar based longhouses, canoes, and other artifacts would have been less feasible before emergence and growth of cedar trees in locations congruent with other resource uses.

In more recent times, people have been attracted to the area by the springs, the fishing in Trapper Creek and the Wind River, and by other recreational and occupational values. In 1909, the Seattle, Portland, and Spokane Railroad reached Carson (located at the mouth of the Wind River on the northern banks of the Columbia River and also the site of a mineral springs).

In 1910, Star Brewing and S.D. Fox of Portland applied for and received a special use permit from the Forest Service to build and operate a three story hotel at the Government Mineral Springs.[17] Hotel guests were met at Carson and brought to the to the Hotel by horse drawn wagon over 15 miles of rough roads. Later road improvement (such as the improvement of the suspension bridge over the Wind River just north of Carson in 1925 and 1926)[18] allowed

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[16] Hebda and Whitlock, 247-248.

[17] Gary Meier, Brewed in the Northwest Seattle, Fjord Press, 1991. The original Star Brewing Company was based in Vancouver, WA. At the time the Special Use Permit was granted, Star Brewing, was owned by the Northern Brewing company, which acquired the brewery and associated ice plant in 1905, and continued to operate the brewery until state prohibition began in 1916. Prior to ownership by Northern, Star was known as the Vancouver Brewery and owned by Henry Weinhard from 1859 until 1863. Weinhard sold the brewery to German brewer Anton Young in 1863, who in turn sold it to Louis Gerlinger in 1894, who gave it the Star name. This brewery should not be confused with the present day Star Brewing micro brewery. Similar notes regarding the special use permit may be found in the USDA Forest Service Wind River Ranger Station (USDA FS Wind River RS) archive of Government Mineral Springs documents..

automobile traffic. Part of the burgeoning resort hotel movement,[19] siting the Hotel at the Springs placed it firmly within a long history of "taking the cure" at mineral waters throughout America and Europe, and dating back to at least the time of the Roman Empire.[20]

The hotel was sited on the southern side of Trapper Creek in a clearing on a rise surrounded by wetlands, springs, and vegetation common to riparian areas in low altitude temperate rain forests. Located above the stream meanders and side channels, the Hotel occupied the western edge of the clearing. First seen by visitors entering the clearing from the east, the Hotel was the focal point of the grounds. The design of the hotel (as noted in contemporary photographs) was simple but well detailed, reflecting turn of the century sensibilities. The Hotel was simply massed; the front portion appears to have been rectangular in plan, with simple gable ends and pitched roof comprising the third story. A centrally located cross gable interrupted the roof and drew attention to the entry porch and a second story balcony.

In 1918, the manager of the Hotel renovated the hotel and installed a

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[19] Leslie Dorsey and Janice Devine Fare Thee Well: A Backward Look at Two Centuries of Historic American Hostelries, Fashionable Spas, and Seaside Resorts, New York, Crown Publishers, 1964.

[20] Roy Porter (ed.) the Medical History of Waters and Spas Medical History, Supplement No. 10, Wellcome Institute for the History of Medicine, London, 1990; see also Hermann Weber, Climatotherapy and balneotherapy... Ed. by F. Parkes Weber. Smith, Elder, & Co., London 1907, for a discussion of the medical history of spas. As stated in the introduction (ix) to *Medical History* "Culturally and regionally, the fortunes of water-cures depended heavily upon complex configurations of values, the laws of land-ownership, and the curves of economic development – to say nothing of the mere accidents of topography and geology." .

Delco lighting plant.[21] In 1921, a picnic area was constructed near the springs, and hosted over 6,000 visitors during its first season.[22]

In 1922, the Hotel was expanded by a wing to the northeast. The style of the addition was more rustic than the original. The third floor was still located in the roof volume, but the roof itself was graced by Dutch gables at the end (partly hipped) and Dutch gabled dormers. The ground and second floors included verandas along the south walls. (See photo of hotel, Figure 4, page 24.)

By the 1920s, hotel related site work included roads, a rose garden in front of the Hotel; a store (located near the present location of the guard station) and a dance pavilion on the south edge of the clearing east of the hotel; transforming one of the wetland areas below the pavilion into a water garden (complete with goldfish); a pavilion and pump over the biggest spring (Big Iron Mike); and baths behind the hotel (utilizing heated mineral water from the springs). Infrastructural development included placing a diversionary structure on a tributary of Trapper Creek for domestic water supply, and a cistern to collect mineral water. Several sources mention ice cream was sold at the hotel, apparently at the pavilion or at the store.[23]

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[21] MS, USDA FS, Wind River RS archive, Carson, Washington.

[22] Letter from Marion Thompson to Jamie Tolfree, USFS District Archeologist; dated 05 March 1987. Ms. Thomson was a lessee of a cabin site at the GMS for many years and a member of the leaseholders association.

[23] The availability of ice cream at this relatively remote location is interesting given the ownership of the hotel by brewing interests, since beer also required refrigeration for production and storage. The advent of mechanical refrigeration machines capable of producing ice dates to the 1880s in the North west. Gary Meier, Chapter 2.

The environs also included a total of 45 cabin sites in the immediate vicinity of the Springs along both sides of Trapper Creek (mostly upstream of as well as across the creek from the springs). Those cabins also required access roads, and water supplied by a diversion on another tributary. A camping area east of the hotel was also included.

The waters were not the only attraction. Visitors could walk the grounds, feed fish in the pond, and buy ice cream and other necessities at the store. Fishing and hiking drew people to the appreciate the the scenery, and berries continued to be gathered seasonally. Guests could rent horses for pleasure rides from the Hotel stables. The water was not only utilized for ingestion or baths, but also for cooking; the effervescent nature of the waters contributed to light textured pancakes, and carbonated lemonade. The Hotel was rumored to be the site of alcohol sales and gambling during Prohibition.

The Hotel burned in the spring 1936 under somewhat uncertain circumstances, and was not rebuilt. The clearing still yields some shards of broken and charred china. The campground and cabins continued to be occupied until the campground was decommissioned in the 1970s when some of the redcedar trees began to fall. The vacation cabins are still occupied, but the guard station was closed, and has begun to deteriorate.[24]

In the middle 1930s, the USFS and the CCC joined forces to improve the campgrounds and adjacent areas. Infrastructural interventions included upgrading the water distribution system to both the campsites and the leased cabin sites, improvement of the mineral springs cistern and pavilion at Big Iron

[24] Further interventions (especially to the cabins) are subject to review under Section 106 of the National Historic Preservation Act (NHPA).

Mike, and construction of diversions on Trapper Creek to prevent it from flooding the smaller springs in a side channel (Little Iron Mike and Bubbling Mike).

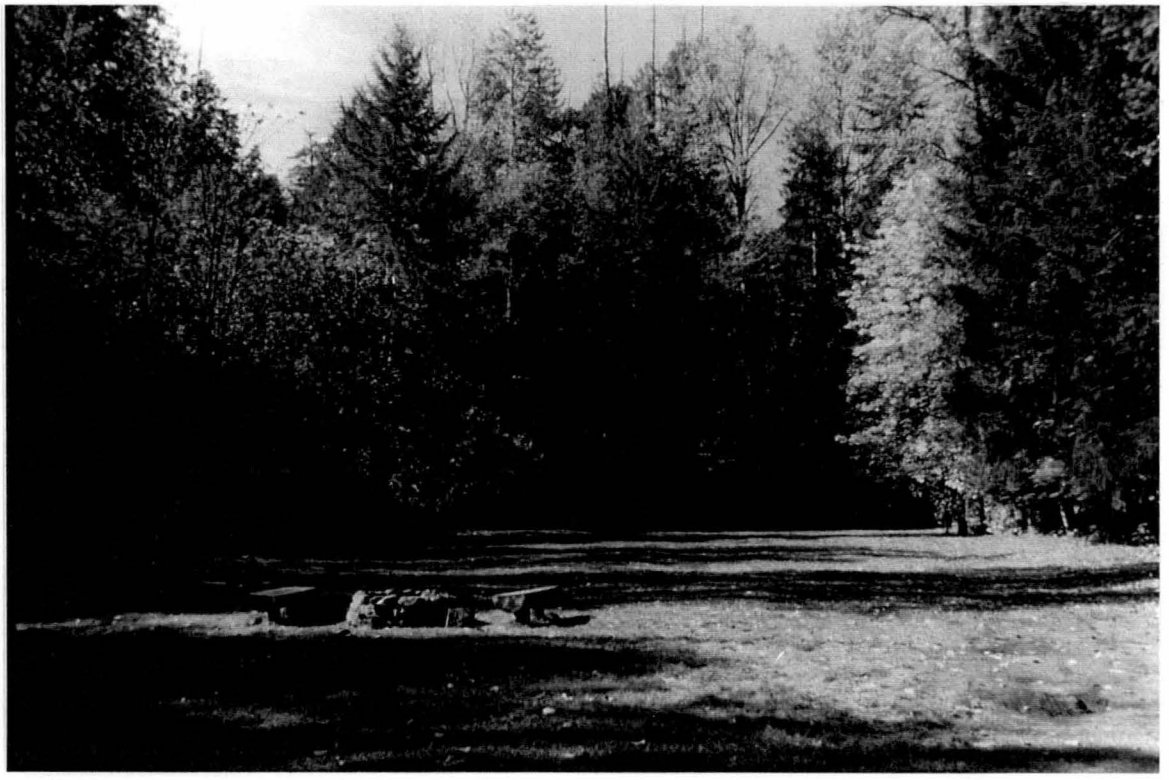

Figure 4A. Photo of Hotel Site, ca. September 1995. Photo by author.

Figure 5A. Photo of Recreation Pavilion at Hotel Site.
The historic record is not clear regarding the fate of the dance pavilion.

Figure 6A. Photograph of Pond Near Former Location of Recreation Pavilion.
Photo by author, September, 1995.

Figure 7A. Photograph of Log Dam Which Forms Pond Area Adjacent to Site of the Hotel. By author, September 1995.

USFS/CCC Structures

Construction of the campground followed design principles intended to preserve visual scenic values and minimize damage to vegetation. These ideas date to 1926, when plant pathologist E. P. Meinecke noted that compaction of soil due to vehicular and foot traffic was killing redwood trees in Sequoia National Park. Awareness grew that uncontrolled traffic damaged the soil, the understory, and trees, resulting in the destruction of the features that made campground locales attractive. The Forest Service codified Meinecke's campground management and design recommendations in *A Camp Ground Policy*, published in 1932.[25] The National Park Service also produced design guidelines intended to control camping practices and limit damage to campgrounds.

At the GMS, The Forest Service was already applying Meinecke's recommendations to the leased cabin areas in 1933, noting standards of design adapting structures to their sites, specifying building materials of local origin, and plantings of indigenous flora. In March of 1935, the roads at the GMS campground were aligned to decrease the need to remove or protect trees, and also to slow traffic. Spur roads to each campsite were aligned to meet the access road at a forty-five degree angle to facilitate parking and backing out vehicles.

Landscaping efforts included removal of snags, and clearing of campsites with the most minimal removal of the understory; in some locations,

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[25] McClelland, 1993, 161 - 168.

native shrubs and other plants were placed to restore damaged areas or influence patterns of human activity, and to "aid in obtaining a natural landscape."[26]

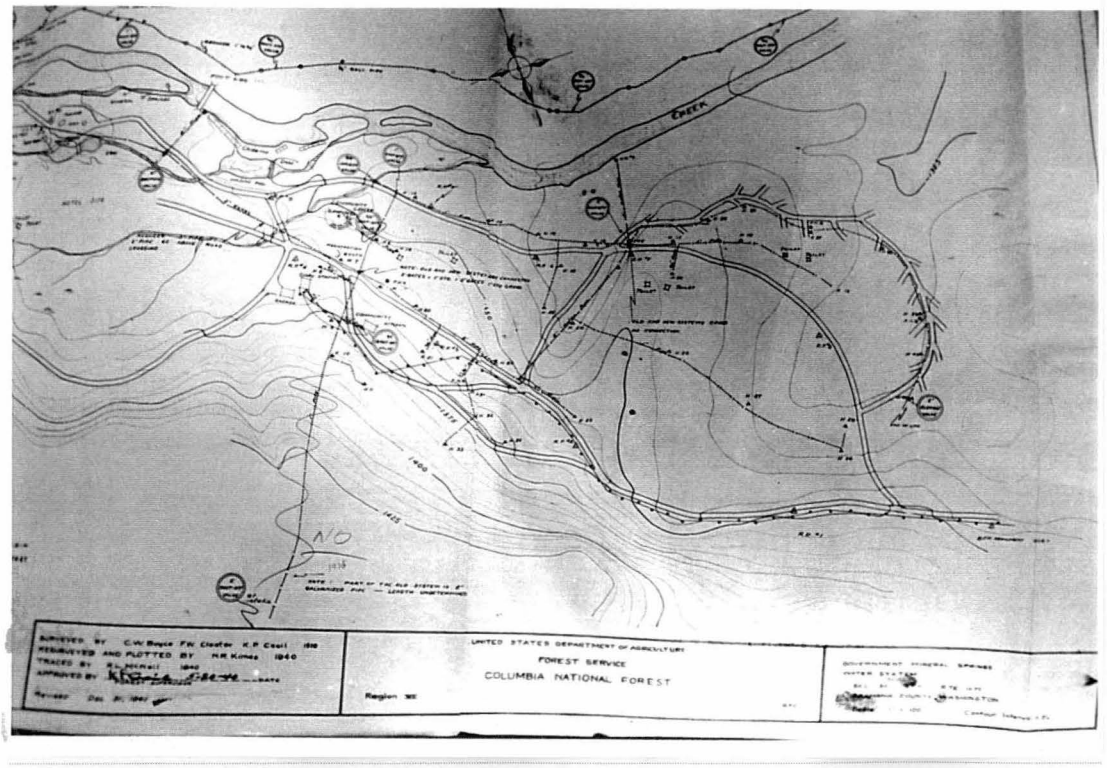

Figure 8A. Photo of Site Development ca. 1940, East Campground Area. Not to Scale. Photographed by author from the Government Mineral Springs file in the archives of the USDA Forest Service Wind River Ranger District, Carson, WA.

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[26] MS in GMS archive files. In a memorandum to the Forest Supervisor dated 18 March 1935, J.P. Langdon conveys a progress report regarding the campground development by the CCC. He is noted to be a USFS Recreation Engineer.

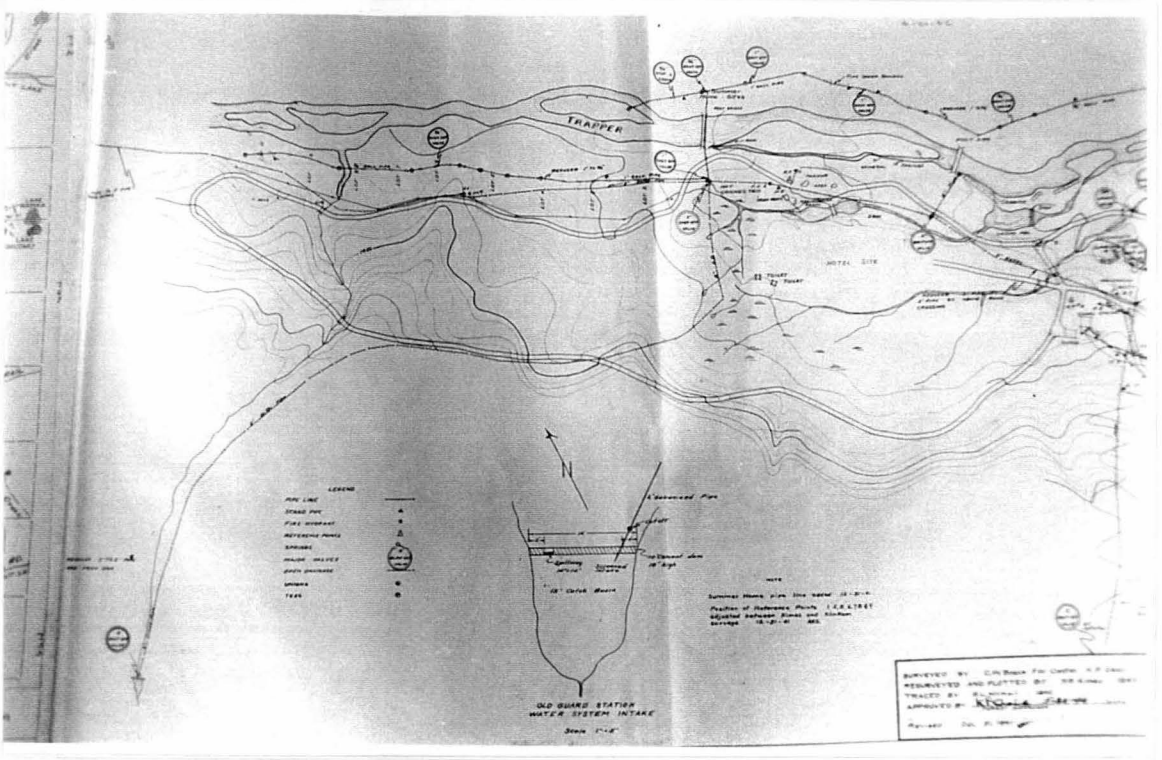

Figure 9A. Photo of Site Development ca. 1940. West Portion of Site (Springs, Day Use, Hotel Site, and Cabin Area). Not to Scale. Photographed by author from the Government Mineral Springs file in the archives of the USDA Forest Service Wind River Ranger District, Carson, WA.

The stream channel was cleared of snags, and straightened to "prevent erosion and damage to the camp ground." Diversion walls were also created to block side channel meanders, in part to protect the smaller springs. A parking area for day use was constructed near the springs, following removal of two cabins formerly associated with the hotel. Masonry fireplaces were constructed at the campsites, and some "located to a large extent in camps spots already established." These were not always desirably located but it was thought the they should be used instead of tearing up and cleaning out additional "natural growth." Camp tables were made of cedar pole logs and slabs. Pit toilets, an amphitheater and fire pit, seesaws, and swings were also constructed, and a wading pool planned.[27] The CCC also constructed a portal at the campground entrance, a Guard Station near the former location of the store, a visitors registry, and a community kitchen, all in the Cascadian or rustic style. Despite the standardization of this style in the USFS at that time, the CCC was apparently responsible for some innovations, particularly in the use of the pine tree symbol of the USFS.[28] The photographs of the Guard Station clearly show this embellishment.

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[27] J.P Langdon memorandum of 1936, GMS archive, USDA Forest Service, Wind River Ranger Station.

[28] Gail Throop, Utterly visionary and chimerical : federal response to the depression : an examination of Civilian Conservation Corps construction on National Forest System lands in the Pacific Northwest. (Thesis (M.A.)--University of Oregon, Eugene 1979).

Figure 10A. Photo of Historic Big Iron Mike Pavilion. According to the Forest Service's GMS file, the rectangular pavilion at Big Iron Mike was replaced by the current hexagonal pavilion in 1967. Photographed by author from the Government Mineral Springs file in the archives of the USDA Forest Service Wind River Ranger District, Carson, WA.

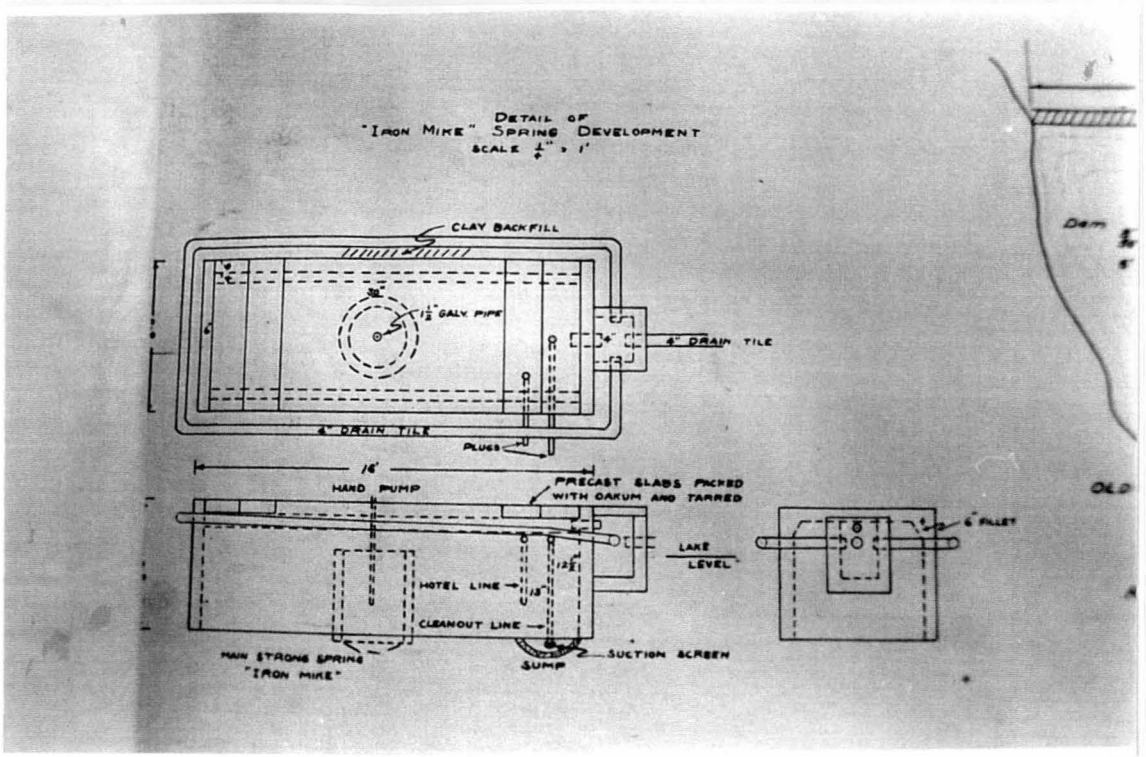

Figure 11A. Photo of Big Iron Mike Improvement Drawings ca. 1935. Not to Scale. Photographed by author from the Government Mineral Springs file in the archives of the USDA Forest Service Wind River Ranger District, Carson, WA.

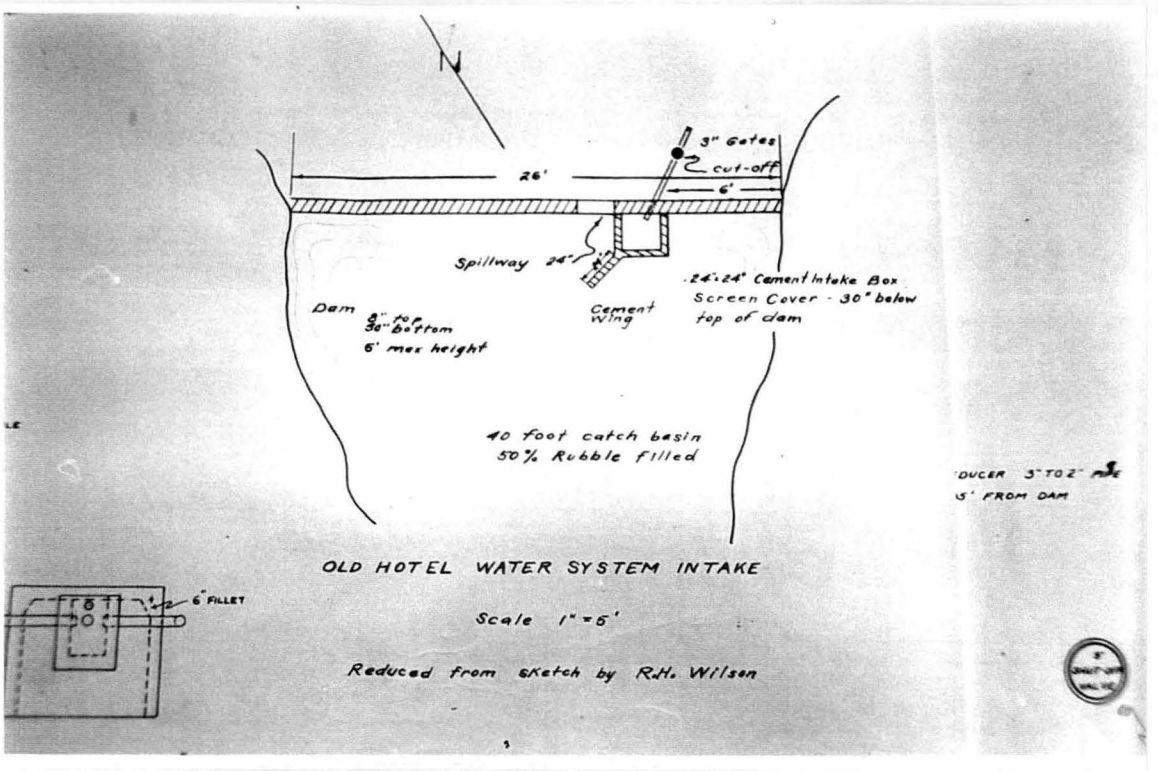

Figure 12A. Photo of Water System Improvement Drawing ca. 1935. Not to Scale. Photographed by author from the Government Mineral Springs file in the archives of the USDA Forest Service Wind River Ranger District, Carson, WA.

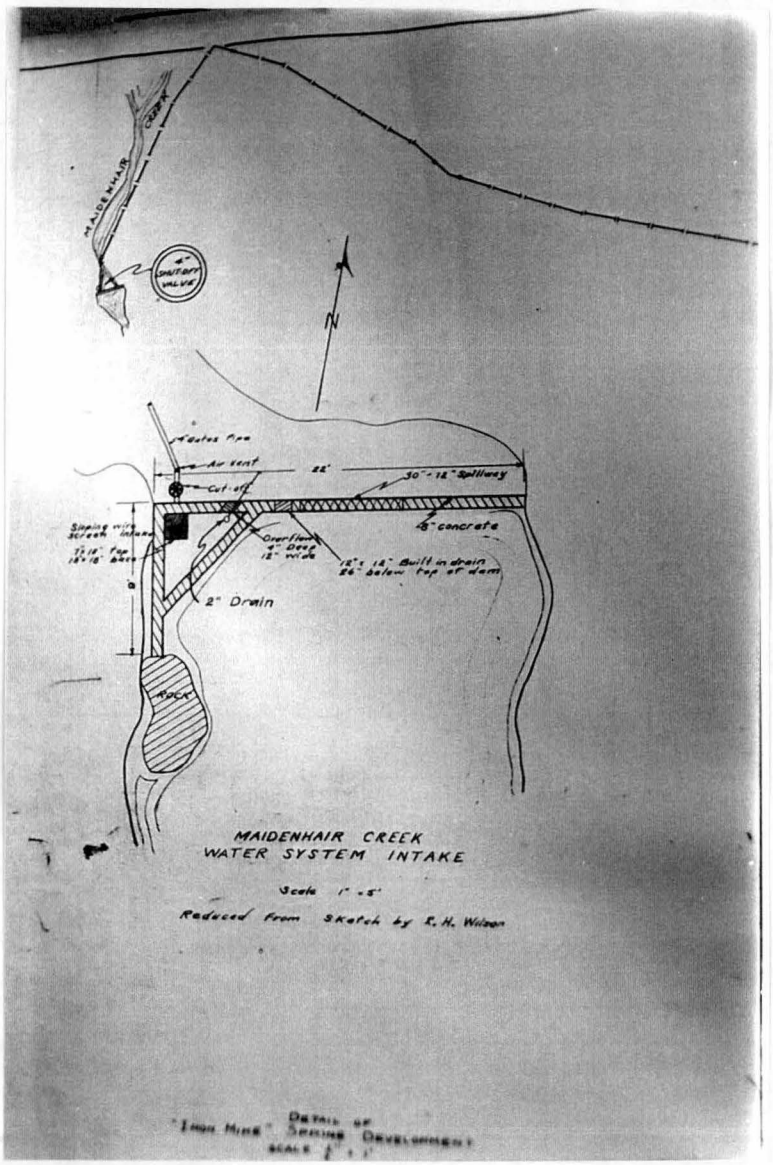

Figure 13A. Photograph of Water System Improvement Drawing ca. 1935. Not to Scale. Photographed by author from the Government Mineral Springs file in the archives of the USDA Forest Service Wind River Ranger District, Carson, WA.

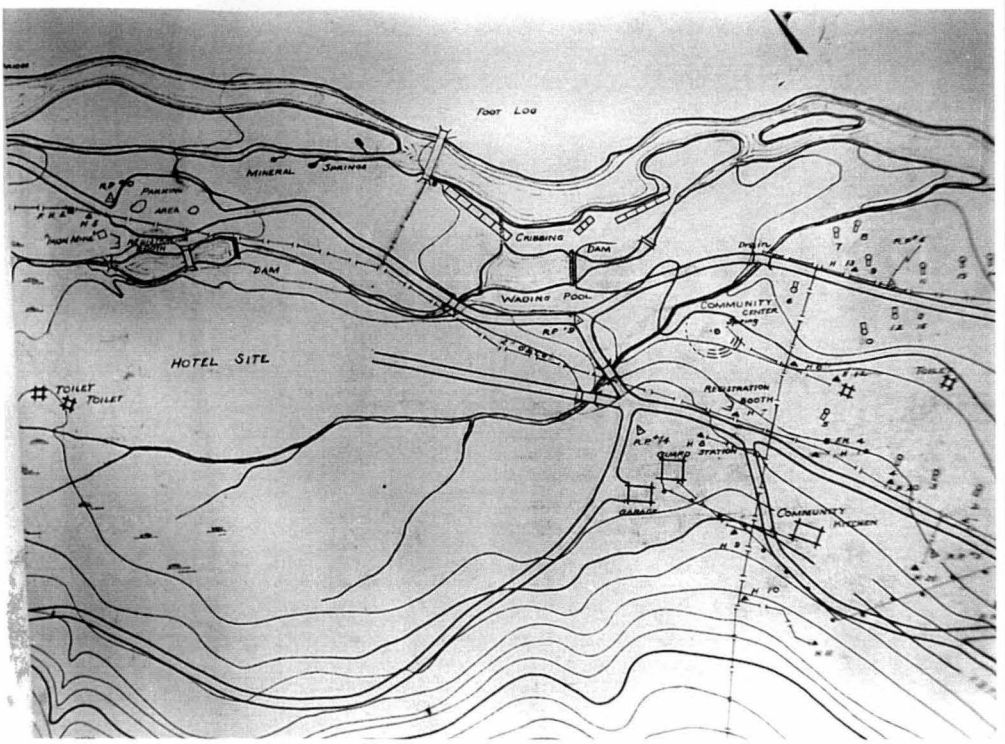

Figure 14A. Photo of Water System Improvement Drawing. Note Big Iron Mike (Spring) Notation; Little Iron Mike and Bubbling Mike Springs Located Near Foot Log. Photographed by author from the Government Mineral Springs file in the archives of the USDA Forest Service Wind River Ranger District, Carson, WA.

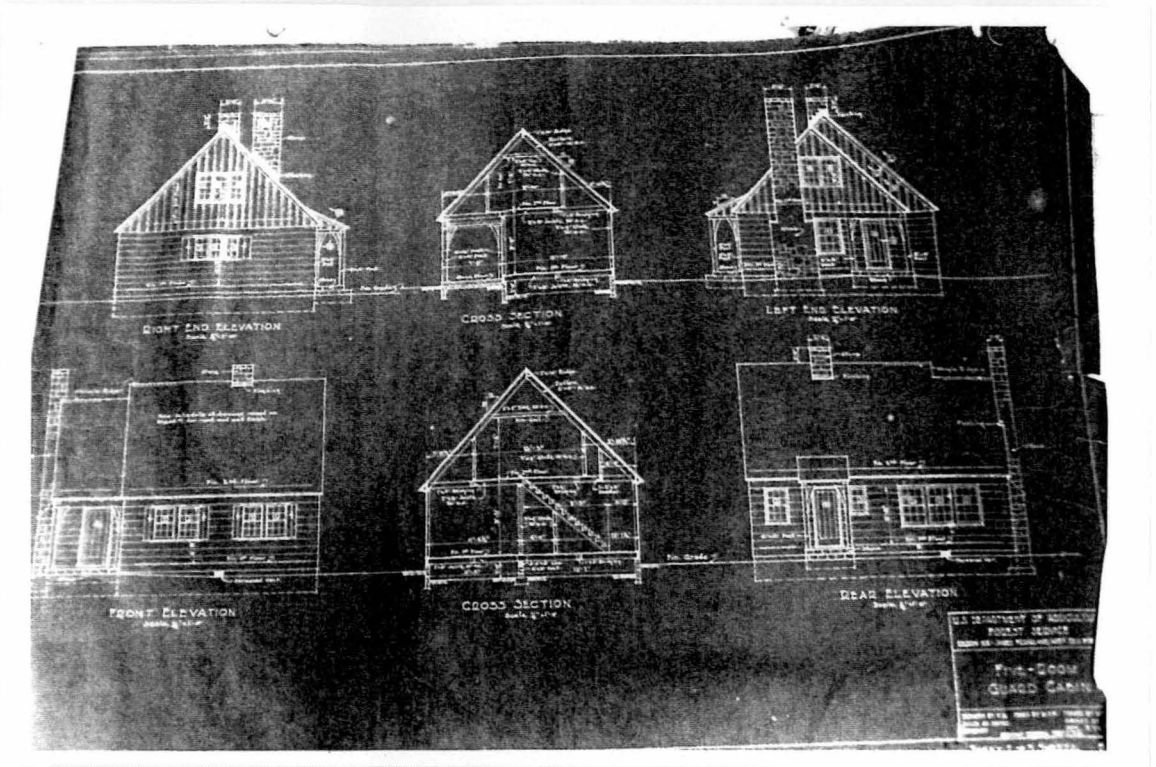

Figure 15A. Photograph of GMS Guard Station Blueprint: Elevations. Not to Scale. Photographed by author from the Government Mineral Springs file in the archives of the USDA Forest Service Wind River Ranger District.

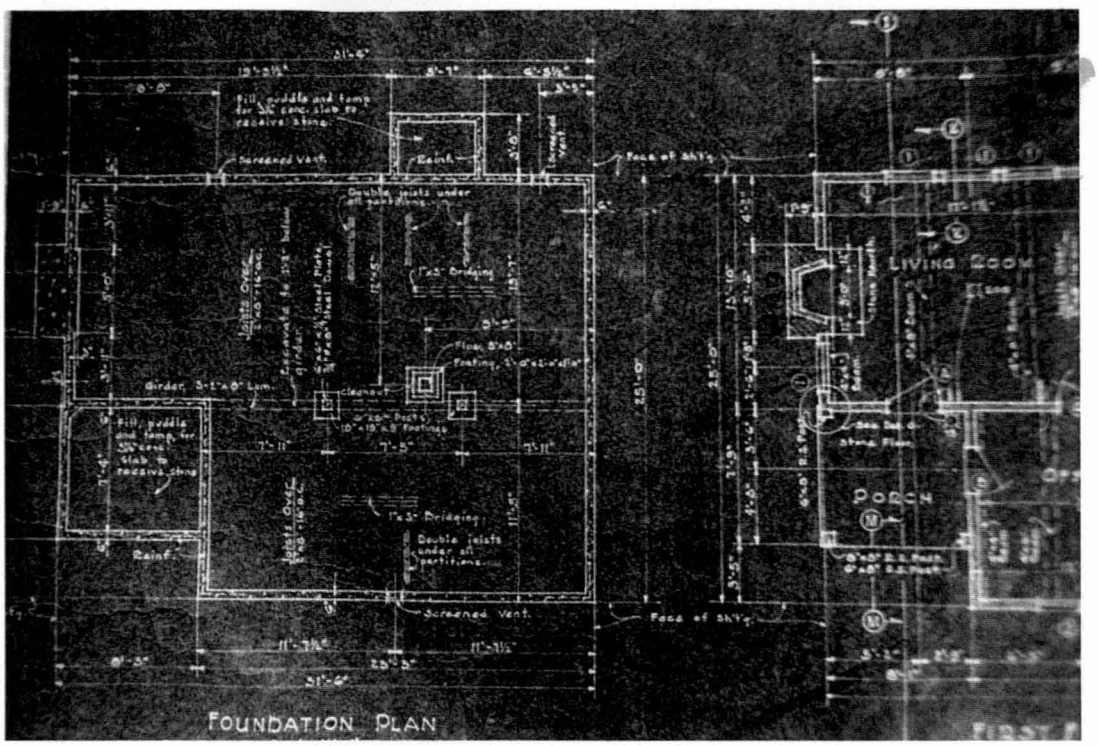

Figure 16A. Photograph of GMS Guard Station Blueprint: Foundation Plan. Not to Scale. Photographed by author from the Government Mineral Springs file in the archives of the USDA Forest Service Wind River Ranger District.

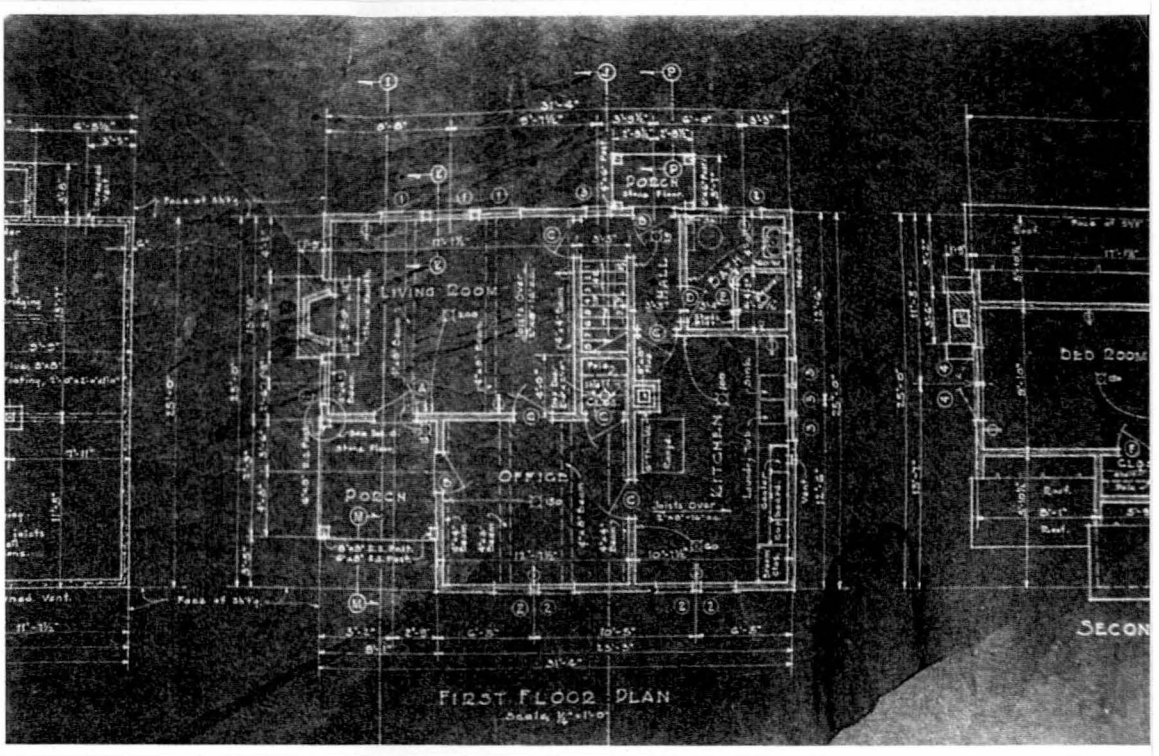

Figure 17A. Photograph of GMS Guard Station Blueprint: First (Ground) Floor Plan. Not to Scale. Photographed by author from the Government Mineral Springs file in the archives of the USDA Forest Service Wind River Ranger District.

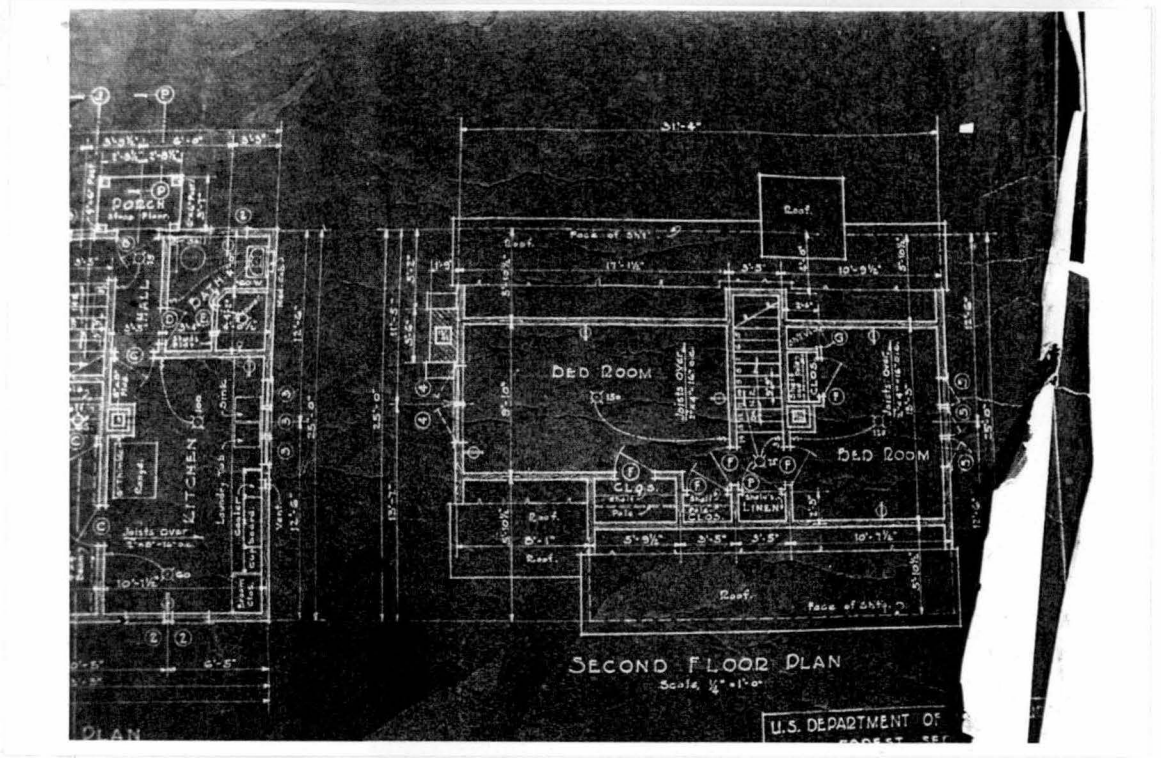

Figure 18A. Photograph of GMS Guard Station Blueprint: Second Floor Plan. Not to Scale. Photographed by author from the Government Mineral Springs file in the archives of the USDA Forest Service Wind River Ranger District.

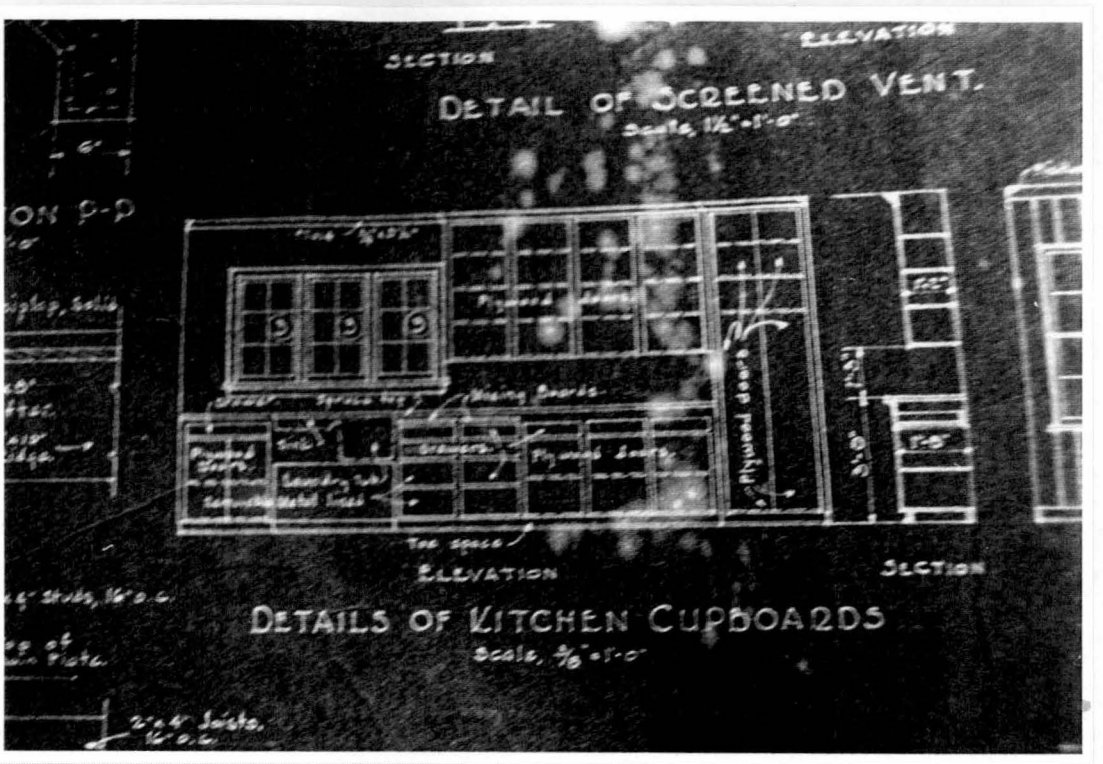

Figure 19A. Photograph of GMS Guard Station Blueprint: Detail of Kitchen Cabinets. Not to Scale. Photographed by author from the Government Mineral Springs file in the archives of the USDA Forest Service Wind River Ranger District.

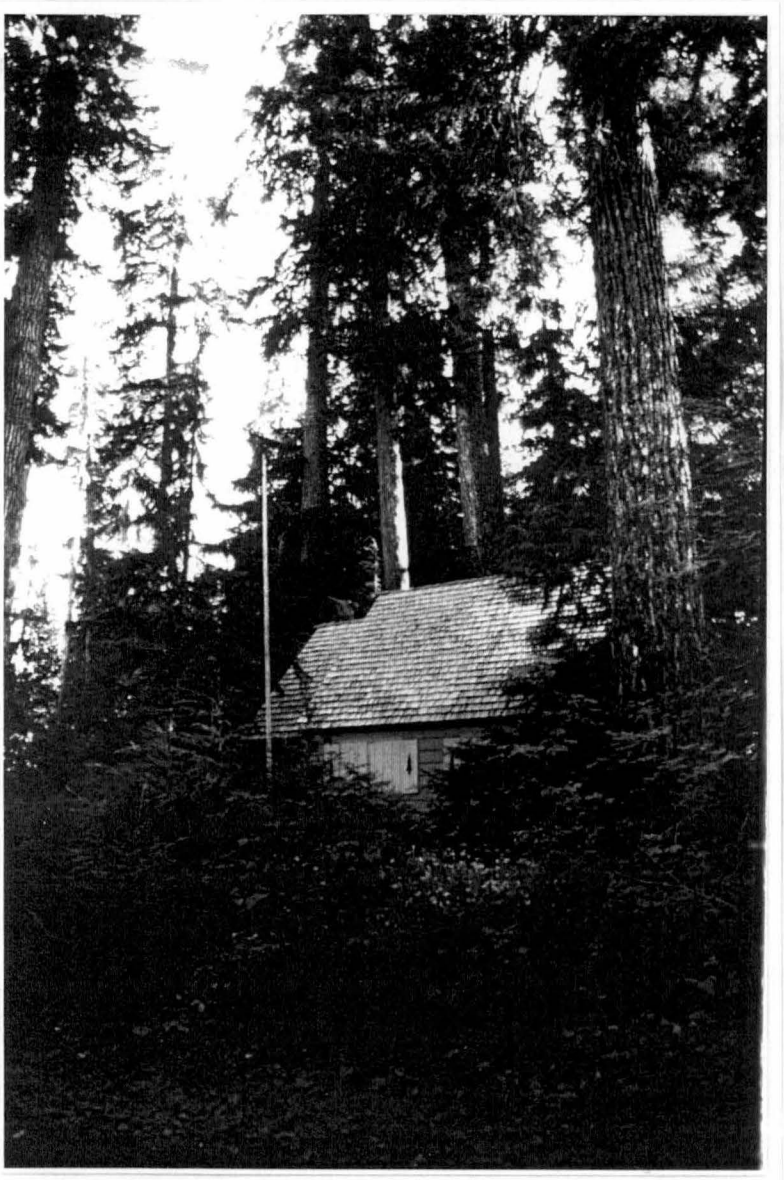

Figure 20A. Guard Station from Road, ca. 1995. Photo by author.

Figure 21A. Guard Station East Gable, ca. 1995. Photo by author.

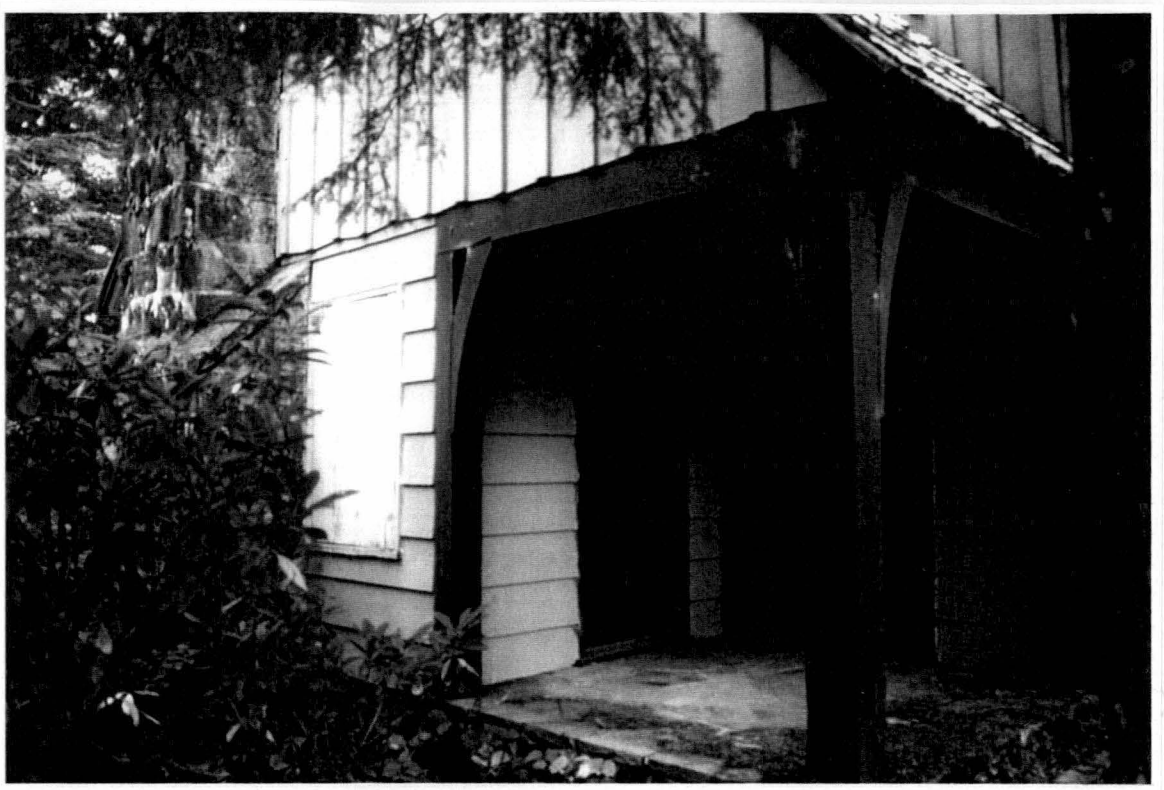

Figure 22A. Guard Station Entry, ca. 1995. Photo by author.

Figure 23A. Guard Station West Gable, ca. 1995. Photo by author.

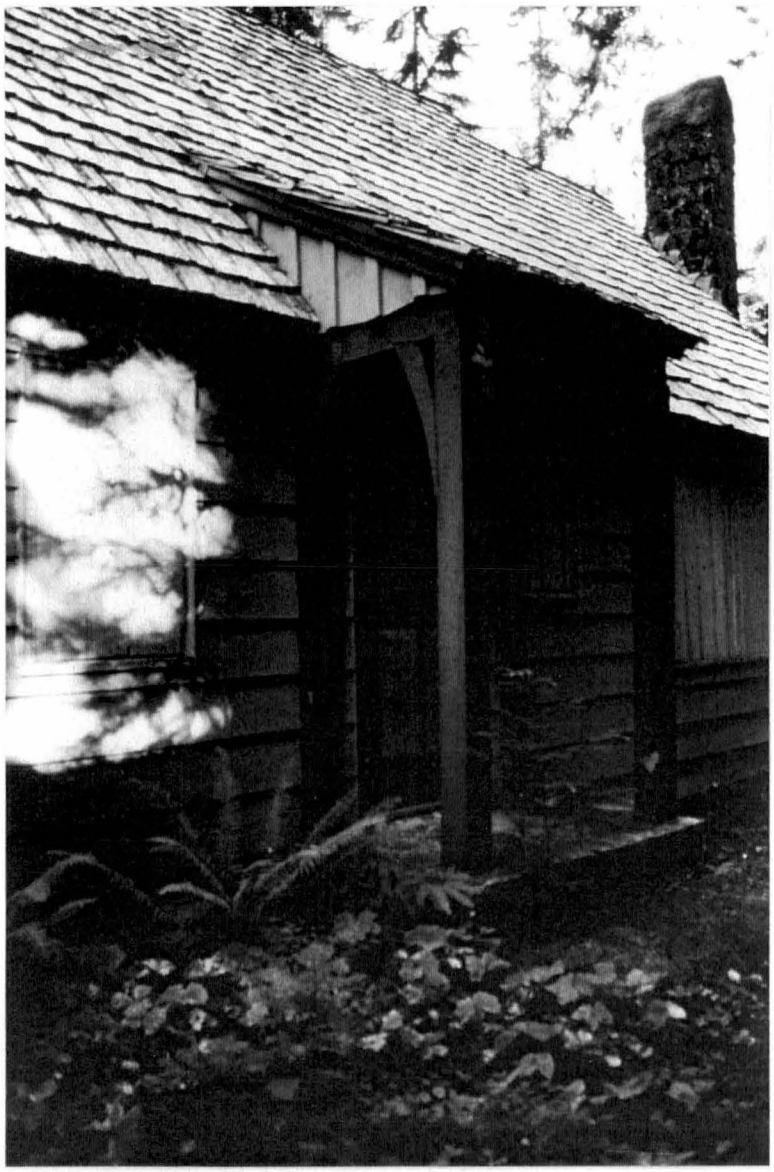

Figure 24A. Guard Station Back Porch, ca. 1995. Photo by author.

Figure 25A. Guard Station Garage, ca. 1995. Photo by author.

Contextual Description and History

Howe Guard Station

In 1924, the USFS constructed the Howe Guard Station on on the north side of Trapper Creek just upstream from the Wind River, and downstream from the Government Mineral Springs area. The Guard station was built next to a trail which sheep and shepherds traveled to reach grazing areas in the upper elevations of the watershed. The rangers counted sheep and patrolled the local area. The station consisted of a two room cabin measuring 10'x32' and was supplemented in 1932 by a garage (15' 6"x32'), and by a 20'x20' barn in 1940. The station was used until the 1950s, and no longer exists.

Observation Peak Tower

Prior to the use of airplanes and automated remote sensing equipment, the USFS constructed towers on selected sites, and employed people seasonally to watch for and locate fires. One such tower was located on Observatory Peak, at the northwest edge of the Trapper Creek watershed. A trail of some 2 miles and nearly 2,000 feet elevation led from the GMS to the lookout tower area, making it a popular day hike for visitors to the Springs.

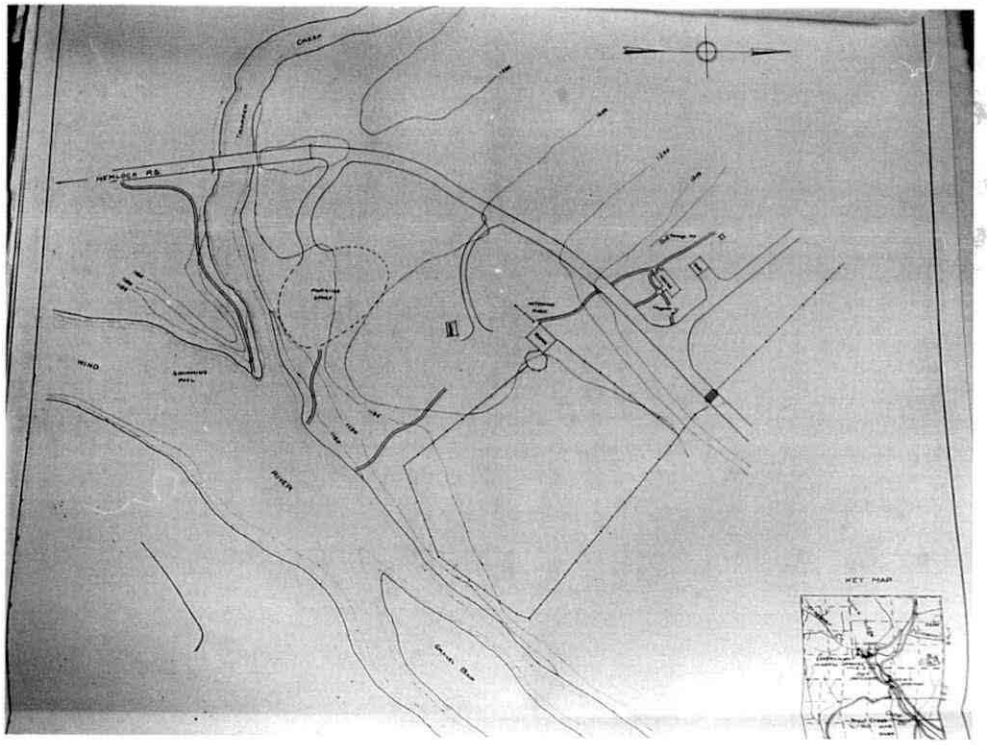

Figure 26A. Photograph of Howe Guard Station Site Map. Not to Scale. Photographed by author from the Government Mineral Springs file in the archives of the USDA Forest Service Wind River Ranger District.

Carson Fish Hatchery

The Carson National Fish Hatchery is located just downstream from where Trapper Creek joins the Wind River. The absence of dams on the Wind River, and the Wind Rivers location just upstream from Bonneville Dam have made it an important resource and visitor destination.

Tyee Springs

The hatchery takes it water from a small tributary of the Wind River which arises from the Tyee Springs. These springs are not as accessible as the GMS, but serve as a reminder of the ubiquitous nature of ground water circulation along bedding planes in this locale.

Little Soda Springs

Yet another set of springs was located on the west side of the Wind River just downstream from Trapper Creek, near the hatchery. Known as Little Soda Springs, it included some camp sites and a day use area from the 1920s through the 1960s. Changes in the river course led to abandonment of the area, and the site is now obscured by growth of the typical temperate rain forest understory.

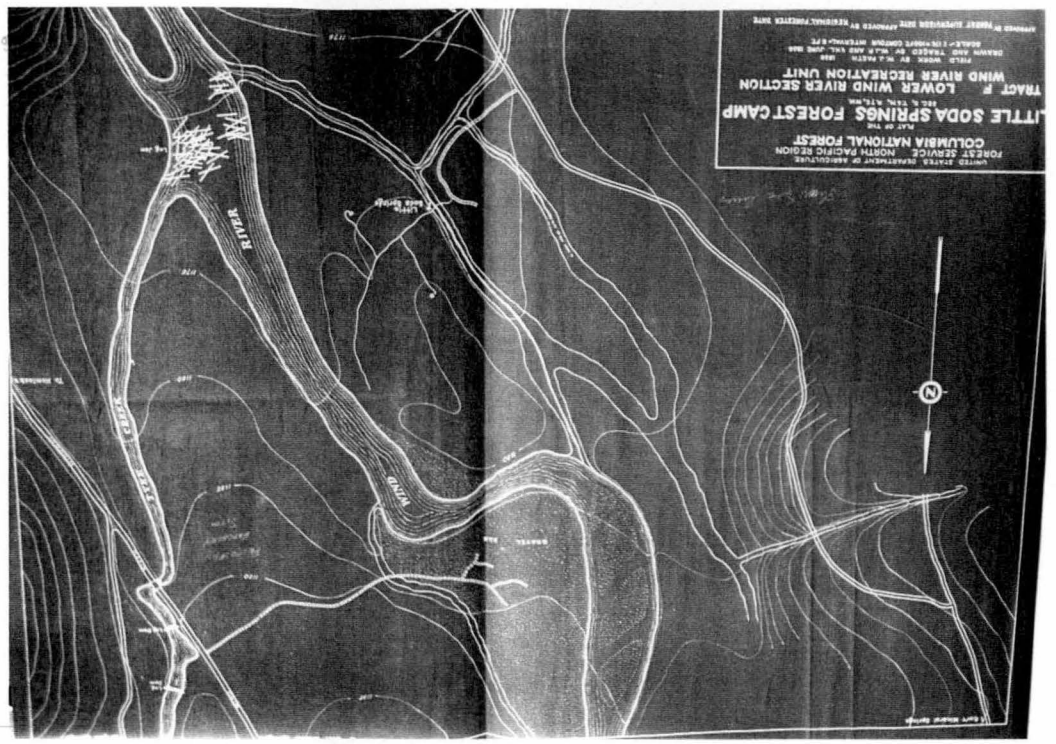

Figure 27A. Photograph of Little Soda Springs Campground Site Plan ca. 1936. Not to Scale. Photographed by author from the Government Mineral Springs file in the archives of the USDA Forest Service Wind River Ranger District.

Context Summary

The GMS is located where the geology, topography, and climate combine with the temperate rain forest to produce an area rich in water dependent features, including the springs, the creeks and rivers, the riparian zones and the redcedar grove. The continued existence of these features is

based upon a complex web of interdependent processes that operate at a wide range of temporal and spatial scales.

Surviving CCC Structures

Of all the structures built by the CCC at the GMS, only the pavilion at the Big Iron Mike pump, the Guard Station, and the picnic area stone work remain. The Guard Station is presently closed, and both the site of the it and the picnic area overgrown. Nevertheless, an examination of the surviving structures will enable definition of causal and sustaining processes. The physical integrity of the structure has been assessed several times over the past two decades; it is currently not inhabitable because structural members supporting the floor have been damaged by moisture.

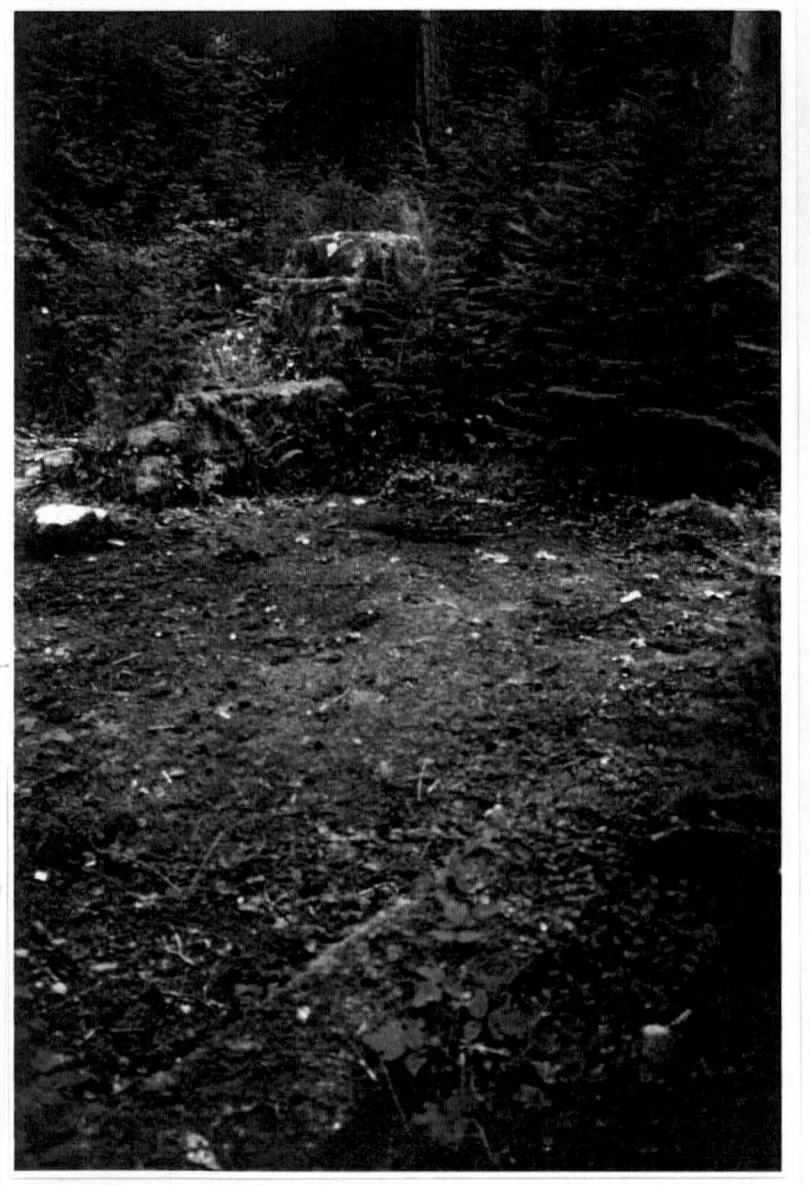

Figure 28A. CCC era Masonry of Community Kitchen, ca. 1995. Photo by author.

Figure 29A. Steps to Little Iron Mike and Bubbling Mike Site, ca. 1995.
Photo by author.

APPENDIX B

DERIVATION OF PRESERVATION PRINCIPLES WHICH MAY BE APPLIED TO PROCESSES

> "Broad principles do not develop overnight. Generally, they have roots in 'first principles' or background theory, and are also supported by a considerable amount of empirical evidence. First principles, such as evolution and laws of thermodynamics, are fine scale or reductionist statements of human knowledge that are highly robust. When large, complex objects render experiments difficult...advances are made by linking observable phenomena to existing first principles.
>
> Models...are simplifications of complex systems to enhance understanding. They may or may not be empirically supported, but the often provide highly useful insight that may lead to principles and applications." [29]

Preservation principles which apply to artifacts and to landscapes (and other collections of artifacts) lend form to much of the pragmatic preservation literature (such as the Secretary's Standards and Guidelines). The feasibility of applying these accepted principles to processes has not been proved. However, the Standards and Guidelines are based upon principles which have developed over time, and proven resilient and flexible enough to apply to diverse situations. They may contain fundamental notions that could apply to preserving or sustaining the processes which underlie the context of the GMS.

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[29] Forman, 1995. *Landscape Ecology*, v.10 no. 3, 133-134.

> "A general principle: (1) integrates diverse areas of knowledge; (2) addresses significant questions; (3) has broad applicability, though exceptions usually exist; (4) has predictive capability; (5) is founded in theory, which in turn has considerable supporting evidence; and (6) has some direct supporting evidence." [30]

For the purposes of this investigation, the Standards are assumed to meet the definition of the general principles, as noted in Forman (above). The Standards are specifically assumed to be broad enough to apply to processes, and to have sufficient predictive capability to enable any possible applications to processes to be evaluated within the context of the case study area.[31]

In this appendix, the accepted preservation principles are presented, and any fundamental notions which may relate to processes are noted, and tested to see if they might fit some portion of the GMS context.[32] The individual preservation standards will be documented briefly in the following order: the general type of treatment (preservation, rehabilitation, restoration, or reconstruction) will be presented, followed by the individual standard. A proposed or derivative principle analogous to the original, but intended to apply to processes, will be presented after the implications have been discussed.

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[30] Forman, 1995. *Landscape Ecology*, v.10 no. 3, 133-134.

[31] These assumptions may be dangerously over simplified, but the evolution of preservation standards over time to fit diverse situations lends credibility in this case.

[32] In effect, we are building a model which is analogous to the relationship the existing preservation standards and guidelines have to buildings, landscapes, and other artifacts.

Appendix C deals in detail with the definition of processes; but for this appendix, the word or concept of process is understood to mean a course of action, or some kind of progression, or natural evolution or change. It may also embody an operation, system, method or approach. It also may carry connotations of caring for, or managing, or preparing, or making.

Overview of General Preservation Principles

The most general preservation principles seem to be based upon the injunction to "do no harm" to that which is the object of attention, i.e., to that resource which may be in need of protection. Like other principles presented in this investigation, these general principles are, or may be hierarchic in nature. Although the relative position of some of these principles have changed over time and according to circumstance,[33] the fundamental notions seem to include respect for and gives great deference to the historic elements and ensembles which have retained integrity. The principles also include respect for the sense of history which the historic tissue acquires with change over time.

General preservation principles also seem to be based upon notions of clarity and reversibility. Any intervention should not obscure the difference between what is historic and what is not historic. Any intervention should also be reversible, because our present knowledge be less than accurate, and our present intentions and actions may be inappropriate.

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[33] Rehabilitation now precedes Restoration in the Guidelines, whereas formerly it followed, or was a less preferred treatment modality than Restoration.

Finally, we should be clear about the temporal scale at which these treatments and standards are intended to apply. The criteria for inclusion on the National Register suggest that fifty years is an adequate amount of time for a property to develop recognizable significance. In applying preservation principles to processes, we may be applying the principles not to decades old objects, but to dynamic structures which may have changed dramatically over that period of time. In the case of the GMS, the USFS has certainly changed over the last fifty years; and the structure of the GMS itself has also changed (e.g., trees have been lost, the creek has changed course). We could assume that the processes have changed as well; but that assumption may be misguided. We may simply be looking at a different manifestation of the the same process(es) that created and has sustained the GMS. Our scale of perception may be so focused upon the last fifty or one hundred years that we cannot see changes and similarities that operate on much longer scales of time.

Evaluation

It is interesting to note that the level of effort implied in these principles may not be directly proportional to their placement in the hierarchy, and in some cases may be inversely proportional. For instance, to repair parts of some historic element or ensemble might require more effort than simple replacement; but the repair would presumably preserve more of the actual historic element or fabric.

These principles are also provocative in terms of the scale of intervention, and in terms of the temporal scales associated with those scales of

intervention. One might imagine, for instance, that stabilization and maintenance could be relative small scale interventions which proceed over longer periods of time than restoration or rehabilitation.

Finally, it is clear from the literature associated with preservation standards that documentation is a constant concern - not only documentation of the original, but also documentation of current understanding, intention, action, interpretation, and effect.

Implications for Application to Processes

In general, the implication these principles have for application to processes is difficult to imagine, without a better understanding of the nature of a particular process. But it is clear that any set of principles which may be applied to processes may have a similar structure, and a similar underlying preference for continual care and attention to the historic - a kind of mindfulness and diligence based upon respect for the particular, unique elements, ensembles of elements, and relationships from which the process is formed.

The notion of applying concepts of clarity and reversibility to living processes and dynamic landscapes may force us to think of how our actions or intentions may cause effects which are in fact irreversible. As noted in the literature of the systems theorists, just as one cannot not communicate, not making a decision is making a decision; and inaction or non-intervention may have quite significant outcomes when dealing with complex systems.[34]

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[34] See Hanson 1995.

Specific Treatments, Standards, and Considerations

The Secretary of the Interior's Standards for Archeology and Historic Preservation have evolved into generally applicable instruments which can be interpreted and applied to specific circumstances. The standards for treating historic structures or landscapes may or may not apply directly to processes. In this appendix, the standards are noted, and possible fundamental ideas discussed as possible applications to processes. The National Park Service document Number 28 (NPS 28) recognizes four distinct, yet interrelated modes of treatment which may be applied to historic properties. These modes of treatment have become codified in the Secretary of the Interiors Standards for the Treatment of Historic Properties,[35] and each include several issues which may be addressed when utilizing that particular mode of treatment. These treatment modalities are distinct, yet interrelated. Any given historic preservation project could include interventions which rely upon more than one treatment modality, and more than one standard, and are guided by any of the points of consideration. The standards include:

- Preservation (8 standards to consider)
- Rehabilitation (10 standards to consider)
- Restoration (10 standards to consider)
- Reconstruction (6 standards to consider)

It is interesting to note that prior to the revision of the Standards in 1996, the relative position of the Restoration and Rehabilitation modalities were

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[35] NPS 28, 236-238.

reversed. The current arrangement is intended to reflect the relative degree to which interventions retain the historic form, features and details. Specifically, restoration is currently understood to imply removal of historic substance and potential unities in order to more accurately represent a particular period of significance; while rehabilitation is understood to acknowledge the need to alter,but not necessarily remove any of the historic substance or relationships.

The NPS document Cultural Resource Management (NPS 28) also lists several other standards or guidelines relating to historic cultural resources.[36] The standards and guidelines apply to:

- Preservation Planning,
- Identification,
- Evaluation,
- Registration,
- Historical Documentation
- Architectural and Engineering Documentation
- Archeological Documentation
- Treatment of Historic Properties
- Professional Qualification Standards

No doubt these standards and guidelines also may apply to processes; for instance, preservation planning relies upon the development of historic context statements or overviews, which in turn rely upon the description of historic processes as well as the identification of important property types. But within the context of this investigation, application of standard or guideline to process will be limited to the Secretary of the Interiors Standards for the treatment of Historic Properties and the Guidelines for the Treatment of Historic Landscapes.

The draft document Guidelines for the Treatment of Historic Landscapes included similar categories, each with eight areas for consideration.

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[36] NPS 28, Appendix C, 207.

- Protection and Stabilization (8 standards, and 8 considerations)
- Preservation (8 standards, and 8 considerations)
- Rehabilitation (10 standards, and 8 considerations)
- Restoration (10 standards, and 8 considerations)
- Reconstruction (6 standards, and 8 considerations)

The current version (1996) of the Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Historic Landscapes deletes the Protection and Stabilization section, enfolding those ideas into other sections. The points to consider expand from eight to eleven, with the original eight categories collapsing to seven. The additional four categories address considerations which are usually part of the actual historic preservation process, but have the potential to negatively impact preservation processes, character defining substance, and desired outcomes. The considerations include:

Final Version Considerations (each Standard)	(Draft Version)
1. Spatial Organization and Land Pattern	(Topography)
2. Topography	(Vegetation)
3. Vegetation	(Natural Systems)
4. Circulation	(Circulation)
5. Water Features	(Water Features)
6. Structures, Furnishings and Objects	(Furnishings and Objects)
7. Structures	(Structures) (Views and Spatial Organization)
8. Accessibility Considerations	
9. Health and Safety Considerations	
10. Environmental Considerations	
11. Energy Efficiency	

The guidelines for landscape also list the following goals for each level in the hierarchy:

- Identify, Retain and Preserve Historic Materials and Features
- Stabilize and Protect Deteriorated Historic Materials and Features as a Preliminary Measure
- Maintain Historic Features and Materials
- Repair Historic Features and Materials
- Limited Replacement In Kind of Extensively Deteriorated Portions of Historic Features

These guidelines for preserving landscape scale artifacts seem to be organized hierarchically, beginning at the large end of the spatial spectrum and proceeding to smaller elements. This hierarchic organization may also reflect a similar spectrum of temporal scales, although both spectra may vary according to the scale of the phenomenon of interest. For instance, the spatial organization and land pattern of the GMS and its context area may be quite large, extending thousands of years and thousands of kilometers, while the spatial organization and pattern of a garden or a building would be appropriately viewed in more finite terms of meters, and over days, seasons, and years.

The Standards and Guidelines will now be examined, and the implications for this investigation discussed. The four Treatment (formerly five) modalities will be discussed, and compared in relation to each other. The individual Treatments will then be assessed. Following examination of the Treatments, the individual Standards will be evaluated. As each of the guidelines repeat across standards, the individual guidelines will be discussed individually. In all cases, the Treatment, Standard, or Guideline will be reviewed and the implications they may have for processes will be noted.

Discussion of The Treatment Modalities

The four modes by which an historic entity may be treated include preservation, rehabilitation, restoration, and reconstruction. All treatments share the assumption that enough historic substance or information exists to act appropriately.

The Treatment Modality of Preservation

Definition: Preservation is defined as the act or process of applying measures necessary to sustain the existing form, integrity, and materials of an historic property. Work, including preliminary measures to protect and stabilize the property, generally focuses upon the ongoing maintenance and repair of historic materials and features rather than extensive replacement and new construction. New exterior additions are not within the scope of this treatment; however, the limited and sensitive upgrading of mechanical, electrical, and plumbing systems and other code-required work to make properties functional is appropriate within a preservation project.

Elaboration: When the property's distinctive materials, features and spaces are essentially intact, and thus convey the historic significance without [need for] extensive repair or replacement; when depiction at a particular period of time is not appropriate; and when a continuing or new use does not require additions or extensive alterations, preservation may be considered as a treatment. Prior to undertaking work, a documentation plan for preservation should be developed.[37]

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[37] NPS 28, 237.

The Treatment Modality of Rehabilitation

Definition: Rehabilitation is defined as the act or process of making possible an efficient compatible use for a property through repair, alterations, and additions while preserving those portions or features which convey its historical, cultural, or architectural values.[38]

The Treatment Modality of Restoration

Definition: Restoration is defined as the act or process of accurate/y depicting the form, features, and character of a property as it appeared at a particular period of time by means of the removal of features from other periods in its history and reconstruction of missing features from the restoration period. The limited and sensitive upgrading of mechanical, electrical, and plumbing systems and other code-required work to make properties functional is appropriate within a restoration project.[39]

The Treatment Modality of Reconstruction

Definition: Reconstruction is defined as the act of process of depicting, by means of new construction, the form, features, and detailing of a non-surviving site, landscape, building, structure, or object for the purpose of replicating its appearance at a specific period of time and in its historic location.[40]

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[38] NPS 28, 237.

[39] NPS 28, 237.

[40] NPS 28, 237.

Overview

As noted earlier, the first three treatments assume the survival and integrity of sufficient historic substance to enable the application of an appropriate treatment, while the fourth treatment assumes that historic substance and integrity are either absent or so seriously degraded that the first three modalities are not appropriate. Consequently, the standards associated with reconstruction are unique to that treatment type, while the other treatments include similar standards (to varying degrees, as will be noted). Therefore, those standards which are associated with the first three treatment types will be examined concurrently. The standards associated with reconstruction will be examined separately.

Review of Preservation, Rehabilitation, and Restoration

The first three modes of treatment are hierarchic in nature, and represent a spectrum ranging from inclusivity at the preservation end to exclusivity at the restoration end of the scale. The inclusivity of the preservation treatment assumes that changes contribute to the sense of historic significance and integrity, while within restoration treatments changes may in fact detract from the sense of significance or integrity.

Implications for Processes

If processes can be treated in ways similar to how physical objects are treated, we might find a hierarchical approach advisable, based upon what we are trying to preserve or protect. We might also be reasonably expected to address issues of inclusivity or exclusivity; or the time scales at which our interventions are intended to apply.

Review of Reconstruction

Reconstruction treatment differs from preservation, rehabilitation, and restoration in part because the relative paucity of historic substance and integrity make those treatments impossible. But reconstruction is possible because enough information exists to allow accurate reconstruction. In other words, the presence of information which has enough integrity to allow reconstruction is the prerequisite for action. Without that quality of information, reconstruction is not possible.[41] Other avenues of action, such as interpretation ("this was the site of...") may be appropriate and advisable.

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[41] The parallel to Bateson's "difference that makes a difference" is noteworthy. See Appendix C for further discussion of Bateson's ideas.

Implication for Processes

How would one go about reconstructing a process? What might it mean to apply reconstructive treatments to processes? It seems clear that standard investigatory techniques may be appropriate. One could consult sources of historic information for descriptions of the processes.[42]

In applying the notion of reconstruction to processes, therefore, one must critically evaluate the nature of the information available regarding the process in question. The key criterion is whether enough of the right kind of information may exist.

Interactions of Treatment Modalities

Any given preservation project might reasonably include any or all of the treatment modalities concurrently. This is pointedly referenced in the Reconstruction standard number one:

> "Reconstruction shall be used to depict vanished or non-surviving portions of a property when documentary and physical evidence is available to permit accurate reconstruction with minimal conjecture, and such reconstruction is essential to the public understanding of the property."

It is clear that reconstruction may be a valid part of any project which may be characterized overall by either preservation, rehabilitation, or restoration. And a reconstruction project might reasonably include some portion treated by

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[42] In fact, this technique was used to investigate the process of campground design. See Chapter Two and Appendix A for an example.

preservation, rehabilitation, or restoration. The critical issues in recognizing and dealing with these complex interactions could be summarized by clarity of intent, execution, and interpretation and documentation.

Implications of Interactivity for Processes

If processes are indeed subject to these treatment modalities, one might reasonably expect that any intervention to a process might include various treatment types. Just as any given preservation project focused upon a physical object may simultaneously include aspects of preservation, rehabilitation, restoration, or reconstruction which are appropriate to individual components, the treatment of a process may include analogous treatment types which operate upon different components and even at different spatial and temporal scales.

Examination of Individual Modes of Treatment

The Treatment Modality of Preservation

Definition: Preservation is defined as the "act or process of applying measures necessary to sustain the existing form, integrity, and materials of an historic property. Work, including preliminary measures to protect and stabilize the property, generally focuses upon the ongoing maintenance and repair of historic materials and features rather than extensive replacement and new construction. New exterior additions are not within the scope of this treatment; however, the limited and sensitive upgrading of mechanical, electrical, and plumbing systems and other code-required work to make properties functional is appropriate within a

preservation project."
Elaboration: "When the property's distinctive materials, features and spaces are essentially intact, and thus convey the historic significance without [need for] extensive repair or replacement; when depiction at a particular period of time is not appropriate; and when a continuing or new use does not require additions or extensive alterations, preservation may be considered as a treatment. Prior to undertaking work, a documentation plan for preservation should be developed."

Overview

In a sense, all maintenance is an act of preservation "necessary to sustain the existing form, integrity, and materials." When the processes that have created and sustained a place change, or disappear, the form and appearance of the place reflects that change. Nevertheless, some changes may be unobtrusive: "the limited and sensitive upgrading of ... systems and other ... work to make properties functional is appropriate...".

Review

This treatment is in some ways the most stringent of all the modes of treatment in that it calls for the least change to form and or appearance. It assumes that the substance of historic significance is intact and retains integrity, and that any changes have acquired significance as well.

The Treatment Modality of Rehabilitation

Definition: Rehabilitation is defined as the "act or process of making possible an efficient compatible use for a property through repair, alterations, and additions while preserving those portions or features which convey its historical, cultural, or architectural values."

The Treatment Modality of Restoration

Definition: Restoration is defined as the "act or process of accurate/y depicting the form, features, and character of a property as it appeared at a particular period of time by means of the removal of features from other periods in its history and reconstruction of missing features from the restoration period. The limited and sensitive upgrading of mechanical, electrical, and plumbing systems and other code-required work to make properties functional is appropriate within a restoration project."

The Treatment Modality of Reconstruction

Definition: Reconstruction is defined as the "act of process of depicting, by means of new construction, the form, features, and detailing of a non-surviving site, landscape, building, structure, or object for the purpose of replicating its appearance at a specific period of time and in its historic location."

The (Formerly Included) Treatment Modality of Protection and Stabilization

Before closing the discussion on the relative substance of the four treatment modalities, we should note that the earlier preservation documents included a fifth treatment which addressed protection and stabilization. The Treatment section of the 1994 draft of the Guidelines for the Treatment of Historic Landscapes began with a category entitled Guidelines for Protection and Stabilization which was deleted in the final version, making it conform to the 1992 Revision of the Standards. The draft Guideline for Protection and

Stabilization stated that:

> "Protection safeguards the existing condition of a landscape or its features by preventing further deterioration, loss, or attack, or to shield it from danger or injury. Stabilization reestablishes the strength of structurally unsafe of damaged or deteriorated property while retaining the essential form as it exists at present. Both protection and stabilization may be temporary in nature. They are employed to solve immediate threats to the condition of the landscape and are, thus, appropriate regardless of later treatments that may be undertaken. It should be noted that in depth historical research may not always be possible prior to undertaking emergency protection and stabilization work; however, it is consistently recommended in these guidelines."[43]

Certain aspects of protection and stabilization are included in Revised Standards by both implication and reference. For instance, in the definition of the Preservation Treatment, the revision states:

> "Preservation is defined as the act or process of applying measures necessary to sustain the existing form, integrity, and materials of an historic property. Work, including preliminary measures to protect and stabilize the property, generally focuses upon the ongoing maintenance and repair of historic materials and features rather than extensive replacement and new construction." {italics added}

The standards for preservation go on to include the terms protection and stabilization, either directly or by implication, in standards one, three, four, five and eight.

It is clear that the Standards and the Guidelines view protection and

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[43] Guidelines, 13.

stabilization as a most appropriate level of physical intervention critical to the physical, structural or historic integrity or stability of the place in question. It is also clear that this physical intervention should usually be preceded by an initial phase which identifies the salient features which define or contribute to the sense of historic character. But it is interesting to note that protection and stabilization may be appropriate even in "... Where [appropriate] treatment and use have not been identified...". It is less obvious, but clearly implied that relational aspects of a property (and not simply physical elements) may also require protection or stabilization: "Changes to a property that have acquired historic significance in their own right shall be retained and preserved." (italics added).While the word 'changes' in this context obviously refers to physical changes, those changes exist with in a context which includes the unchanged, and the changed can be perceived partly because of its relationship to that which is unchanged.

Implications of Applying Protection and Stabilization to the Government Mineral Springs Case Study Area

Certain aspects of the Government Mineral Springs (GMS) case study area seem to be the salient features or processes that define or contribute to the character of the place. At the geologic scale, protection might include forbidding actions or interventions that would disturb processes upon which the springs depend, i.e., the impervious nature of the basalt which affects the circulation of ground water (such as blasting or quarrying), or actions which would disturb the circulation of surface water (logging, increased hard surface areas such as buildings or paved roads).

Examination of Individual Standards

As noted earlier, the first three treatments assume the survival and integrity of sufficient historic substance to enable the application of an appropriate treatment, while the fourth treatment assumes that historic substance and integrity are either absent or so seriously degraded that the first three modalities are not appropriate. Consequently, the standards associated with reconstruction are unique to that treatment type, while the other treatments include similar standards (to varying degrees, as will be noted). Therefore, those standards which are associated with the first three treatment types will be examined concurrently. The standards associated with reconstruction will be examined separately.

Standards Relating to Historic Use and Continuity

Preservation: 1. A property shall be used as it was historically, or be given a new use that maximizes the retention of distinctive materials, features, spaces, and spatial relationships. Where a treatment and use have not been identified, a property shall be protected and, if necessary, stabilized until additional work may be undertaken.

Rehabilitation: 1. A property shall be used as it was historically or be given a new use that requires minimal change to its distinctive materials, features, spaces, and spatial relationships.

Restoration: 1. A property shall be used as it was historically or be given a new use which interprets the property and its restoration period.

Overview

This Standard is found in the first three treatment modalities (Preservation, Rehabilitation, and Restoration) in varying forms. It is, by definition, excluded from the Reconstruction mode of treatment because reconstruction implies the original historic substance is either absent, or has lost integrity to the point where preservation, rehabilitation, and restoration are not feasible.

Review

The three forms of this standard reflect the hierarchy of the treatment modes in which they are found, ranging from the maximal retention of historic substance (preservation), to the removal of some historic substance which will enable the property to more clearly reflect some period of historic significance (restoration). At the end of the spectrum where the least change is allowed, the standard quite clearly recognizes that changes or alterations may have acquired significance in their own right, or may be of unknown value, and should be retained until they can be assessed. In rehabilitation, some changes are allowable in order to be used. In restoration, even more changes may be acceptable.

At the scale of buildings or other singular artifacts, the intention of this standard reads quite clearly. At the scale of the landscape, the issue of historic use may be less clear, raising the questions of what is or are the historic use(s)? what is the historic period of significance? In many cases the "distinctive materials, features, spaces, and spatial relationships" will help define the period

of significance; but in some cases, they may not. In the case of the GMS, for instance, the distinctive materials, features, spaces, and spatial relationships include not only cultural elements, but biotic and geologic elements.

Implications for Processes

In examining this standard for applicability to processes, replacing the word "property" with the word "process" yields a provocative reading:

> A process shall be used as it was historically, or be given a new use that maximizes the retention of distinctive materials, features, spaces, and spatial relationships.

What might it mean to preserve an historic process, or to utilize it as it was historically? Can a process be treated such that it retains its distinctive features or relationships? Many examples exist of craft processes which have been preserved by practitioners, such as raku ceramics, or wooden boat construction.

In the case of the GMS, the processes which created and sustain its "distinctive features or relationships" include social, biotic, and climatic components. Protection of those components might reasonably include political advocacy (that is to say, advocacy regarding policies that protect those components) or intervention. This potentially ever enlarging scope raises the issue of whether the significance of the GMS warrants such broad ranging intervention. Considered on its own merits, the GMS probably does not; but considered in its context (e.g., remnant of temporal rain forest, part of the rapidly disappearing CCC built structures) which also depend the same (or similar)

components, one could make the case for interventions that include protection of categorically related elements that include the GMS.[44]

What might it mean to give a new use to a process? A building or landscape may accommodate a new use with minimal degradation of existing (historic) distinctive materials, features, spaces, and spatial relationships even though that new use may seem radically different. For example, an old factory or school may be converted to commercial or residential loft space with minimal change to the materials, features, spaces and spatial relationships. But these new uses are actually quite similar to the old uses. Like comparing apples and oranges,[45] the uses may have more in common than in contrast. If we look at processes the same way, we might find components constituencies that could perform similar functions within a given process. In fact, the CCC may be a good example of a process which was given a new use, depending on need, location, and available resources.

In the case of the GMS, a new use for a process might therefore include looking at the original process, and determining how its original components

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[44] The parallel to managing watersheds and ecosystems as wholes instead of in relation to single endangered species is striking. This appears to be a major area where preservationists could apply ecological practices. The production of historic context statements, and surveys which identify artifacts eligible for consideration of listing on the National Register of Historic Places is undoubtedly a step in the right direction. Perhaps the next step is to consider the artifacts as ecologies - perhaps of building types or landscapes, or other similar categories.

[45] Apples and oranges are both round fruit that grow on trees, and contain sugary fluid, pulp and seeds. They may be more alike than not.

related to process functions. For example, the Guard Station was originally inhabited and maintained by persons intended to perform as caretakers and hosts to the GMS proper. While the original "component" (the USFS) can no longer perform this function, there may be other "components" in related environments that could perform a similar function, thereby continuing the process which sustains the physical and historical integrity of the Guard Station, and safeguards its historic significance.

The qualifying statement regarding protection and stabilization is interesting in that it recognizes some protective measures may be called for even in the absence of certain kinds of knowledge. One may speculate that when applying this principle to processes, one might be called upon to resist certain kinds of actions or processes which put the historic process in danger of diminution or loss.

Standards Relating to Historic Character

Preservation: 2. The historic character of a property shall be retained and preserved. The replacement of intact or repairable historic materials or alteration of features, spaces, and spatial relationships that characterize a property shall be avoided.

Rehabilitation: 2. The historic character of a property shall be retained and preserved. The removal of distinctive materials or alteration of features, spaces, and spatial relationships that characterize a property shall be avoided.

Restoration: 2. Materials and features from the restoration period shall be retained and preserved. The removal of materials or alteration of features, spaces, and spatial relationships that characterize the period shall be not be undertaken.

At the building scale, this standard is usually intended to protect the property from loss of historic elements and associated damage to the historic integrity. It is clear that the original element is the phenomenon of value.

At the landscape scale, the guidelines focus upon relational characteristics which are intact or repairable, and therefore should be protected. Again, the historic original is what is valued, and may include specific, individual plants or plants of the same genus and even cultivar. In some cases, protective measures themselves may be procedural rather than merely technical, relying upon zoning, or conservation easements, for example, or specifying a mowing pattern. Preference is given to non-destructive interventions, including prevention and removal of invasive elements.

Standards Relating to Inclusive Authenticity

Preservation: 3. Each property shall be recognized as a physical record of its time, place, and use. Work needed to stabilize, consolidate, and conserve existing historic materials and features shall be physically and visually compatible, identifiable upon close inspection, and properly documented for future research.

Rehabilitation: 3. Each property shall be recognized as a physical record of its time, place, and use. Changes that create a false sense of historical development, such as adding conjectural features or elements from other historic properties, shall not be undertaken.

Restoration: 3. Each property shall be recognized as a physical record of its time, place, and use. Work needed to stabilize, consolidate and conserve materials and features from the restoration period shall be physically and visually compatible, identifiable upon close inspection, and properly documented for future research.

Standards Relating to Changes Over Time

Preservation: 4. Changes to a property that have acquired historic significance in their own right shall be retained and preserved.

Rehabilitation: 4. Changes to a property that have acquired historic significance in their own right shall be retained and preserved.

Restoration: 4. Materials, features, spaces, and finishes that characterize other historical periods shall be documented prior to their alteration or removal.

Standards Relating to Issues of Material and Craft

Preservation: 5. Distinctive materials, features, finishes, and construction techniques or examples of craftsmanship that characterize a property shall be preserved.

Rehabilitation: 5. Distinctive materials, features, finishes, and construction techniques or examples of craftsmanship that characterize a property shall be preserved.

Restoration: 5. Distinctive materials, features, finishes, and construction techniques or examples of craftsmanship that characterize the restoration period shall be preserved.

Standards Relating to Repairs and In-Kind Replacement

Preservation: 6. The existing condition of historic features shall be evaluated to determine the appropriate level of intervention needed. Where the severity of deterioration requires repair or limited replacement of a distinctive feature, the new material shall match the old in composition, design, color, and texture.

Rehabilitation: 6. Deteriorated historic features shall be repaired rather than replaced. Where the severity of deterioration requires

replacement of a distinctive feature, the new feature shall match the old in design, color, texture, and, where possible, materials. Replacement of missing features shall be substantiated by documentary and physical evidence.

Restoration: 6. Deteriorated features from the restoration period shall be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature shall match the old in design, color, texture, and, where possible, materials.

Restoration: 7. Replacement of missing features from the restoration period shall be substantiated by documentary and physical evidence. A false sense of history shall not be created by adding conjectural features, features from other properties, or by combining features that never existed together historically.

Standards Relating to Prevention of Harm

Preservation: 7. Chemical or physical treatments, if appropriate, shall be undertaken using the gentlest means possible. Treatments that cause damage to historic materials shall not be used.

Rehabilitation: 7. Chemical or physical treatments. if appropriate, shall be undertaken using the gentlest means possible. Treatments that cause damage to historic materials shall not be used.

Restoration: 8. Chemical or physical treatments, if appropriate, shall be undertaken using the gentlest means possible. Treatments that cause damage to historic materials shall not be used.

Standards Relating to Archeological Resources

Preservation: 8. Archeological resources shall be protected and preserved in place. If such resources must be disturbed, mitigation measures shall be undertaken.

Rehabilitation: 8. Archeological resources shall be protected and preserved in place. If such resources must be disturbed, mitigation measures shall be undertaken.

Restoration: 9. Archeological resources affected by a project shall be protected and preserved in place. If such resources must be disturbed, mitigation measures shall be undertaken.

Standards Relating to Additions

Rehabilitation: 9. New additions, exterior alterations, or related new construction shall not destroy historic materials, features, and spatial relationships that characterize the property. The new work shall be differentiated from the old and shall be compatible with the historic materials, features, size, scale and proportion, and massing to protect the integrity of the property and its environment.

Standards Relating to Reversibility

Rehabilitation: 10. New additions and adjacent or related new construction shall be undertaken-in a such a manner that, if removed in the future, the essential form and integrity of-the historic property and its environment would be unimpaired.

Standards Relating to Prior Existence

Restoration: 10. Designs that were never executed historically shall not be constructed.

Reconstruction: 6. Designs that were never executed historically shall not be constructed.

The Treatment Modality of Reconstruction

Definition: Reconstruction is defined as the act of process or depicting, by means of new construction, the form, features, and detailing of a non-surviving site, landscape, building, structure, or object for the purpose of replicating its appearance at a specific period of time and in its historic location.

Standards for Reconstruction

1. Reconstruction shall be used to depict vanished or non-surviving portions of a property when documentary and physical evidence is available to permit accurate reconstruction with minimal conjecture, and such reconstruction is essential to the public understanding of the property.
2. Reconstruction of a landscape, building, structure, or object in its historic location shall be preceded by a thorough archeological investigation to identify and evaluate those features and artifacts which are essential to an accurate reconstruction. If such resources must be disturbed, mitigation measures shall be undertaken.
3. Reconstruction shall include measures to preserve any remaining historic materials, features, and spatial relationships.
4. Reconstruction shall be based on the accurate duplication of historic features and elements substantiated by documentary or physical evidence rather than on conjectural designs or the availability of different features from other historic properties. A reconstructed property shall re-create the appearance of the non-surviving historic property in materials, design, color, and texture.
5. A reconstruction shall be clearly identified as a contemporary re-creation.
6. Designs that were never executed historically shall not be constructed.

Landscape Scale Considerations for Preservation

Before leaving the discussion of the implications which the treatment modalities and standards may have for processes, the entire spectra of the scale of intervention should be addressed for analogous relationships. As noted above, the Guidelines for Landscape also lists several considerations which address the following features and components of landscapes which contribute to historic character, including:

1. Spatial Organization and Land Pattern
2. Topography
3. Vegetation
4. Circulation
5. Water Features
6. Structures, Furnishings, and Objects
7. Small Scale Structures
8. Accessibility Considerations
9. Health and Safety Considerations
10. Environmental Considerations
11. Energy Efficiency

These subcategories or considerations are repeated for the all treatment modalities in the Guidelines for Preserving Cultural landscapes. The considerations, which can be understood as corresponding to the relative spatial and temporal scales of landscape, will be examined individually for fundamental characteristics which may apply to processes in the context of the preservation treatment modality. The first seven will be considered in relationship to each other, followed by a discussion of the remaining four considerations. The considerations will be then examined individually.

Landscape Features

The first seven considerations identify those features that contribute substantially to the historic significance and integrity of the landscape. These features may or may not have analogous or similar counterparts in processes, but will be examined to avoid neglecting any counterparts that may exist.

The Guidelines for the Treatment of Cultural Landscapes notes that the first consideration are organizational elements of the landscape, and that the next six are character-defining features of the landscape. It is interesting to note the similarities between this set of categories and those developed by landscape ecologists.[46] The categories which comprise the first seven individual considerations are arranged hierarchically, forming a spatial spectrum ranging from largest to smallest. The hierarchy may also imply a temporal hierarchy, with the largest things lasting longer, and the smaller things having a presumably shorter span of existence.

Implications of Landscape Features for Processes

If the processes which create and sustain things like landscapes are structured like landscape features, we may expect to find them operating at a wide range of temporal and spatial scales. We should not, however, assume a direct correlation between size and complexity. The largest landscape features may be dependent upon simple processes, and the smallest upon very complex processes.

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[46] See Appendix C for more information on how landscape ecology can help define a landscape.

Other Considerations

As noted at the beginning of this Appendix, the four additional categories address considerations which are usually part of the actual historic preservation process, but have the potential to negatively impact preservation processes, character defining substance, and desired outcomes. These four considerations include:

- Accessibility Considerations
- Health and Safety Considerations
- Environmental Considerations
- Energy Efficiency

While these considerations may not seem to have much to do in general with processes that create and sustain culturally significant structures, they do influence those processes. For instance, the process of campground design includes consideration of accessibility, health and safety, and environmental issues. These considerations may have analogous counterparts in some processes. The relationship may be less clear or even nonsensical, but will be investigated nonetheless to ensure the survey is complete.

Landscape Scale Consideration No. One

Spatial Organization and Land Patterns

The Guidelines note that Spatial relationships

"are the three-dimensional organization and pattern of spaces in a landscape, like the arrangement of rooms in a house. They may have evolved for visual or functional purposes and includes views within the landscape itself. Spatial organization is created by a variety of smaller scale elements, some which intentionally form visual links or barriers such as fences and hedgerows; others which less intentionally create spaces and visual connections in the landscape such as topography and open water. The organization of these elements define and create spaces in the landscape. The functional and visual relationship between these spaces is integral to the character of the historic property. Individually or collectively, these features form the spatial relationships of the landscape. These individual features must in turn be treated as they relate to the spatial organization of the property as a whole, not just in isolation."

Landscape Scale Consideration No. Two

Topography

Overview

The Guidelines note that topography [is]

> "the shape, slope, elevation, and contour of landforms and ground plane."[47] Furthermore, "the shape of the ground, is a character-defining feature of the landscape. Topography may occur naturally or be manipulated through human activity. Landforms may contribute to the creation of outdoor spaces, serve a functional purpose, or provide visual interest."[48]

Review

Implications for Processes

This Guideline implies that protection and stabilization need not be limited to passive or static interventions ("...such as covering an unstable hillside with protective textiles"), but can be proactive as well as reactive. For instance, a recommended intervention might include "...providing for adequate drainage so that landforms are not eroded."[49] Again, these examples clearly indicate that some of the features which define a place are procedural in nature.

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[47] Guidelines, 13.

[48] Guidelines, 9.

[49] Guidelines, 13.

Landscape Scale Consideration No. Three

Vegetation

The Guidelines note that vegetation

"features may be an individual plant, as in the case of a specimen oak tree, or groups of plants such as a hedge, allee, forest, agricultural field, or planting bed. Vegetation may be evergreen or deciduous trees, shrubs, or ground covers, and include both woody and herbaceous plants. Vegetation may derive its significance from historical associations, horticultural or genetic value, or aesthetic or functional qualities. It is the primary component of the constantly changing character of the landscape. The treatment of historic landscapes must recognize the continual process of growth, seasonal change, maturity, decay, death, and replacement of vegetation. Vegetation derives its character form form, color, texture, bloom, fruit, fragrance, and scale."[50]

Landscape Scale Consideration No. Four

Circulation

The Guidelines note that Circulation features include

"roads, parkways, drives, trails, walks, paths, parking areas, and canals. These features may occur individually or be linked to form networks or systems. The character of circulation features in defined by attributes such as alignment, surface treatment, width, edge, grade, materials, furnishings, view/vistas, walls, signs, and infrastructure."

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[50] Guideline, 14.

Landscape Scale Consideration No. Five

Water Features

The Guidelines note that

"Water features may be aesthetic as well as functional components of the landscape. They may be linked to the natural hydrologic system or may be fed artificially. Their associated water supply, drainage, and mechanical systems are important components of water features. Water features include fountains, pools, cascades, irrigation systems, ponds or lakes, streams, or aqueducts. The attributes of water features include shape (form), sound, edge and bottom condition/material, water level or depth, movement or flow, reflective qualities, water quality, and associated plant or animal life. Special consideration may be required due to the seasonal changes in water such as variations in water table, precipitation, and freezing."

Landscape Scale Consideration No. Six

Structures, Furnishings and Objects

The Guidelines note that

"Site furnishings and objects are small-scale elements in the landscape that may be functional, decorative, or both. They include benches, lights, fixtures, signs, drinking fountains, trash receptacles, fences, tree orates, clocks, flagpoles, sculpture, monuments, memorials, planters, and urns. They may be movable, seasonal, or permanently installed. Site furnishings and objects occur as singular items or in groups of similar or identical features. They may be designed or built for a specific site, available through a catalog, or created as vernacular pieces associated with a particular region or cultural group. They may be significant in their own right as works of art or as the work of a master."

Landscape Scale Consideration No. Seven

Structures

The Guidelines note that

"Landscape structures are non-habitable, constructed features unlike buildings which have walls and roofs and are generally habitable. Structures may be significant individually or they may simply contribute to the historic character of the landscape. They include walls, terraces, arbors, gazebos, follies, stadiums, tennis courts, playground equipment, plazas, greenhouses, cold frames, steps, bridges, and dams. Buildings found in historic landscapes include but a-e not limited to, residences, gate houses, barns, visitor centers, inns or hotels, and cabins. The placement and arrangement of buildings and structures, whether designed or not, are important to the character of the landscape. These guidelines emphasize the relationship between buildings structures, and the historic landscape. For additional and specific guidance related to the treatment of historic buildings, please consult the Guidelines for Rehabilitating Historic Buildings."

Landscape Scale Consideration No. Eight

Accessibility Considerations

The Guidelines note that

"It is often necessary to make modifications to cultural landscapes so that they will be in compliance with current accessibility requirements." "...rules, regulations, and standards have been developed which provide guidance on how to accomplish access to historic areas for people with disabilities. Work must be carefully planned so that it does not result in the loss of character-defining features. The goal is to provide the highest level of access with the lowest level of impact."

Landscape Scale Consideration No. Nine

Health and Safety Considerations

The Guidelines note that

"In undertaking work on cultural landscapes, it is necessary to consider the impact that meeting current health and safety codes (for example, public health, life safety, fire safety, electrical, seismic, structural, and building codes) will have on character-defining features." "Special coordination...may be required. Securing required permits and licenses is best accomplished early in work project planning. It is often necessary to look beyond the "letter" of code requirements to their underlying purpose; most modern codes allow for alternative approaches and reasonable variance to achieve compliance."

Landscape Scale Consideration No. Ten

Environmental Protection Considerations

The Guidelines note that

"Many cultural landscapes are affected by requirements that address environmental issues. Legislation [has] established rules and regulations for dealing with a variety of natural resources – including water, air, soil, and wildlife. Work predicated upon such legislation must be carefully planned and undertaken so that it does not result in the loss of a landscape's character-defining features. Securing required permits and licenses should be considered early in project work, and special effort should be made to coordinate with public agencies responsible for overseeing specific environmental concerns."

Landscape Scale Consideration No. Eleven

Energy Efficiency

Overview

The Guidelines note that

> "Some features of a cultural landscape ... can play an energy conserving role. Therefore, prior to undertaking project work to achieve greater energy efficiency, the first step should always be to identify and evaluate existing historic features to assess their inherent energy conserving potential. If it is determined that such work is appropriate, then it needs to be carried out with particular care to insure that the ... historic character is retained."

Summary of Discussion on the Implications which Treatments, Standards, and Guidelines may have for Application to Processes

See Chapter 3 for the summary.

APPENDIX C

THE DEFINITION, IDENTIFICATION, AND DESCRIPTION OF PROCESSES AND CHOICE OF INTERVENTIONS

Overview

The purpose of this appendix is to present material which supports the choices and definitions of the processes noted in Chapter 4, to which preservation principles and or techniques may be applied. In particular, processes will be described in terms common to the preservation or conservation literature; and also in terms used by ecologists and systems theorists.

This appendix forms an important part of the thesis by describing the components of processes which operate at the landscape scale in a general way. This general description will allow the processes actually operating on the site or case study area to be described more fully and accurately. This more accurate description of process and component should lead to a more successful choice and application of preservation principles to any given process, thereby leading to a more successful outcome.

General Definitions of Processes

The most accessible definition of process comes from dictionaries (in this case, The Oxford Desk Dictionary and Thesaurus, American Edition, 1997., s.v. "process.). In this philological setting, process is presented as a noun meaning:

1) "course of action or proceeding, especially as a series of stages."
2) "progress or course of action (*in process of construction*)."
3) "natural evolution or change (*process of growing old*)."

The word process may also be used as a transitive verb:

1) "to handle or deal with by a particular process."
2) "treat (food, especially to prevent decay)."

Synonyms of the word process include:

1) [nouns] "operation, system, method, approach; see also procedure."
2) [verbs] "take care of, manage, look after; prepare, make or get ready; answer."

It is clear that the definitions and concepts related to "process" include systematic or structured relationships, and actions and incorporation of feedback.

Processes in the Preservation Literature

In general, the literature of historic preservation addresses processes in relation to properties and other tangible objects. One important source[51] notes that

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[51] NRB 30, 3.

> "Landscape characteristics are the tangible evidence of the activities and habits of the people who occupied, developed, used, and shaped the land to serve human needs; they may reflect the beliefs, attitudes, traditions, and values of these people."
>
> "...*four characteristics [of landscapes] are processes that have been instrumental in shaping the land*, such as the response of farmers to fertile soils. ...seven [characteristics of landscapes] are physical components that are evident on the land, such as barns or orchards. Many, but not all, rural properties contain all eleven characteristics. *When historic processes are linked to existing components, the rural landscape can be viewed as a unified whole.*" [italics added]

Note that these historic processes by definition and by nature, incorporate not only a dimension of what, but also a dimension of when.

The processes are a subset of a larger group of characteristics which define or identify a cultural or historic landscape. The characteristics include:

<u>*Four Processes;*</u>	and	<u>*Seven Components*</u>
Land Uses and Activities		Circulation Networks
Patterns of Spatial Organization		Boundary Demarcations
Response to Natural Environment		Vegetation Related to Land Use
Cultural Traditions		Buildings, Structures and Objects
		Cluster
		Archeological Sites
		Small Scale Elements

Note that all characteristics need not be present to define a landscape, nor will they necessarily exist at all scales.

For the purposes of this investigation, the seven physical components of landscapes (as defined in the NRB 30) are assumed to map into the four landscape processes. For instance, the component "vegetation related to land

use" could quite clearly be understood as a manifestation of the process of "response to natural environment." One example which illustrates this is the selection and organization of plants in a hedgerow that protects a farmstead from the winds on the high plains of the North American continent. The vegetation is related to a land use, and is a response to the natural environment.

One issue for this investigation, then, is whether the processes as defined in the preservation literature are both general enough and particular enough to represent the wide range of things which may fit within the domain of historic preservation practice. The processes certainly apply to landscapes, but other processes may be more germane for a building, a bridge, a statue or other historic and cultural resources. Note that both the Secretary's Standards and the cultural / historic processes can apply to artifacts such as buildings or landscapes at many scales, and that interventions based on the Standards may also be applied at many scales. Application and intervention may also occur concurrently at any of several scales as well.

The set of possible relationships between processes and the Standards can be described within a matrix with some clarity. The most basic matrix correlates the four treatment modalities with the four processes.

Historic / Cultural Processes	Treatment Modality: Preservation (8 Standards)	Rehabilitation (10 Standards)	Restoration (10 Standards)	Reconstruction (6 Standards)
Land Uses and Activities				
Patterns of Spatial Organization				
Response to Natural Environment				
Cultural Traditions				
Natural Processes				

Figure 30A. Prototypical Principle and Process Matrix

Note that each of the individual cells within the matrix above represent a whole realm of possible interventions, especially when applied to a given site. For instance, the cell at the intersection of the Land Use row and Preservation column could be further described as noted below.

Historic / Cultural Process: Response to Natural Environment	Rehabilitation Treatment Standards: Cont. Appropriate Use	Protect Historic Character	Record of Time, Place, and Use	Recognize Signif. / Change	Craft, Mat'ls and Other Features	Repair / Replace in Kind	Gentle Techniques	Protect in Place / Mitigate	Compatible Additions	Retro / Removability
Natural Features (springs, creek) (cedar grove) (wetlands										
Siting of Structures (springs, hotel) (campground)										
Aesthetic climate (Cascadian Rusticity)										

Figure 31A. Prototypical Standard and Process Matrix

Note that for just the most basic extension of this approach - specifying the multiplicity of sub cells implied within the basic matrix - yields at least thirty four potential zones of investigation for any single process (based on the total of thirty four standards for all of the treatments). Multiplying these thirty four potential zones of intervention by the sixteen treatment / process intersections of the basic matrix yields five hundred forty four possible points of intervention. Of course, it is unlikely that any single process will call for all thirty four kinds of investigation, since only one treatment modality will usually apply. And the actual number of potential zones of investigation will actually depend upon how many processes are identified. But the possibility exists that just as some parts of a building or district may need preservation and other parts might require rehabilitation, portions of any given process may call for one kind of treatment such as restoration, and others parts may reasonably require some other treatment modality.

Despite this level of specificity, the processes are still only described in general terms, depending on individual observation, insight, and investigation (expertise) to determine which processes are in fact in operation at a given site. And by both implication and extension, that expertise is also relied upon to understand and ascertain which processes and characteristics are critical to the experience or description of that given site. This more detailed and integrated understanding of the processes found in a preservation project should enable a practitioner to select interventions and techniques more appropriately.

But the question persists - what are the processes that are operating at the landscape scale of the GMS? How does one perceive, define, and choose a process for subsequent intervention?

One indication may be found in the statement that *"When historic processes are linked to existing components, the rural landscape can be viewed as a unified whole."* In other words, the seven landscape components themselves may have both physical and intangible attributes, and be manifestations of their own causal processes. But at the scale of the landscape, it is the combination of object and process that constitute a whole. Therefore, for purposes of this investigation, the component characteristics of GMS will not be documented to the degree suggested in NRB 30 or other sources. The component will not neglected nor discarded either, but instead, will be identified and mapped into the processes most appropriate to their historic origins and integrity.

This approach (of considering the whole instead of the component) is not novel. In fact, it forms the basis of intervention.

> "The first operation in any conservation process is to assess accurately the substance of the object to be safeguarded. This may seem obvious but, alas, is not, and ignoring this operation by considering it to be obvious may result in irreparable mistakes. The problem's main aspects may be summarized in three questions: (1) What is to be considered the whole of the object, to which all operations must be referred? (2) What is the context of the object? and (3) What has been the history of the object?"

The assessment of substance is indeed the first operation of this investigation.[52] And for the purposes of this investigation, the three questions Philipott posed may be restated as:

1) What is to be considered the whole of the *process*, to which all operations must be referred?

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[52] Philipott, Historical and Philosophical Issues in the Conservation of Cultural Heritage.

2) What is the context of the *process*? and
3) What has been the history of the *process*?

The scope of these questions may be shown in part by the rest of the text from which the original quote was extracted.

The whole of the object

"The importance of the whole must be stressed because positivistic habits of classification have accustomed us to divide various arts according to technique and to split the whole of a monument into various pieces... It is obvious that what is a whole must be treated consistently as a whole, and this implies that close cooperation among various specialists in preservation — architects, conservators, artisans — under one consistent policy is necessary. On the other hand, each fragment will have to be treated as such, keeping in mind the whole..." [to which it belongs].

Context

"Context refers to an object's immediate surroundings, inasmuch as these determine the approach and, thus, the correct interpretation of the object; that is, the frame of a picture, traditional surroundings of a monument that are essential to its scale and significance and social circumstances in which the object is or was used..."

"In some cases, the context may be an object, as is the case, for instance, of minor architecture in historic centers, when no individual building is a work of art but the whole becomes a monument in itself (e.g., the Campo dei Fiori in Rome). An object should never be deprived of its context, if the object is to avoid becoming isolated and "museumized," that is, segregated from life."

"The recognition of the value of the whole and the object's context leads logically to the principle that every object should, whenever possible, be conserved in situ if one wants to save the full value of the whole and of the parts."

The Object's History

"A monument of the past, be it architecture, sculpture, painting or any combination of these forms of art, has come to [the present] through time and history. During this period, it usually undergoes changes of various

> kinds— additions, reductions or modifications in shape, use or sense due to ... interventions and material alterations due to physical and chemical processes. Furthermore, the way the object is perceived is continuously evolving as the result of the historic development of a culture, especially aesthetic sensitiveness. Each new experience in art changes one's view of the history of all art in the way that one's vision of colors is no longer the same after experiencing Impressionism. All this history must be taken into consideration when establishing what is the whole to be safeguarded. Indeed, history and time cannot be undone; they are irreversible."

As will be shown below, the congruence between this "wholes" approach to conservation and the literature of ecology and systems theory is striking. But for now , certain ideas in the text immediately above should be noted.

> "... what is a whole must be treated consistently as a whole, and this implies that close cooperation among various specialists in preservation ... under one consistent policy is necessary."

In reviewing the text, one drawback to this investigation of the GMS becomes immediately apparent: it is obviously being done by only one person, and not by many specialists. Therefore, omissions and limitations inherent to those investigation will be stated clearly, as they become known. But it is also clear that the processes which are defined for this investigation must be described as wholes.

> "... inasmuch as [the immediate surroundings] determine ... the correct interpretation of the object..., [the] traditional surroundings ... are essential to its scale and significance..."
>
> "... the context may be [such that] no individual [contextual component] is a work of art but the whole becomes a monument in itself (e.g., the Campo dei Fiori in Rome)."
>
> "An object should never be deprived of its context, if the object is to avoid becoming isolated and "museumized," that is, segregated from life."

> "*The recognition of the value of the whole and the object's context leads logically to the principle that every object should, whenever possible, be conserved in situ if one wants to save the full value of the whole and of the parts.*" [Italics added.]

It is clear that the context(s) of the GMS, and the context(s) of processes acting upon the GMS are crucially interdependent, and should not be disassociated. Indeed, the object and context would seem to be the minimal definition of the whole... The context here is quite pointedly stated as the traditional, or historic context.

It is also interesting to note that scale and place are considered important to both object and context. Scale of context, for instance, will probably vary according to the phenomena of interest, that is to say, the object of attention. Place may be more constant, based upon both object and context, but will probably also vary in scale according to the relative scale of the object-context whole.

It is also clear that the object - context ensemble as a whole may achieve a level of significance together that they could not considered separately. In a way, we could look at object and context as two separate mappings. Taken individually, neither the object, nor the context may be significant; but taken together, they become more than the a simple summing of their parts might suggest.

> "A monument of the past ... has come to [the present] through time and history. During this period, it usually undergoes changes of various kinds... due to ... interventions and material alterations [caused by] physical and chemical processes."

> "Furthermore, the way the object is perceived is continuously evolving as the result of the historic development of a culture, especially aesthetic sensitiveness."[53]

> "All this history must be taken into consideration when establishing what is the whole to be safeguarded. Indeed, history and time cannot be undone; they are irreversible."[54]

The previous two readings began to build the definition of the whole that was to be conserved - the object and context, in place. This reading introduces and includes the temporal context. In effect, the *object–context system which* is located *in place* and is not separated from the flow of *time* becomes the whole. It is the preservation of a whole system in time and place that keeps that which we value integrated with life. Indeed, it could be argued that keeping things of historical value connected to living processes also enables us to remain integrated with our surroundings, i.e., connected and mindful of the time and place in which we are, and from which we have come.

Before leaving the literature of preservation, the issue of the intangible needs to be addressed.

The NRB 38, Guidelines for Evaluation and Documenting Traditional Cultural Properties, notes that some cultural resources may be entirely intangible in nature, that is having no property referents. Most preservation literature, especially those sources relating to listing or determining eligibility for listing on the National Register of Historic Places. But the NRB 38 also notes that such intangible resources should be

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[53] Philipott, 273.

[54] Ibid.

> "fully considered in planning and decision making... . Historic properties represent only some aspects of culture, and many other aspects, not necessarily reflected in properties as such, may be of vital importance... ."

The authors of NRB 38 go on to say

> "...the National Register is not the appropriate vehicle for recognizing cultural values that are purely intangible in nature, nor is there legal authority to address them under Section 106 [of the National Historic Preservation Act] unless they are somehow related to a historic property. The National Register lists, and Section 106 requires review of effects on, tangible cultural resources–that is, historic properties. However, the attributes that give such properties significance, such as their association with historical events, often are intangible in nature. Such attributes cannot be ignored in evaluating and managing historic properties; properties and their intangible attributes must be considered together."

The similarity between the assertion by Philipott that the object of conservation is the whole; the notion of process and component being inextricably linked; and the observation within this passage that "properties and their intangible attributes must be considered together" is striking, and should not be overlooked. It seems clear that while a process may not be eligible for listing on the Register, it is crucial that it be recognized for contributing to the sense of place, time, or significance. In fact, we will see that some of the processes significant to the GMS can be described as intangible. Other processes that lend significance to the GMS are so wide spread and pervasive that the GMS is only one aspect of their complete range of influence, one place among many; but no less significant despite being only one part of a larger whole.

Summary of Historic Preservation Literature

This survey of how historic preservation (HP) literature pertains to processes has been necessarily brief, but has introduced the notions that preservation must address wholes consisting of object of interest and context, in place, and connected to the flow of time. If preservation principles (as described in Appendix B) can be applied to processes, we might expect to find that processes can be described in terms of wholeness (that is to say, object and context), place and time, and tangibility and intangibility. We might also reasonably expect significant processes to be found at temporal and physical scales both faster or slower, and larger or smaller than those usually considered by preservationists.[55]

Other Modes of Addressing Process

The historically significant components at the GMS, and probably the processes as well, exist at and often overlap at several different spatial and temporal scales, as may be expected from these readings. While these scales are alluded to in documents such as NRB 30 and 38, and NPS 28, the preservation community as a whole does not seem to have a well developed a language for describing processes as compared to describing things.

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[55] It is acknowledged that some conservators, such as metallurgists, and some preservation activities,such as materials conservation, routinely deal with issues at quite small scales, even at the molecular scale.

Other disciplines, such as ecology, landscape ecology, and general systems theory, do address issues of process at the multiplicity and spectra of temporal and spatial phenomena suggested in the history of the GMS (see Appendix A and Chapter 2.) A brief survey of the literature of those disciplines suggested a conceptual framework which can help define the processes at the GMS, and selected readings were found to be invaluable. In addition, certain issues raised by conservation biologists have been found to be germane, especially those focusing upon intent and other moral issues. The questions of morality and ethics raised in the literature of these relevant disciplines prompted recognition and research into the cultural and philosophical underpinnings of the preservation movement, including the notion that preservation proceeds from a moral impulse.[56]

This cross disciplinary approach to issues of preservation and sustainability is not novel, and many examples exist. Most relevant to this case study area is the collection of essays and case studies contained in *The Rain Forests of Home* (Schoonmaker, 1997). The studies in Schoonmaker clearly show that the processes which have helped form the GMS connect to larger scales and are part of a hierarchy of processes and relationships. As such, the processes manifest at the GMS also are related to other processes, and contain sub processes within themselves. For instance, the act of utilizing mineral springs for either health or social purposes is not limited to the GMS, but is part of the larger tradition of balneotherapy.

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[56] See R. Edward Grumbine, Ghost Bears; and "Image & Reality;" also Joseph Sax, Mountains Without Handrails.

Findings in Landscape Ecology Literature

Ecology, by its very nature, tries to describe the environment in a holistic and inclusive manner. Indeed, the literature of landscape ecology frequently alludes to the multi-discliplinary nature of its investigation and development of general principles which which we can describe the nature of the observed. Foreman[57] states that a general principle:

- integrates diverse areas of knowledge;
- addresses significant questions;
- has broad applicability, though exceptions usually exist;
- is founded in theory, which in turn has considerable supporting evidence; and
- has some direct supporting evidence.

Forman also states that "though the core of landscape ad regional ecology is science, the field explicitly embraces and integrates other slices of knowledge."[58] We can note that the general principles of preservation, as embodied in the Secretary's Standards, clearly reflect Forman's criteria, and that preservation also "explicitly embraces and integrates other slices of knowledge," e.g., history, sociology, anthropology, materials science, and so forth. Forman further asserts that "landscape and regional ecology provides spatial solutions useful in addressing all of society's land use objectives," and

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[57] R.T.T. Forman, Landscape Ecology, v.10 no.3, 133-134.

[58] Ibid, 134. This could also be said, to some degree, of historic preservation.

goes on to present twelve principles of landscape ecology, organized in four categories.[59] This structure may be relevant to the definition and organization of processes which may be addressed by preservation interventions as hypothesized in this investigation.[60]

The Levin Article

Ecologists deal with whole systems, by definition, and deal explicitly with processes complicated by wide ranges in spatial and temporal scales. Indeed, most if not all essential ecological processes "occur at ... scales [too large or too small], or within time periods too fast or slow for human perception."[61] One ecologist has noted that issues of scale and hierarchy may be the central issues in ecology, and maybe in all the physical sciences.[62] This observation certainly applies to this investigation: many of the processes noted in both the cultural and natural realms extend over many spatial and temporal scale far exceeding the conventional preservation notion of the historic period of significance.

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[59] Forman also notes that there may be as many as twenty, or fewer than twelve; but these twelve seem to cover most problems encountered at the scale of landscape.

[60] Of course, the structure may not directly apply, but could inform a model developed and used by preservationists.

[61] Johnson and Johnston, "Nature Constructed," Orion Winter 1993 26.

[62] Simon Levin, "The Problem of Pattern and Scale in Ecology" Ecology 73 (6) 1992, 1943-1967.

The Stommel Diagram

One oceanographer made very specific and successful attempts to deal with phenomena at diverse scales of time and space.[63] The diagram he created has been used by ecologists to map phenomena inclusive of a wide ranges of scales.[64]

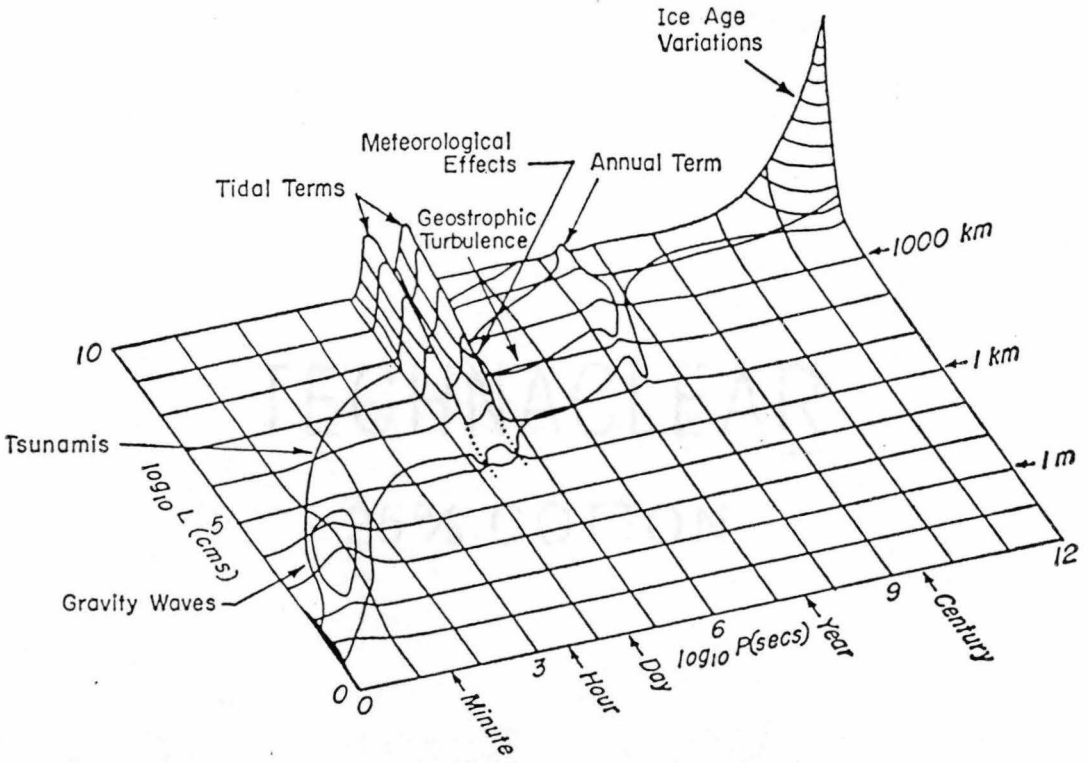

Fig. 1. Schematic diagram of the spectral distribution of sea level.

Figure 32A. The Stommel Diagram

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[63] Henry Stommel, "Varieties of Oceanographic Experience" Science, Vol. 139, 15 February 63, 572-576.

[64] See Levin, 1944.

The Stommel diagram is of interest, but may seem limited by displaying a single phenomenon in the z axis, and by presenting time as a victrolas quantity. Preservationists, by contrast, consider the vector of time (i.e., past, present, and future) quite critical to practice, and may need to map diverse phenomena on the same graph. For instance, in the case of the Government Mineral Springs, one might reasonably include the geological and climatological processes with the historic extent of the redcedar grove and the artifacts of cultural history. A review of Stommel's diagram may support this notion; while the phenomenon of interest is singular, the causative factors and the process implied by those factors are quite diverse. The vector of time could be included by a simple modification of the basic Stommel diagram. If the diagram were mirrored about the temporal axis, the zero line of the temporal scale would represent the present moment, and the range of values flanking the zero line would represent past and future.

Finally, the landscape ecologists have noted that "component events and patches [of landscape patterns] occur at characteristic scales that are positively correlated in time and space."[65] This observation seems similar to what conservationists of cultural resources intuitively recognize: that certain resources exist in particular places and time periods.[66]

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[65] Urban, O'Neill, and Shugart, 1987, 120. Stommel, 573.

[66] For example, the architectural historian R.W. Brunskill also notes that a kind of vernacular zone exists wherein certain architectural elements come into favor and are adopted into the vernacular; and then fade from use.

Findings In Systems Literature

The literature of the general systems theory is rife with notations about wholes and scales, and hierarchies of information. Perhaps the most cogent sources for processes at the landscape scale are Hanson and Bateson. Both note that systems are essentially relationships of information that occupy many scales, but have the qualities of non-summativity and indivisibility.[67]

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[67] G. Bateson, Toward An Ecology of Mind. Hanson, Systems Beginning With Wholes.

BIBLIOGRAPHY

BIBLIOGRAPHY

Alt, David D. Roadside Geology of Washington (with Donald W. Hyndman) (8th Printing 1993) Mountain Press, Missoula, MT 1984

Bateson, Gregory, "Form, Substance, and Difference" StepsToward an Ecology of Mind, Ballantine Books, New York: 1973

Beckham, Stephen Dow [et al.] Prehistory and history of the Columbia River Gorge National Scenic Area, Oregon and Washington : Heritage Research Associates, Inc., Portland, Oregon, 1988.

Berry, Wendell. What Are People For?, North Point Press, San Francisco : 1990

Bowers, C.A. Education, cultural myths and the ecological crisis: toward deep changes,.State University New York Press, 1993.

Brown, Bruce, Mountain in the Clouds - A Search for the Wild Salmon, University of Washington Press, Seattle, 1995

G. Z. Brown and Margot McDonald, Activity Decomposition for the Building Design Process, University of Oregon Department of Architecture, Eugene, Oregon, 1990

_____. Conceptual Design Subdomain Model, University of Oregon Department of Architecture, Eugene, Oregon, 1990

Brunskill, R.W. Traditional buildings of Britain : an introduction to vernacular architecture London, Gollancz, 1981.

Devine, Janice, and Leslie Dorsey, Fare Thee Well: A Backward Look at Two Centuries of Historic American Hostelries, Fashionable Spas, and Seaside Resorts, New York, Crown Publishers, 1964.

Grumbine, R. Edward. Ghost Bears : exploring the biodiversity crisis foreword by Michael Soule. Washington, D.C., Island Press, 1992

_____. "Image and Reality - Culture and Biology in the National Parks"

Orion, Spring 1997,

Hanson, Gail. General Systems Theory Beginning With Wholes, Toronto, Taylor and Francis: 1995

Harris, Stephen L. Fire Mountains of the West: The Cascade and Mono Lake Volcanoes [Revised edition of Fire and Ice, The Mountaineers, Seattle WA 1976] 2nd Printing 1992 Mountain Press, Missoula, MT 1988

Hebda, R.J. and C. Whitlock. "Environmental History," The Rain Forests of Home: Profile of a North American Bioregion, Edited by Peter K. Schoonmaker, Bettina von Hagen, and Edward C. Wolf, Washington DC : Island Press, 1997

Hunter, Christopher, Better Trout Habitat. Washington DC, Island Press, 1991

Johnson and Johnston, "Nature Constructed," Orion Winter 1993 26

Levin, Simon, "The Problem of Pattern and Scale in Ecology" Ecology 73 (6) 1992, 1943-1967.

McClelland, Linda Flint. Presenting Nature: Historic Landscape Design -The National Park Service 1916-1942, U. S. Department of the Interior, Washington D.C., 1993

Meier, Gary Brewed in the Pacific Northwest: a history of beer-making in Oregon and Washington. Fjord Press, Seattle, WA 1991.

Montgomery, David R., "The Influence of Geological Processes on Ecological Systems" The Rain Forests of Home Washington DC, Island Press, 1997

Parker, Patricia L., and King, Thomas F. National Register Bulletin 30 - Guidelines for Evaluating and Documenting Traditional Cultural Properties, U.S. Department of the Interior, Washington D.C.

Philipott, Paul, "Historic Preservation: Philosophy, Criteria, Guidelines I," Historical and Philosophical Issues in the Conservation of Cultural Heritage, ed. N.S Price, M.K. Talley, Jr., and A.M. Vaccaro, Readings in Conservation (Los Angeles, The Getty Conservation Institute: 1997)

Porter, Roy (ed.) the Medical History of Waters and Spas Medical History,

Supplement No. 10, Wellcome Institute for the History of Medicine, London, 1990

Sax, Joseph, Mountains Without Handrails, University of Michigan Press : Ann Arbor, 1980

Stegner, Wallace Earle. Where the bluebird sings to the lemonade springs : living and writing in the West. 1st ed. Random House, New York : 1992.

Stommel, Henry. "Varieties of Oceanographic Experience" Science, Vol. 139, 15 February 63, 572-576

Throop, Elizabeth Gail. Utterly visionary and chimerical : federal response to the depression : an examination of Civilian Conservation Corps construction on National Forest System lands in the Pacific Northwest. Thesis (M.A.)--University of Oregon, Eugene 1979.

Urban, Dean L., R.V. O'Neill, and Herman H. Shugart, Jr. "Landscape Ecology: A hierarchical perspective can help scientists understan spatial patterns" in BioScience, Vol. 37, No.2 (February) 1987

U.S. Congress, Office of Technology Assessment, Technologies for the Preservation of Prehistoric and Historic Landscapes - Background Paper OTA-BP-E-44 U.S. Govt. Printing Office, Washington D.C., 1987

Weber, Hermann, Climatotherapy and balneotherapy; the climates and mineral water health resorts (spas) of Europe and North Africa, including the general principles of climatotherapy and balneotherapy, and hints as to the employment of various physical and dieteic methods; being a 3d ed. of 'The mineral waters and health resorts of Europe' much enlarged in respect to medical climatology; by Sir Hermann Weber and F. Parkes Weber ... Ed. by F. Parkes Weber. Smith, Elder, & Co., London 1907

U. S. Department of the Interior, National Parks, NPS 28 - National Park Service, Cultural Resource Management Guidelines, .Release 4, July 1994, Washington D.C. 1994

_____. The Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes. Final Draft March 1996, Washington D.C., 1996