DEVELOPING A COMMUNITY INDICATORS PROJECT
IN THE APPLEGATE WATERSHED

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The purpose of the project is to investigate how the Applegate community, a rural community located in the Applegate River Watershed of Southwest Oregon, might develop a community indicator project (CIP). The Applegate community and the federal agencies, which manage seventy percent of the land in the watershed, have expressed interest in developing social, ecological, and economic indicators that can help them track important issues and progress toward visions for the local community, ecosystem, and economy. This thesis provides background information on indicators and community indicator projects, and explores a process that the Applegate watershed, and other communities that share its characteristics, can use to create a CIP. It investigates the principles of community health, total community wealth, quality of life, and sustainability that are used to develop a CIP. The thesis then provides an example indicator project comprised of issues and indicators identified in the literature about the Applegate community. The primary literature sources include weekly Applegate Partnership meeting minutes, agency descriptions of watershed conditions, and researchers’ reports of community perceptions and concerns.
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CHAPTER ONE

INTRODUCTION

Communities throughout the world are changing. As the global population increases, people move from rural areas to urban areas looking for services, employment and opportunities to improve their lives. This urbanization trend leads to a counter-trend; wealthy individuals escape to rural places, where they may commute to work or have a home office equipped with a fax machine and computer. Meanwhile, the landscape containing both rural and urban places is changing as well. As people look to resource extractive industries to meet their absolute and consumptive needs, they have diminished life-supporting resources for other species. For some communities, like the Applegate Valley and watershed in Southwest Oregon (Figure 1), often simply called “the Applegate” or “the Applegate community,” the local economy has been primarily dependent on timber harvesting and farming for most of the twentieth century.¹ During the 1980’s, residents discovered that the larger, more profitable trees were fewer. At the same time, court decisions related to the northern spotted owl severely restricted logging on public lands while cutbacks in grazing allotments negatively affected the ranching community (Reid et al. 1996). The farm crisis that played out across the nation also spilled over into the Applegate. Farmers struggled to pay off debt due to both falling crop prices and the increased cost of certain practices, such as irrigation and herbicide use, due to environmental concerns and pressures (Fitchen 1990; Reid et al. 1996). Not only was the Applegate a community in

¹ Although “valley” traditionally refers to the flat land adjacent to a river, to residents in the Applegate watershed, “Applegate Valley” is interchangeable with “Applegate watershed.” Since Applegate residents and literature mention these terms, both are used throughout this thesis. The terms “the Applegate,” and “the Applegate community” are also interchangeable and refer to people living within the Applegate watershed, but does not refer to the hamlet of Applegate.
transition, in many senses, it was a community at war; lawsuits and even shooting sprees at neighbors’ vehicles were not uncommon (Banny 1995). Applegate residents were tired of conflict and wanted to “actually have healthy forests, to have a stable timber supply, to have stability in our communities, [to] have some stable employment base, and to try to get to some semblance of peace in our communities (Moffett 1995). The concurrent changes and corresponding conflicts of the 1980’s and 1990’s were instrumental in bringing Applegate residents together to discuss how to simultaneously maintain their local economy, ecosystem and social structures.

Developments in the Applegate are a microcosm of what communities all over the world encounter when a local natural resource diminishes or when long-time residents leave and newcomers subdivide the farmlands. As towns, cities and regions face issues from resource depletion to urbanization and delocalization, they “launch community indicators projects (CIPs) in order to create new visions for their future, so that future generations will inherit a vital place to live” (Redefining Progress 1999). Creating visions for the future requires the community to trace present and past changes and take action to guide policy. Indicators measure the trends as well as the progress towards the community’s goals and priorities.

Community indicators projects are as diverse as the places that develop them. However, these CIPs share a common three-layered organizational structure. The first tier is the policy goal or guiding principle(s), which often centers on improving the quality of life, the health, the sustainability, or the natural, social and financial assets of the community. For example, Sustainable Seattle has chosen sustainability as its policy goal. In the early 1990’s, over 200 Seattle volunteers identified 40 key indicators of sustainability, organized into five categories: Environment, Population and Resources, Economy, Youth and Education, and Health and
Community (Predefining Progress et al. 1997). These categories form the second layer. They represent the multiple parts of the community—the social, natural, and economic sectors. Under each category, Sustainable Seattle lists its indicators. These indicators determine trends in important issues. For example, one of Sustainable Seattle’s Health and Community indicators, “Attendance at Seattle Community Centers,” attempts to measure trends in community participation. Together, the issue, community participation, and the indicator, attendance at community centers, form the third tier. Before deciding upon categories and issues and indicators (the second and third layers, respectively), a community first comes together and decides upon the principle or principles it will use to guide the indicator development process. This project seeks to explore the process of creating a CIP and to apply that process using the goals and values of the Applegate community.

**Setting: A Sense of Place**

Whether living on the busy streets of Seattle or in a rural ecosystem, many community members have a strong attachment to place. In a rural community, these “places” are physical regions with economies dependent on flows of natural resources into agriculture, forestry, timber, recreation, and tourism. Topography, watersheds, valleys, ecosystems, and political boundaries such as counties may constitute “place.” A sense of place “becomes a catalyst for self-governance. It mobilizes citizens to care enough to participate in the act of governing ‘their’ place by reminding community members of what they share in common—reliance on the natural landscape” (Weber 2000, 239). Although not all communities are necessarily place-based, place helps define community: researchers in the community field “are in basic agreement that community consists of persons in social interaction within a geographic area and having one or
more additional common ties” (Hillary 1955). In rural areas dependent on an ecosystem for natural resources, the individual’s dependence on place and on others is a basis for rural identity, social relationships, and commonality (Fitchen 1991; Kemmis 1990). An example of such a place is the Applegate watershed (Figure 1).

**Figure 1: Location of the Applegate Watershed**

![Location of the Applegate Watershed](http://www.mind.net/app/nwapp.gif)

The Applegate community is comprised of approximately 12,000 people living within the nearly 500,000-acre Applegate River watershed.² The Applegate River is a tributary to the Rogue River, which flows to the Pacific Ocean through the Coastal Range. The watershed is in the heart of the Klamath Geological Province, which “provided a geologic ‘bridge’ that still

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functions today for plant and animal migration in all directions…. The Klamath Province is one of the most biologically diverse areas within North America, and certainly the most diverse in the western United States” (BLM and USFS 1998). As part of the bridge, the Applegate is home to rare plants like Baker’s cypress, to sensitive vertebrates like the northern spotted owl and peregrine falcon, and to serpentine, an unusual rock type (Sturtevant and Lange 1996, 7-8). The watershed’s slopes, with elevations ranging from 1000 to 7000 feet, are forested with oak, manzanita, madrone, and stands of both second growth and old growth (BLM and USFS 1998, 19-20; Sturtevant and Lange 1996, 7). Farming and cattle ranching utilize the fertile soils of the lowlands. The uplands are generally federally-managed lands, while the lowlands are in private ownership; in fact, 70 percent of the Applegate watershed is public land, managed by both the U.S. Forest Service (USFS) and the U.S. Bureau of Land Management (BLM) (Rolle 1997, 612-613). All the federal lands, with the exception of the Red Buttes Wilderness, comprise the Applegate Adaptive Management Area.3

The geographic setting of the community has no incorporated towns, spans across sections of two Oregon counties, Jackson and Josephine, and reaches into a tiny part of northern California. Residents of the Applegate watershed shop in nearby Medford (in Jackson County) or Grants Pass (in Josephine County), but come together in social gathering places and general stores in Ruch, Applegate, Provolt, Wilderville, McGee Bridge, and Murphy. The watershed has over 20 community organizations, listed in Appendix A, that were established long ago (like the granges) or “have emerged in response to the dynamics of social, economic and political forces—especially changes in natural resource policy” (BLM and USFS 1998, 48).

3 President Clinton’s 1994 Northwest Forest Plan created ten Adaptive Management Areas to be “natural laboratories for technical and social learning” where experimentation is encouraged” (BLM and USFS 1998, 4).
Some of these groups, though place-based in their concept of community, are affiliated with regional and national interest groups. Many Applegate organizations are dedicated to monitor and improve land management within the Applegate’s sub-watersheds, while others focus on improving the local economy. One influential group, the Applegate Partnership, integrates the concerns of many of these groups and includes people from all of the small towns.

The Applegate Partnership formed during the spotted owl crisis to resolve conflict and manage the watershed in a way that was ecologically sound, economically viable, and socially acceptable. It has met weekly since 1992 for the above purpose: “The Applegate Partnership is a community-based non-profit organization involving industry, conservation groups, natural resource agencies and residents cooperating to encourage and facilitate the use of natural resource principles that promote ecosystem health and diversity. Through community involvement and education, this partnership supports management of all land within the watershed in a manner that sustains natural resources and that will, in turn, contribute to economic and community well-being and resilience” (Applegate Partnership 1999). The Applegate River Watershed Council (ARWC), a subset of the Partnership, monitors and improves the water quality and salmonid habitat of the Applegate River and tributaries and educates residents about the ecosystem. Both the Partnership and the ARWC provide a forum for community members and agency representatives to coordinate forest management activities with community concerns. The Applegate Partnership, the ARWC, the Applegate AMA employees, and numerous other community groups have all expressed interest in developing a community indicators project (Applegate Partnership 1993-1999; USFS and BLM 1998; Preister 1994).
Purpose and Objectives

The purpose of this thesis project is to investigate how the Applegate community can develop a community indicators project. Ideally, the Applegate and other communities will find the project useful. The objectives are to:

1. Explore a process for the Applegate community to use to create a CIP.
2. Investigate the central principles that other communities employ to approach community indicators.
3. Develop a list of issues pertinent to the Applegate community during the last decade.
4. Find potential indicators to trace how these issues change and assess them according to literature about the Applegate community and to examples of indicators from other communities.

Methods

These objectives are addressed by:

1. Examining other community indicator projects and addressing questions about indicators and CIPs in chapter 2.
2. Extracting The Community Indicators Handbook’s general ten step process for developing community indicators projects to see if it can be adapted to fit the specific needs, goals, and values of the Applegate community (Predefining Progress et al. 1997). Chapter 3 discusses the CIP process.
3. Investigating four policy goals that a majority of communities currently use to approach a CIP: the wealth model, the health model, the quality of life model, and the sustainability model (Redefining Progress 1999). Chapter 4 explains these principles.
4. Identifying and describing the top ten issues and potential indicators for the Applegate in chapter 5. During the summer of 1999, I lived in and researched the Applegate watershed. In order to assess possible indicators, I summarized data gathered from weekly Applegate Partnership meeting minutes, from published literature on economic, community, and/or watershed assessments, and from other community sources. Then, I found out why each issue is important and investigated how trends of the issue could be measured. In this step, I developed several potential indicators for each issue. These methods are described in detail in chapter 5.

**Scope and Limitations**

I recognize that making community indicators projects into usable tools that guide decision-making and create better planning is not an easy process. The scope of my project is limited to the process of developing a CIP, not the utilization of one. Indicator projects are a relatively new trend in community planning and development. In most cases, how they affect planning and decision-making is not known.

Indicators projects are also done at a variety of scales, from national and regional to local. The state of Oregon has created *Oregon Benchmarks*, an indicator project. Although comparing local indicators to statewide indicators to determine how the community compares to the state in meeting large-scale goals is a worthwhile exercise, I do not consider *Oregon Benchmarks* when assessing indicators for the Applegate watershed.

If the Applegate community chose to replicate the statewide indicators in the *Oregon Benchmarks* report, its indicator effort would be top-down in nature. Many CIP efforts to date start from the top-down, with bureaucrats, planners and elected officials starting the process and
eliciting bottom-up feedback from citizens. However, the Applegate community, with its active involvement in community-based ecosystem management, did not adapt a top-down approach. Although the agencies responsible for managing the Adaptive Management Area (Forest Service and BLM) historically have adhered to a top-down style of public land planning, they now form partnerships and collaborate with residents (BLM and USFS 1994, 1996, 1998; Applegate Partnership 1993; Shannon et al. 1996; Sturtevant and Lange 1996). These partnerships were not spurned by the agencies, but by the Applegate’s residents (Shannon et al. 1996; Sturtevant and Lange 1996). Therefore, I am taking a bottom-up approach by reviewing issues that the residents of the Applegate watershed identify as important. I recognize that my data sources, the Applegate Partnership meeting minutes, the Applegate Adaptive Management Area literature (Forest Service and BLM), the economic and community assessments and strategic plan (Southern Oregon University researchers and the Rogue Institute for Ecology and Economy), and short publications from other community groups, cannot represent the values of every member of the Applegate community. However, they do give a broad representation of the community. Only a poll of everyone in the community, young and old alike, would achieve the purpose of complete representation. Likewise, no institutions are capable of representing the values of the entire community. Many of the issues identified in the literature do result from surveys and interviews of residents and businesses in the Applegate watershed. Other issues come directly from community meetings hosted by the Applegate Partnership or the agencies. Therefore, the selected data sources provide a good place to begin the indicator development process.
CHAPTER TWO
EXPLORING THE QUESTIONS

In order to understand how change affects a region, some communities develop and compile measurable community indicators. As the community indicators movement has arisen around the United States and other countries, hundreds of communities in the country have embarked on creating a community indicators project (CIP): “Today, there are nearly 200 projects around the U.S., and many more in other countries” (Scruggs et al. 1996). Some places develop indicators using the principles of sustainability or of the healthy communities movement. Others use the models of quality of life or total community wealth. These communities also have several names for indicators: “some places call them benchmarks, some call them vital signs. Regardless of the name, indicators are in. States, cities, even tiny hamlets are using a variety of yardsticks to measure their own economic and social health—and to set future goals” (Andrews 1996). Communities developing sets of indicators want to measure their progress and take action toward a vision of a better tomorrow.

What Is an Indicator?

An indicator is a measurable part of a bigger whole that indicates if that whole is increasing, decreasing, or staying the same. The “whole” can exist at multiple levels as a single issue, a social, environmental, or economic sector of the community, or the entire community. Indicators are “statistics, statistical series, and all other forms of evidence…that enable us to assess where we stand and are going with respect to our values and goals, and to evaluate specific programs and determine their impact” (Bauer 1966, 1). They are designed to simplify,
to “reduce a large quantity of data down to its simplest form, retaining essential meaning for the questions that are being asked of the data (Ott 1978, 2), and to “have significance that transcends the properties of the underlying data for issues of wider concern” (Environmentally Sustainable Development 1995, 2). For example, Calgary, Alberta uses indicators such as unemployment and the number of people dependent on food banks to alert it to problems like poverty. Publishing these indicators helps it recognize ways to improve the problem: “in the short term, be generous to food banks all year long, [and] in the long term, support policies and programs that tackle the root causes (i.e., unemployment) creating the need for food banks (Sustainable Calgary 1998, 3, 19). Considering indicators in relation to the issue they represent, how that issue changes and how it relates to several aspects of the community, helps decision makers and planners assess how to help a community reach its goals. By compiling several indicators into a comprehensive report, a community indicators project is a planning tool that points where changes need to be made to improve key aspects of the community or region.

What Is a Community Indicators Project (CIP)?

A community indicators project is both a process and a report. When citizens in a community come together to create new visions for their future, they begin the process of a community indicator project. They want to define community, identify important issues, assess the economic vitality of their region, and provide background for major policy decisions (Redefining Progress 1999). Most importantly, they set goals for improving their community. Indicators are a way for communities to assess progress toward these goals. According to Redefining Progress, a public policy institute in San Francisco, communities discover that “the process of developing indicators can bring many different sectors of the community together,
foster new alliances and relationships, provide all citizens with a better compass for understanding community problems and assets, and be used to drive community change” (Redefining Progress 1999). Community indicators projects are also published reports. They are textual “sets of indicators that illuminate long-term trends of economic, environmental and social well-being and chart the path to a changed future” (Redefining Progress 1999). Most places have scores of economic and social indicators through local census data, as well as environmental indicators measured by watershed councils and area community groups. What makes a CIP different than these various sets of indicators is that it integrates these indicators (and new ones that arise from a community visioning process) into a single comprehensive report.

**Why Is the Community Indicators Movement Different?**

Indicators are not new. In the United States, indicators examining data on changing social and economic conditions existed as early as 1894 when the U.S. Bureau of Labor published *The Slums of Baltimore, Chicago, New York, and Philadelphia* (Sawicki and Flynn 1996). Since then, three major peaks occurred in the indicators movement. Excluding economic indicators that described conditions of the stock market, the next indicators report was published in 1933, four years after President Hoover asked a group of scientists to investigate on recent social trends for formulating national policies (Scruggs et al. 1996). In the 1960s, the social indicators movement emerged; it focused on measuring the well being of individuals and families rather than institutions and governments. It also included some community measures called “urban quality indicators” but their use faded in the 1970s (Scruggs et al. 1996). Environmental indicators, which measured environmental conditions (quantitative measures)
and/or environmental quality (qualitative measures) also came out of the 1970’s. Lastly, community indicators projects emerged with Jacksonville, Florida in 1985 and Sustainable Seattle in 1991.

This most recent peak is different from the others for two reasons. First, communities embarking on CIPs want to capture an entire snapshot of the state of their communities rather than measure only economic or social trends; they want to holistically examine social, economic, and environmental issues. People have begun to view their communities as comprised of systems—social, natural, economic, and political. They are “recognizing that all these systems are essential elements to the whole and each affects all others” (BLM and USFS 1998). For example, the healthy community movement recognizes that strengthening the parts of the community, like the environment or the economy, would improve the physical health of the residents (Kemmis 1995, 80).

The second reason why the CIP movement is different than the previous indicator movements is that community indicators projects are not only reports but are processes of community participation. This participatory process invites many diverse and often conflicting interests to the table to jointly develop a common vision as well as goals for the community. The CIP process is a chance for community members to tell their stories, to become involved in the community and look for ways to improve it. “The process of creating indicators is just as important as the indicators themselves” because the dialogue that spawns from developing and measuring indicators is what results in action (Scruggs et al.1996, 2, 5).

In the latest indicator movement, community members themselves, rather than outside researchers or bureaucrats, are developing ways to characterize and understand the systems that make up the community. The “past peaks in the movement appear to have been very top-down,
while this one seems to be more community-based and independent of national-level trends” (Scruggs et al.1996). One must note, however, that while many CIPs are made from the bottom-up and use indicators that focus on local issues, they are frequently encouraged from government bureaucracies or outside groups and therefore need to address the goals of state or national organizations. David Berry from the Sustainable Development Indicators Group and Council on Environmental Quality suggests a reason why the national government encourages community efforts: “At the national level, we are impressed by the level of work being done at the community level. We are interested in how our national effort can support the work within communities” (Berry 1996). He encourages communities to develop community indicators that are commensurate to those measured for the nation as a whole. Berry asserts that the focus of the national sustainability indicators project is on the whole picture and how various issues interconnect. However, communities are still leery of such a top-down approach. Most participants at the Colorado Forum on National and Community Indicators in 1996 felt that the national indicator framework “was too bureaucratic to make sense at the community level,” and “was developed by a top down process with little conversation at the community level” (Scruggs et al. 1996). Many CIPs come from the bottom-up for this reason, but since they still receive support from state or national groups, it is possible (and perhaps even desirable) for community indicator projects to be simultaneously top-down and bottom-up.

**Why Do Communities Develop Indicators?**

A community indicators project is important because it is a planning tool that encourages citizens to become interested or involved in their community, and it can show how management decisions affect different sectors of the community and ecosystem. Even if made from the top-
down, bureaucrats often involve a wide range of volunteers that represent various sectors of the community to characterize important issues and potential indicators. The sectors of the community—social, natural, economic and political—are complex systems. Indicators provide feedback about a system that might otherwise be too complex to understand. For example, a school district may ask, “how does our education system fare?” Studying trends in SAT scores or graduation rates helps the district understand changes in at least a part of the educational system. Accurate feedback about the state of a system may help decision-makers effectively manage the sectors of the community in their care. A CIP also helps managers or policy makers be more accountable for their decisions by showing how a condition changes as a result of policy and planning decisions. As is now being done across the country, school districts may look at standardized test scores in specific disciplines (e.g., math, science, reading, etc.) as measures of how a change in the school curriculum has affected the education system. Communities develop and use indicators, “quite simply…because they need them. Indicators are a window into the complexities of modern life. They make it possible to make informed decisions and to be accountable for the results” (Predefining Progress et al. 1997).

Decision-makers utilize community indicators for reasons besides their accountability to the community. They use a CIP as a communication device to help them explain their decisions to citizens and as a mechanism to encourage citizen input into “official” community decisions. Increased communication between community leaders and community members can ease decision implementation, both in the planning or implementation phases of a new regulation, program or policy. Even in many top-down indicator projects, the ideas, issues, and indicators come from the community—the very people affected by the “official” decision; residents
volunteer to come together and suggest ways to improve how community systems or ecosystems function.

National directives from the President’s Council on Sustainable Development (PCSD) make developing an index of community indicators important for reasons besides improved local involvement and communication between decision-makers and residents. Sustainability has become a policy-making focus at the national level; the PCSD created the U.S. Interagency Working Group on Sustainable Development Indicators (SDI Group) to develop a national framework for sustainable development. SDI Group responded by publishing *Sustainable Development in the United States: An Experimental Set of Indicators*. It asserts that “indicators provide a useful feedback mechanism for highlighting areas where we are doing well and for alerting us to areas that may need greater attention. This feedback is particularly important as people across the country work to put the Nation on a path toward greater economic, environmental, and social well-being” (SDI Group 1998, v). Although the indicator set is for the nation as a whole and not for individual communities, PCSD encourages local areas to develop their own indicators and compare them to the national set. Communities who demonstrate that they are seeking ways to equitably preserve their local economic and natural environment are often entitled to grants from the PCSD, the Environmental Protection Agency, and other organizations. For example, in 1998, the Sierra Business Council received the National Award for Environmental Sustainability for the *Sierra Nevada Wealth Index* from Renew America, an

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4 The concept of sustainable development, defined by the SDI Group, as “an evolving process that improves the economy, the environment, and society for the benefit of current and future generations” is popular within the United Nations system (SDI Group 1998, 9). Despite its popularity, it has many critics: “Sustainable development is an oxymoron. Modern political economy in any form is unsustainable, precisely because it involves ‘development’—that is, more and more people consuming more and more goods with the aid of ever more powerful technologies” (Ophuls 1996, 34).
organization promoting constructive models that assist communities in meeting environmental challenges. A CIP attracts recognition at local and national scales.

**What Is an Example of a CIP?**

Currently, communities worldwide are developing community indicator projects, which are available through “Redefining Progress: Community Indicator Projects on the Web” (Redefining Progress 1999). In the United States, these efforts exist at state, regional, county or city scales. Among these, five are described in *Land Use in America: A Sustainable City Plan for Berkeley; Sustainable Cambridge Coalition; Chattanooga Venture; Jacksonville, Florida Community Council Indicators, and the Sustainable Seattle Indicators Project* (Diamond and Noonan 1996, 101-103). The Jacksonville Community Council Indicators project, the first formal CIP in the United States, is a useful learning tool for communities that wish to develop their own indicators. Starting in 1985, the Jacksonville Chamber of Commerce and the Jacksonville Community Council met to discuss their concern for their city’s quality of life. Volunteer committees completed a vision for 2000 that included seventy-four indicators in nine sectors: government/politics, social environment, health, culture/recreation, education, economy, public safety, natural environment, and mobility. Positive and negative trends have emerged from the data, which has been collected for more than 10 years. Knowledge of these trends guides planning and decision-making. JCCI publishes two quality of life documents yearly, which are available for purchase. The Executive summary contains general information about the indicators: goals, positive trends (highlighted with gold stars) and negative trends (displayed with red flags). Complete information about each indicator is included in the Reference Document. Furthermore, what makes the Jacksonville project a vital learning tool is the
Community Council’s outreach to other communities interested in utilizing indicators. JCCI welcomes questions from communities by phone, e-mail, or letter, and offers a Replication Kit, a how-to manual for developing quality of life indicators (JCCI 1999). However, since quality of life is a vague concept defined by the values of residents in Jacksonville, JCCI’s approach may not be transferable to all communities.

Why Would the Applegate Community Benefit from Developing a CIP?

Jacksonville, Florida and other cities with community indicators reports are very different from the Applegate watershed. Urban places have scores of issues unlike those found in a rural community comprised of mostly public land. Nevertheless, both urban and rural communities experience changes in their social, natural, economic, and political sectors; a CIP is a tool to help them keep track of these developments. Some of the many changes happening in the Applegate watershed during the 1990s include: a declining economic dependence on the timber and agricultural industries; a move toward more local participation in public land management, and a shift in demographics as newcomers move in to the watershed (Reid et al. 1996; Preister 1994; RIEE 1996; BLM and USFS 1994, 1998; Applegate Partnership 1993-1999). The Applegate Partnership, the agency representatives, and groups of both newcomers and long-time residents perceive these changes and look for ways to measure them.

A CIP would help the Applegate Partnership determine its progress toward meeting its vision statement of improving the natural, economic and social sectors of the community. Additionally, it could make information about the Applegate watershed available to people living outside the community who are concerned about the management of the watershed’s public lands. The Partnership formed because residents wanted to incorporate local knowledge of the
ecosystem into public land management while strengthening the bonds of community. It emerged alongside the grass-roots ecosystem management (GREM) movement (also known as community-based ecosystem management), which mirrors urban movements that attempt to decentralize control over natural, economic, and/or social resources. GREM encourages agencies to replace their prescriptive, uniform standards with more place-based strategies: “Instead of a system premised on hierarchy and commands from above, GREM devolves significant authority to local, place-based alliances (networks) of affected stakeholders from the community and relevant federal, state, and local agencies” (Weber 2000, 250). Critics of GREM complain that it gives too much power to local industry stakeholders who may want to dodge the restrictions of national environmental laws and impose economic values over environmental ones (Weber 2000, 255). As a response to this complaint, one asks: in the Applegate, are negative ecological effects resulting from the power given to the Partnership’s industry representatives? Although a CIP is unlikely to answer whether power is evenly distributed, carefully chosen community indicators will monitor changes in ecological, economic, and social conditions. The Applegate Partnership and its critics could use a CIP to determine if decisions resulting from grass-roots ecosystem management in the Applegate watershed result in a degradation of these systems.

To balance the values of local and national concerns, alliances and agencies influenced by GREM utilize the Ecosystem Approach, a goal-driven framework for sustaining the functions and values of natural systems while integrating ecological, economic and social factors (Interagency Ecosystem Management Task Force, 1995). A CIP process is a tool to help communities and agencies be goal-driven and to enable groups like the Applegate Partnership to provide a forum for sharing local knowledge and visions for the future. Additionally, a CIP integrates ecological, economic and social indicators into a single, comprehensive report. The
Ecosystem Approach also uses adaptive management, where agencies review progress toward ecological sustainability and adjust their management actions to meet such a goal. A key to knowing if progress occurs is yearly monitoring of environmental, social and economic conditions; indicators are used both in monitoring these conditions and in monitoring progress (Interagency Ecosystem Management Task Force, 1995; Redefining Progress 1997). Agencies attempt to adapt management of the land according to new information gained from monitoring; they use the community’s knowledge of the ecosystem, in addition to the agency’s own store of expertise, to guide planning and decision making. Communities, like the Applegate, who are motivated to participate in the management of the land they depend on, are likely beneficiaries of a community indicators project.

Not all land management in the Applegate watershed is public. Thirty percent of the Applegate watershed is in private ownership: in farms and ranches where generations of Applegate residents have lived and worked; in new developments, where people come to the watershed to escape busy city streets; and in acres of privately-owned forest. Many old timers and newcomers in the Applegate community share a sense of place and are building a community history: “As this common history takes shape, it can point to the important themes which come up repeatedly, for example changing patterns of land ownership, different uses of the valley’s water. These themes can provide a starting point for building a set of indicators which can help the community start monitoring its own health, just as we [researchers] are trying to develop indicators which help us watch the health of the Applegate ecosystem” (Preister 1994, 121). The community history, recorded in the Applegate literature utilized for this thesis, illuminates these themes. Although the Applegate community has talked about creating indicators since the publication of Preister’s Community Assessment, a community indicators
project has not yet begun. Preister (1994) encourages the Applegate to develop indicators because “as these indicators take shape, the community can begin thinking together about what it wants the community to look like in the future. As the saying goes, ‘If you don’t know where you’re headed, you’ll never know whether you get there.’ The Applegate area, a leader in the region in so many ways, again has the opportunity to blaze a new path by taking this sort of proactive approach to thinking about its future.” The purpose of this thesis project is to investigate the process of developing a community indicators project specific to the Applegate community. Therefore, the findings could be helpful to the Applegate Partnership, the agencies, or other community members in the Applegate who decide to instigate a CIP.
“The process is just as important as the product” is what many groups developing indicator projects assert because they value bringing people together to improve their community (Predefining Progress et al. 1997). Creating an indicator project requires a balance between the participatory and the technical. When community members do not participate in an indicator project, they are likely to express less interest in the technical data presented in the final report than if they helped formulate the indicators (Predefining Progress et al. 1997). Balancing participation with technical data collection and analysis is “why the process of indicator development is so important. Indicators require that people with many different backgrounds work together toward a common goal, one that they can all agree on, despite political or cultural differences” (Predefining Progress et al. 1997). Encouraging diverse people to agree on a common vision for their community takes time. Therefore, a community must invest time in designing and planning the indicator development process as well as in researching and determining the indicators. Utilizing the CIP to improve the community takes more time: “creating a vision of a healthy community can take a day. Creating an initial report card to measure your progress can be done in a matter of months. But realizing the vision may take a generation” (Predefining Progress et al. 1997). Before creating indicators, a community must realize that an indicators project involves an on-going process that takes many years and many people.
**How Could a Community Develop a CIP?**

A community like the Applegate does not have to start from scratch in designing a process for CIP development. It can look to other pioneers that have charted step-by-step models. Redefining Progress, Tyler Norris Associates, and Sustainable Seattle (1997) have researched the processes pioneer communities used and have developed a “synthesis, a ‘prototypical’ community indicator process, that you can use as you like and adapt as you see fit” (Redefining Progress et al. 1997, 9). They stress that most communities follow a version of the process, which is less linear than its step-by step model shown in Table 1a. Since no single best approach exists, the Applegate community may adapt such a process to fit its own needs. The Applegate Partnership and AMA already look to one model to guide the planning and monitoring of the ecosystem and community: *The Ecosystem Approach* (Interagency Ecosystem Management Task Force 1995). *The Ecosystem Approach* is not a process for developing indicators, although it uses indicators to characterize and monitor the historical ecosystem and the present economic, environmental, and social conditions and trends for the ecosystem (Step D and in Table 1b). Many of its steps, however, like developing a shared vision, are similar to the 10 general steps from Redefining Progress. By utilizing *The Ecosystem Approach* framework, the Applegate is well on its way to developing a CIP. Integrating the steps and principles inherent in *The Ecosystem Approach* into the step-by-step model from Redefining Progress could help the Applegate community members, if they so choose, to tailor their own community indicators process. Table 1c shows the results from this integration, and the following sections describe how the author modified Redefining Progress’ ten steps, using knowledge about *The Ecosystem Approach* and the Applegate community, in order to make the CIP process more specific to the Applegate.
Table 1: Approaches Leading to the Design of a Community Indicators Project

Table 1a: The Community Indicators Process from *The Community Indicators Handbook*

<table>
<thead>
<tr>
<th>Step</th>
<th>Step Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Form a Working Group</td>
</tr>
<tr>
<td>2</td>
<td>Clarify your Purpose</td>
</tr>
<tr>
<td>3</td>
<td>Identify your Community’s Shared Values and Vision</td>
</tr>
<tr>
<td>4</td>
<td>Review Existing Models, Indicators, and Data</td>
</tr>
<tr>
<td>5</td>
<td>Draft a Set of Proposed Indicators</td>
</tr>
<tr>
<td>6</td>
<td>Convene a Participatory Selection</td>
</tr>
<tr>
<td>7</td>
<td>Perform a Technical Review</td>
</tr>
<tr>
<td>8</td>
<td>Research the Data</td>
</tr>
<tr>
<td>9</td>
<td>Publish and Promote the Report</td>
</tr>
<tr>
<td>10</td>
<td>Update the Report Regularly</td>
</tr>
</tbody>
</table>

Table 1b: *The Ecosystem Approach* Framework

<table>
<thead>
<tr>
<th>Step</th>
<th>Step Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Define the Area of Concern/Interest</td>
</tr>
<tr>
<td>B</td>
<td>Involve Stakeholders</td>
</tr>
<tr>
<td>C</td>
<td>Develop a Shared Vision of the Ecosystem’s Desired Future Condition</td>
</tr>
<tr>
<td>D</td>
<td>Characterize the Historical Ecosystem and the Present Economic, Environmental, and Social Conditions and Trends for the Ecosystem</td>
</tr>
<tr>
<td>E</td>
<td>Establish Ecosystem Goals</td>
</tr>
<tr>
<td>F</td>
<td>Develop and Implement an Action Plan for Achieving the Goals</td>
</tr>
<tr>
<td>G</td>
<td>Monitor Conditions and Evaluate Results</td>
</tr>
<tr>
<td>H</td>
<td>Adapt Management According to New Information</td>
</tr>
</tbody>
</table>

Table 1c: A Process Specific to the Applegate Community That Integrates Tables 1a and b.

<table>
<thead>
<tr>
<th>Step</th>
<th>Step Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Form a Working Group Involving All Stakeholders</td>
</tr>
<tr>
<td>2</td>
<td>Clarify the Purpose and Identify the Area of Concern or Interest</td>
</tr>
<tr>
<td>3</td>
<td>Develop a Shared Vision for the Community and Ecosystem and Identify the Guiding Principle and Goals for the Indicators Report</td>
</tr>
<tr>
<td>4</td>
<td>Review Existing Information to Identify Community Issues and Potential Indicators</td>
</tr>
<tr>
<td>5</td>
<td>Draft a Set of Proposed Indicators</td>
</tr>
<tr>
<td>6</td>
<td>Convene a Participatory Selection and Validation Process</td>
</tr>
<tr>
<td>7</td>
<td>Perform a Technical Review</td>
</tr>
<tr>
<td>8</td>
<td>Research the Data</td>
</tr>
<tr>
<td>9</td>
<td>Publish and Promote the Report</td>
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<tr>
<td>10</td>
<td>Update the Report Regularly</td>
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</tbody>
</table>
The Ecosystem Approach

*The Ecosystem Approach* is “a method for sustaining or restoring natural systems and their functions and values. It is goal driven, and it is based on a collaboratively developed vision of desired future conditions that integrates ecological, economic and social factors” (Interagency Ecosystem Management Task Force 1995). The approach gives steps for agencies or organizations, like the Adaptive Management Area’s BLM and USFS, the Applegate River Watershed Council (ARWC), and the Applegate Partnership, to “restore and maintain the health of ecological resources together with the communities and economies that they support” (Interagency Ecosystem Management Task Force 1995). The Northwest Forest Plan influenced the formulation of *The Ecosystem Approach* framework, especially by creating ten Adaptive Management Areas in the Pacific Northwest, including the Applegate Adaptive Management Area. In the Applegate Adaptive Management Area, the BLM and the USFS involve each other and the community in management of the lands they each control.

The BLM and the Forest Service in the Applegate Adaptive Management Area already follow many of the steps, listed in Table 1b. Adapting management according to new information, step H in *The Ecosystem Approach*, is the central principle guiding BLM and USFS projects. Adaptive management “is a process for adjusting management actions and directions in light of new information about the ecosystem and about progress toward ecosystem goals” (Interagency Ecosystem Management Task Force 1995). For each watershed project, the agencies first define the area of concern (Step A) and introduce the project to the public in order to involve stakeholders (Step B). In the *Ecosystem Health Assessment*, they characterized “the historical ecosystem and present economic, environmental, and social conditions and trends for the ecosystem” (Step D). In order to gather the assessment data, the agencies used many
indicators, but did not explain them in a published report or use them annually as a CIP would. Additionally, the Applegate Partnership, the ARWC and the managers of the Applegate Adaptive Management Area have already completed hundreds of monitoring studies using *The Ecosystem Approach* (step G), but have not integrated their data nor published a comprehensive summary of the indicators they used. These studies identically follow the purposes defined in *The Ecosystem Approach*: “to determine whether standards and guidelines are being followed (implementation monitoring); to verify achievement of desired results (effectiveness monitoring); and to determine soundness of underlying assumptions (validation monitoring)” (Interagency Ecosystem Management Task Force 1995). Additionally, the agencies in the Applegate use “inventory or baseline monitoring,” which “may be repeated to detect trends or changes over time” (BLM and USFS 1998). This type of monitoring can aid both the agencies and the public in locating data for indicators.

Although *The Ecosystem Approach* is a framework designed by the federal government for agencies, it has a “consensus-based orientation [which] benefits the public because people are more likely to get what they want with regard to ecological and economic goals” (Interagency Ecosystem Management Task Force 1995). It involves the community in each step and allows the public to create additional steps. By utilizing *The Ecosystem Approach*, and by developing vision statements for the desired future conditions of the watershed (Step C) the Applegate community has already begun the process of developing an indicator project. By assessing what steps the Applegate community has taken and by integrating *The Ecosystem Approach* with the Redefining Progress model, the Applegate may more readily begin creating a CIP.

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5 The agencies and the Applegate Partnership have both developed vision statements, independently of each other.
A Process Specific to the Applegate Community

Before embarking on an indicators process, a community must perceive a need to create a CIP. The Applegate AMA representatives, who often speak for the Applegate community through scoping opinions of residents and community groups, have expressed this desire to “develop clear criteria and indicators of sustainability reflecting shared values and monitor measurable criteria over time” (BLM and USFS 1998). The Applegate community and the agencies have already begun this process through writing vision statements, holding weekly and/or monthly community meetings, identifying the community’s and ecosystem’s major issues in several publications, and beginning the All Party Monitoring (APM) effort. Furthermore, the agencies, the Applegate River Watershed Council, researchers from Southern Oregon University, and organizations (especially the Rogue Institute for Economy and Ecology) have already developed indicators for their respective purposes (BLM and USFS 1994, 1998; Reid et al. 1996; Preister 1994, RIEE 1997).

Though the Applegate has multiple sources of existing indicators, the indicators are not always published frequently, nor are they integrated into a comprehensive report. The BLM and Forest Service have data on endangered species, terrestrial vegetation, fire, logging, grazing, and other ecosystem conditions; yet do not necessarily share the data in a yearly report. Likewise, social and economic indicators gathered for the Community Assessment in 1994 (Preister) or in the demographic and economic assessment in 1996 (Reid et al.) have not been measured since 1994 or 1996. A CIP published regularly, however, could facilitate comparisons from year to year.

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6 APM is an attempt to coordinate ecosystem monitoring between the BLM, USFS, ARWC, Oregon Department of Fish and Wildlife, other community groups, and area or national environmental groups. The APM effort strives to involve the above groups in a consensus process to choose a few key environmental indicators and determine who will monitor each indicator to prevent duplication.
year about resource use, and the state of the Applegate’s ecosystem, as well as its social and economic systems. To make these comparisons, a CIP contains graphs showing possible trends. While the ARWC does report its data on various water quality parameters yearly, it does not include data from past years. A CIP could include only a few key water quality indicators from ARWC’s report and present these indicators alongside indicators about social, economic, and other ecological issues. Although most Applegate residents are interested in what the data from agencies, researchers, and/or the ARWC may show, many do not want to look through pages of information from multiple sources to gain an understanding of current Applegate conditions.

Besides summarizing such information, a CIP involves residents in the process of determining what is important about the community and in finding ways to measure changes in those aspects. Including a broad spectrum of community members in this process helps the participants feel ownership of it, which in turn aids project implementation and leads to a greater likelihood of success (Weber 1998). The Applegate community has expressed interest in developing its own indicators project (Preister 1994; BLM and USFS 1998). In many ways, it has already started the process. The following sections discuss the Applegate’s progress toward developing a CIP. They also describe the integration of The Ecosystem Approach framework into the general CIP process from the Community Indicators Handbook (Interagency Ecosystem Management Task Force 1995; Predefining Progress et al. 1997). The ten steps resulting from this integration (summarized in Table 1c and explained in the following sections) are intended to be a guide to help or encourage Applegate community members to develop their own indicator development process.
Step 1: Form a Working Group Involving All Stakeholders

At the heart of an indicators project are the people who design the process, analyze the technical details, coordinate the research, and complete the final report. Redefining Progress et al. (1997) calls this team the “Working Group,” which is a group of people that reflect the diversity of the community. Integrating Step B of The Ecosystem Approach (“include stakeholders”) helps insure the involvement of people who have a stake in the issues important to the community and who want to improve one or multiple sectors of the community. In the Applegate watershed, the community of stakeholders includes the Applegate Partnership, the Applegate River Watershed Council, the other community groups, any individuals not part of these groups, and agency representatives. Of these, both the Applegate Partnership and the agencies have expressed interest in community and ecosystem indicators (Applegate Partnership 9/22/93, 12/7/94, 1/21/96, 12/11/96; BLM and USFS 1998).

The Applegate Partnership continually involves stakeholders by asking, “who else needs to be at the table” (Rolle 1997). However, if the Partnership organizes the CIP process, its board members should not comprise the entire working group. Even though the Applegate Partnership strives for total representation by trying to include people of all interests from the entire Applegate watershed, some community members do not feel that the Partnership represents their views (Sturtevant and Lange 1996). Agency representatives and people from Headwaters, an environmental group, participate in Partnership meetings but do not always share its vision. Likewise, farmers, business leaders, ranchers, logging contractors, and individuals from other community groups (Appendix B) who do not attend the Applegate Partnership meetings would bring diversity to the table. Including people “with a wide variety of interests and perspectives will add a richness and creativity to your process that are impossible to get any other way.
Diversity will also lend your project important credibility with the community at large” (Predefining Progress et al. 1997). Likewise, if agencies design the indicator process, government employees alone should not compose the entire working group. While the Partnership would take a bottom-up approach to indicator development, the agencies must take care not to instigate an entirely top-down approach.

Including stakeholders, as encouraged in *The Ecosystem Approach*, allows the agencies to be more sensitive to the needs of the local community. In the past decade, as part of adaptive management, local residents have shared their knowledge and experience (BLM and USFS 1994, 1996, 1998; Applegate Partnership 1993-1999). Under traditional top-down public land planning, their knowledge can be ignored because it lacks the formality and methods of scientific data (Preister 1994, 102). When scientists, citizens, and managers dialogue, they begin to formulate a combination of a top-down and a bottom-up approach to ecosystem management. Hopefully, the results are increased respect and trust developing among participants, as well as better results on the ground: “Just like trust, wisdom about how to manage an ecosystem only comes from time. And that, if we were wise enough to support a system in which people could build a base of experiential knowledge about how a system should be managed, we would have better forest management, not worse” (Ken Cairn 1995). The agencies and the Applegate community are not the only stakeholders who decide what constitutes “better” forest management. Public land management that is better for community residents and local agency representatives might not be better from a national perspective. To achieve full inclusively, the agency’s combination top-down and bottom-up approach to developing community indicators would include both Applegate community and national interests in the working group. This first
Step 2: Clarify the Purpose and Identify the Area of Concern or Interest

Step A in The Ecosystem Approach is to define the area of concern or interest. The Applegate community has already completed this step by its focus on the entire Applegate watershed, instead of smaller locales, in multiple publications: Words into Action: A Community Assessment of the Applegate Valley; Applegate Valley Strategic Plan; Analysis of Demographic and Economic Aspects of the Applegate Watershed, and the Applegate Adaptive Management Area Ecosystem Health Assessment and Guide. The watershed also consists of sub-watersheds and small communities, as well as parts of two counties. The geographical area boundaries influence the issues and values of the community. For example, the Josephine County part of the watershed contains 66% of all Applegate private land owners, has a smaller average lot size, and higher property and improvement values than the Jackson County part, while the actual amount of privately-held land is split nearly evenly between the two counties (Reid, et al. 1996). Therefore, in surveys, residents in the Josephine County section voiced economic and social concerns relating to property values, cost of living, and in-migration more than those living in Jackson County (RIEE 1997). A CIP that focused on the Josephine County part of the Applegate watershed would differ from one that included the interests of both counties.

Besides defining the geographical boundaries, “defining the area of concern” also means to “clarify your purpose” as in the second step of the CIP process: “indicators are tools for positive change, but they are not ends in themselves. They are most effective when linked to a
specific purpose” (Redefining Progress et. al. 1997, 13). Most indicators reports are done for a reason; clarifying that reason is what Redefining Progress et al. means by linking to a specific purpose. Research on current indicator projects shows that communities have three primary purposes for a community indicators project: public education, policy background, and performance evaluation (Redefining Progress et. al. 1997, 13).

Public education indicators introduce a set of concepts like sustainability, community health, quality of life, or total community wealth to citizens. They communicate data to help community members understand important trends and mobilize efforts to improve the community. Applegate watershed residents are active in perceiving the changes facing their community, as well as implementing action steps to address change (Reid, et al. 1996). After Jackson County closed a park on the Applegate River, “a citizen/county partnership has resulted in the re-opening of Cantrall-Buckley Park using local residents as staff” (RIEE 1997).

Although Applegate community members often quickly respond to change, the Analysis of Demographic and Economic Aspects of the Applegate Watershed has found that the perceptions of Applegate residents and business owners have not always been accurate (Reid, et al. 1996). Therefore, a CIP with a focus of public education would help to clarify the trends and guide future community projects.

Policy background indicators provide information on trends relevant to a major policy decision, such as rezoning or developing a new comprehensive plan. Such indicator projects focus on a relevant policy question; their intended audiences are people involved in the decision-making process. The decision-makers in the Applegate—government officials for the counties and the agencies—may want to encourage a policy background CIP. On the other hand, performance evaluation indicator projects arise when the community, not the government, has set
specific goals, policies, plans or programs. Performance evaluation indicators are the means for assessing whether the community achieves those goals. The *Applegate Valley Strategic Plan* voices the goals, “strategies,” and “action steps” of the Applegate community as a whole, and the areas of Upper Applegate, Applegate, Williams and Murphy (RIEE 1997). Therefore, residents could evaluate progress of the action steps toward reaching those goals and educate others about the principles behind those goals. The three foci for an indicator project overlap, “but they are different enough that it helps to be clear about what the primary focus is, right from the outset” (Predefining Progress et al. 1997). Clarifying the purpose will enable the Applegate community to identify its intended audience, and guide the indicator selection process, the presentation of the data, and the marketing of the report.

**Step 3: Develop a Shared Vision for the Community and Ecosystem and Identify the Guiding Principle or Model**

After inviting various interests to the table and clarifying the purpose, Step C in *The Ecosystem Approach*, and step 3 in the Redefining Progress process comes next: develop a shared vision of the desired future condition of the ecosystem. *The Ecosystem Approach* asserts that “vision statements tend to be broad and general, but should be precise enough to provide a realistic target toward which specific implementation actions can be directed (Interagency Ecosystem Management Task Force 1995). The meetings and publications of the agencies, the Applegate Partnership, the Applegate River Watershed Council, the Rogue Institute for Ecology and Economy (RIEE), and other organizations, have identified the community’s shared values and vision. The values are the major issues that the community cares about, while the vision is how those issues are balanced in the future (Predefining Progress et al. 1997). The Applegate
has already participated in a strategic planning process, where “citizens reflect about what they like and don’t like about their community, what works and doesn’t work, and what they would most want to preserve or change” (RIEE 1997). They have developed action steps they think are necessary to create the future they envision. Both the Applegate Partnership and the managers of the Applegate Adaptive Management Area have published their vision statements as well. The vision statements, though worded differently, share a common theme to foster healthy social, economic, and ecological systems or sectors of the community while supporting management that sustains natural resources (Applegate Partnership 1999; BLM and USFS 1998).

The Community Indicators Handbook overlooked the second part of step 3 (“develop a shared vision for the community and ecosystem and identify the guiding principle or model”) by failing to address the identification of the guiding principle behind the indicators report. Differences exist in how communities approach the development of community indicator projects. After creating a new vision of the future, communities adopt a central principle (or combination of principles) to assess their region’s “wealth,” measure their “quality of life,” or promote the idea of “healthy cities” or “sustainable communities.” In a survey of nearly 100 CIPs nationwide, Redefining Progress found that 41 percent focused on quality of life, 37 percent on sustainability, and 10 percent on healthy communities (Redefining Progress 1999). One community, not represented in the study, chose a wealth model to characterize their social, economic, and ecological assets. Regardless of the model used, all the communities surveyed “want to measure their vision of a better tomorrow and to take actions that will build a vital community now and into the future” (Redefining Progress 1999). However, in order to select, or create, an approach that is appropriate for the Applegate, the community must understand the
central principles of the wealth, health, quality of life and sustainability models. To aid the community’s understanding of these principles, chapter four discusses these models in detail.

Step 4: Review Existing Information to Identify Community Issues and Potential Indicators

In many areas, like the Applegate, “generally there will be a number of published (or publicly available) indicator reports about a community” (Predefining Progress et al. 1997). Such reports arose when the Applegate community completed step D of The Ecosystem Approach, which is to “characterize the historical ecosystem and the present economic, environmental, and social conditions and trends for the ecosystem” (Interagency Ecosystem Management Task Force 1995). Current projects monitor these conditions, and are part of Step G of The Ecosystem Approach. The following published reports describe Applegate issues and present data: Words into Action: A Community Assessment of the Applegate Valley (Preister 1994); the Ecosystem Health Assessment (BLM and USFS 1994); the economic and demographic assessment (Analysis of Demographic and Economic Aspects of the Applegate Watershed—a companion to the Community Assessment); the Applegate Valley Strategic Plan (RIEE 1997); the description of ecosystem restoration (BLM 1998), and the Applegate Adaptive Management Area Guide (BLM and USFS 1998). Reviewing these data sources reveals many indicators. According to Redefining Progress, “surveying what is already being measured will help you decide what some of the priorities for new indicator development are likely to be” (Predefining Progress et al. 1997). For the Applegate community, step four is more than locating existing data sources. Instead, it is characterizing the important issues.

Focusing only on existing indicators and data tends to limit the selection of indicators to those already monitored. Many issues important to the Applegate community are not routinely
monitored, but residents perceive changes within these issues. For example, in *Words into Action: A Community Assessment of the Applegate Valley*, Preister (1994) found that “traffic is the number one community complaint” (6). Traffic is an issue important to the community; residents perceive the trend within this issue as an increase in congestion on the narrow roads. However, data measuring how traffic has increased or decreased in the watershed does not exist. Therefore, in step four, the working group reviews existing information about the area in order to identify the major issues and to propose either current or new indicators that measure trends within each issue.

**Step 5: Form Criteria and Draft a Set of Proposed Indicators**

In step four ("review existing information to identify community issues and potential indicators"), the working group identifies many potential indicators for each issue. For step five, it develops a list of indicators it proposes to report to the community. To make this list, the working group narrows the number of proposed indicators to one or two indicators per issue based on the purpose of the project, the community’s vision, and the existing data. *The Community Indicators Handbook* stresses that the working group “start from a set of criteria for selection” to begin step five (Redefining Progress et al. 1997, 17). For example, if the community’s focus (from step 2) is public education, it chooses indicators that:

- “Reflect something fundamental to your specific educational objective;
- Have existing data, or data that can readily be measured;
- Will show change over time;
- Are easy for the public to understand;
- Will attract the attention of the media;
• Inspire action” (Predefining Progress et al. 1997).

Indicators for policy background may require time-series data that is policy-relevant. Performance evaluation indicators “should focus on results from the work being done (outputs) rather than the resources being expended on the work (inputs)” (Predefining Progress et al. 1997). The working group can adjust the criteria to fit the community’s needs and/or the central principle—health, wealth, quality of life and/or sustainability—guiding the project. However, the selections must be consistent with the criteria so they are defensible when the working group presents the set of proposed indicators to the community in step six. The Applegate community has not yet developed criteria for social, economic, and ecological indicators, though the Applegate Adaptive Management Area Guide states that the community wants to “develop clear criteria and indicators of sustainability reflecting shared values and monitor measurable criteria over time” (BLM and USFS 1998). Since criteria for selecting indicators may change as the focus for the indicator project shifts between public education to policy background or to performance evaluation, the monitoring criteria mirrors the community’s goals for the indicator project. The Applegate community has established and clarified ecosystem (including economic and social) goals (step E in The Ecosystem Approach) in the ecological assessment, AMA guide, and the strategic plan. Reviewing these goals will aid the Applegate community in determining criteria for a preliminary list of indicators.

Step 6: Convene a Community-wide Selection and Validation Process

The list of proposed indicators developed in step five (“form criteria to draft a set of proposed indicators”) is a rough draft: “if it’s overly developed, with data tables and charts and written interpretations, other people may feel that their feedback won’t be taken seriously”
(Predefining Progress et al. 1997). In order to accept the set, already grouped into categories and briefly explained, a wide range of people must evaluate it. Therefore, step six involves the community and asks it to review, revise, and eventually support the list of indicators. Community members choose from the proposed list of indicators that will be meaningful for them and will best represent the issue that the indicator is trying to measure. They may also create a new indicator for an issue. Step six “can be the most exciting part of the initial work, because you begin to see ‘results,’ new relationships among people, opportunities for creativity, and a renewed sense of hope and empowerment” (Predefining Progress et al. 1997). However, designing and implementing this community forum process is challenging for the working group. The group will need to attract participation, highlight the diversity of the community, introduce the concept of indicators, facilitate the discussion of the indicators, and have sufficient resources (planning expertise, time and money) to host several large events.

The Applegate community fortunately has several means to carry out this process. Its framework of adaptive management (step H in The Ecosystem Approach) stresses that learning about natural and social issues, science, and differences in values must take place before the agencies or community members take improvement steps (BLM and USFS 1998). This learning regularly occurs in the Applegate through communication, negotiation or facilitation, newsletters, and horizontal networks. The Applegate Partnership encourages the community to voice concerns and issues through weekly meetings and field trips. Once a month, it hosts a large meeting where the agencies, representatives from the Applegate watershed’s other community groups, and interested citizens discuss how to improve both public and private land management within the community.
Moreover, since indicator projects gather people who are not accustomed to working together, facilitation “and good process skills—such as listening, gently guiding discussion, mediating disagreements, finding and naming the points of agreement—will help turn the inevitable conflicts into creative opportunities for consensus” (Predefining Progress et al. 1997). A facilitator, often from within the community, is present for the Partnership’s large monthly meetings. Likewise, its board members have received training in facilitation; they learned to construct and get through meeting agendas, keep track of time, utilize ground rules, and help participants objectively focus on common ground and interests rather than positions (Sturtevant and Lange 1996). Although the Partnership members possess skills in self-facilitation, the working group could benefit from hiring experienced facilitators; doing so would prevent the perception that the indicators project is biased toward the views of the Partnership.

Partnership members may also prevent such a perception through outreach to other community groups (Appendix A), to its board member constituents, and to residents not affiliated with any local groups. This outreach builds horizontal networks, which “are the means by which most community members communicate and respond to issues” within the Applegate community (Sturtevant and Lange 1996). Outreach could also occur through the local website, “The Applegate Learning Page” (available at http://id.mind.net/community/app/).

After outreach has occurred, the community forum events for selecting and validating indicators should include as many people as possible. For example, to make meetings accessible, the Partnership shifts meeting times and locations (but keeps the day of the week constant) and publishes these in the local newspaper. The Applegate River Watershed Council publishes this bimonthly newspaper, called the “Applegator,” and distributes it to all watershed residents. The agencies also communicate with the community through field trips, newsletters,
and the interagency liaison, while the liaison communicates between the agencies monthly. The Applegate Partnership, the agencies, other community groups, or the ARWC could use meetings, field trips, newsletters, facilitation skills, and networks to publicize the indicators project and the community forum events.

Even before attracting participation in the indicators project, the working group either designs the community collaboration process or utilizes existing planning efforts that attract a broad representation of the community. Wide variation exists among the leading indicator efforts in how they have conducted this process (Predefining Progress et al. 1997). The working group may host a series of community forum events. It could invite engaging speakers to inspire the audience to improve the community wealth, health, quality of life, or sustainability. A subsequent event could introduce the concept of indicators and desired outcomes of an indicator report, circulate the proposed draft, and outline the entire community indicator process. Encouraging people to work in small groups and showcasing success stories from other CIPs often helps the participants gain familiarity with each other and the goals of the indicator project. Then, at a later event, the participants will be more ready to review and revise the proposed indicator set. At this workshop, the working group explains and refines the criteria for selecting indicators. Participants could work in a number of small groups or committees according to their interests; these small groups could coincide with the categories of issues and indicators. For example, the Sierra Nevada Wealth Index organizes indicators into three categories which correlate to different sectors of the community: social, natural, and financial (SBC 1996). Outside committee work and additional sessions may be necessary for people to come to a consensus on a limited number of indicators. In a final event, the working group could present the revised indicator list and brainstorm about how the indicators could make a difference in the
community. Additionally, a mutual validation must occur between the working group and the community members. The community needs to support and endorse the set of indicators, and the working group needs to validate and appreciate the community’s efforts. Since “collaborative community processes are one of the reasons for doing indicators in the first place,” the working group must carefully design the series of community forum events (Predefining Progress et al. 1997). The community collaboration process must take time. However, “it’s important that the Working Group keep its eye on the prize: completion of an indicator report for release to the public” (Predefining Progress et al. 1997). The use of good facilitation will help prevent it from becoming sidetracked or confused during the community-wide selection and validation process.

Step 7: Perform a Technical Review

In the community-wide indicators selection process, “people will inevitably choose a number of indicators that have never been measured before, or that are defined slightly differently from existing, similar indicators” (Predefining Progress et al. 1997). Newly developed indicators, though intuitively sound, may have problems inherent in the sources of data or the methodology for gathering the data; such indicators may be insufficient to influence decision-making. In the Applegate watershed, indicators using county data, such as zoned land use, may be problematical; the methodologies of land assessment and definitions of land or improvement classifications differ between Jackson and Josephine counties (Reid, et al. 1996). Thus, the working must translate the indicator list developed in step 6 (“convene a community-wide selection and validation process”) into a set that is measurable and defensible in technical terms. If the working group does not have a number of members with sufficient expertise, it may develop a separate committee of technical advisors, comprised of academics, consultants, agency
scientists, county government experts, or others knowledgeable about effective measurement. The technical advisors will determine if each indicator is accessible and technically sound.

The Applegate Partnership, the Applegate River Watershed Council, the Forest Service, and the BLM have worked hard to design and implement monitoring projects with quality data. They already possess accessible and technically defensible data. As part of step G in The Ecosystem Approach, “monitor conditions and evaluate results,” “monitoring should…provide standardized data…[and] compile information systematically” (Interagency Ecosystem Management Task Force 1995). In following The Ecosystem Approach, the Applegate community has over forty “validation monitoring” studies: “the intent of validation monitoring is to investigate the scientific basis for observations and whether fundamental assumptions and models are correct” (BLM and USFS 1998). Some of these research and monitoring projects have produced technically sound data that relate to social, economic, and/or ecosystem issues (BLM and USFS 1998). The Applegate Adaptive Management Area Guide lists these and other monitoring studies, as well as a technical contact person for each project; if interested in participating in the CIP process, such individuals may comprise the technical advisory committee. Additionally, the Applegate Partnership and the agencies have sponsored a research and monitoring workshop, held at a local high school, for anyone interested, including high schoolers. The December 1995 newsletter, published on the Applegate Learning Page Website, stated why monitoring and research are critical to adaptive management strategy; they “allow us to make recommendations based on the best available information instead of hormones and adrenaline” (“Applegate Learning Page” 1996). However, the newsletter also pointed out why monitoring programs have lacked focus and follow-through, besides reasons like funding, staffing, and changing values. A community indicators project will likely help the monitoring
programs gain focus by prioritizing which conditions to utilize as indicators, and help them follow through by publishing the summarized data in a report.

Redefining Progress et al. (1997), cautions that the technical advisors must work in service to the community process and let the intent of the community guide any changes. Technical experts often want a sophisticated measure that is more complete and precise than the generalists who want an indicator that is easy to understand and communicate. Since the whole community needs to access the final report, “the balance should be tipped in favor of the generalists, and the experts should try to accommodate the community’s desires as much as possible” (Predefining Progress et al. 1997). Therefore, when changes to an indicator need to be made, the technical advisors consult the community members who originally chose the indicator. In this way, the participants in step seven will be able to endorse the changes.

Step 8: Research the Data

The indicator selection process does not end with the work of the technical advisors. The process of researching the data usually reveals that some data is inaccessible or of poor quality. Likewise, it often leads to a discovery of new indicators that coordinate well with the goals of the project. During step eight, “it is generally the Working Group—with its accumulated knowledge about community intentions, expert critiques, and the overall goals of the project—that has to make the tough calls on what indicators to keep, add, or exclude based on data availability” (Predefining Progress et al. 1997). In researching the data, the working group and other volunteers may use published reports that thoroughly present the data and its sources, or they may need to locate databases, government documents, and conduct surveys. Already, the Applegate community has access to survey data—which measure residents’ perceptions—in both
the *Community Assessment* (Preister 1994) and the economic and demographic assessment (Reid et al. 1996). Reid et al. (1996) also provides county assessors data and census data, as well as an aggregation of zoning codes for the two counties into four major groups. Although the *Applegate Valley Strategic Plan* does not contain quantitative data about the community’s visions for the future, it does identify data sources: “In the last few years, partly as a result of the Applegate Partnership, a number of useful reports have been published about the Applegate watershed. These were instituted, in part, because the federal land management agencies wanted social and economic information which could get integrated with the natural environment data being generated for the ecosystem management planning underway” (RIEE 1997). The *Strategic Plan* contains a table listing social and economic reports and refers the reader to the Bureau of Land Management, the U. S. Forest Services, or the Applegate Partnership for studies of the natural environment. The Applegate River Watershed Council also produces published reports about water quality and fish habitat. With a plethora of data already gathered in the Applegate watershed, the CIP working group may utilize the indicator report to simultaneously present pieces of social, economic, and environmental data that represent the major issues of the community.

**Step 9: Publish and Promote the Report**

When publishing a CIP, a community makes many decisions about the clarity, accessibility, graphic appeal, cost and design of the report. It needs access to writing, editing, graphic design, and desktop publishing skills, as well as a budget for printing and distributing the report. The community will need monetary or donated resources to make the indicator document attractive to look at and easy to read. Such resources, like the Applegator newspaper, will also
help market and promote the report. In structuring the report, a minimal checklist should include:

- “Graphic depictions of the data trends."
- Explanations for how and why the indicators were chosen.
- The data sources, and a definition of what is being measured.
- Some interpretation of the data i.e., what the indicator is saying.
- An evaluation of the trend, if possible (are things getting better or worse?)” (Predefining Progress et al. 1997).

Looking at how other communities have structured their indicator reports may aid the working group in following this checklist. For example, the Sierra Nevada Wealth Index, published in both 1996 and 1999, incorporates these five criteria by showing the data for an indicator in a graph or table and answering two questions: “how are we doing? [and] why is it important?” (SBC 1996; 1999). Answering “how are we doing?” evaluates the trend, while discussing “why is it important?” defines what is being measured, what the indicator is saying, and why it was chosen. Below each graphic, the report identifies the source of the data. The Wealth Index also includes a brief section in its introduction on research methodologies and three criteria for choosing the indicators. Another indicator report, Quality of Life in Jacksonville: Indicators for Progress, November 1998, goes beyond the Wealth Index in meeting the five minimum guidelines by including an in-depth explanation of the authors’ methodology, the report’s parameters and limitations, and the guidelines for the selection of indicators (JCCI 1998).

Additionally, the report identifies the method of calculation, the caveats and explanations, the source, the target for the year 2000, and the trend for each indicator. A gold star shows that the
indicator is moving in a positive direction, a red flag means it is moving in a negative direction, and an arrow pointing to a target shows that the target for 2000 has been met.

Redefining Progress et al. suggests that communities follow Jacksonville, Florida in evaluating the trends as positive or negative. The *Community Indicators Handbook* asserts that “in the world of community indicators, there is no such thing as an objective indicator. Every piece of data has a value attached to it; if it did not, there would be no reason to include it in an indicator set” (Predefining Progress et al. 1997). However, for the Applegate community, some indicators, especially ones that represent the state of a system, may present trends that are positive to some people and negative to others. For example, one of the top issues that Applegate residents identified was the preservation of the rural character of the valley and the residents’ economic ties to the land. Many Applegate residents have livelihoods that depend on farming, and ranching (Preister 1994). Other watershed residents have service-based jobs in the nearby towns of Grants Pass and Medford. A potential indicator to measure changes in the economic ties to the land would be the number of acres of productive farm and grazing land taken out of production per year (SBC 1996). For farmers and ranchers, an increase in this indicator would be a negative trend, while for land developers, who also have an economic tie to the land, it might be a positive trend. Although the identification of what constitutes a desirable or undesirable trend will become clearer after the Applegate community defines the purpose and the central principle behind the indicator project, the working group may not want to evaluate a trend for every indicator.

Besides describing the significance of each indicator, defining the terms and the data being measured, interpreting the data, and evaluating the trend as undesirable or desirable, the Applegate community will decide whether to consider how each indicator links to other
indicators, issues, and sectors or systems within the community. Redefining Progress et al. (1997) asserts that “indicators are an excellent means for communicating linkages between social, economic and environmental systems; tracing linkages between systems can lead to a broader and deeper understanding of the reasons for a rising or declining trend” (35). The Applegate watershed is comprised of systems “(e.g., Terrestrial, Aquatic, Social and Economic, Organizational, and Applied Learning)—recognizing that all these systems are essential elements to the whole and each affects all others” (BLM and USFS 1998). A short description of these systems in the CIP report could facilitate the key linkages between different indicators and may help those reading the indicator report to see how one system affects the others.

The Applegate community could choose to group the issues and indicators under the five systems or under categories developed by the Applegate Partnership: ecosystem health, community stability, and economic opportunity (Applegate Partnership 9/22/93, Applegate Partnership Information Needs and Monitoring Project Objectives). Categories are simply conceptual tools to help the community organize the indicator selection process and research, and present the trends. The Applegate community is reminded that “many communities get hung up on the question of how best to divide up the topics” (Predefining Progress et al. 1997). The categories need only to meet the needs of the community and facilitate the understanding of how indicators, issues, and systems within the community are linked.

The Roaring Fork-Grand Valley, Colorado Healthy Community Indicators Project groups indicators into four categories: Health of the Family, Health of the Community, Health of the Economy, and Health of the Environment. Linkages for the indicator air quality (a Health of the Environment indicator) show how categories, issues, and indicators overlap:
Air quality is related to increasing population, increase of single occupancy vehicles, and sprawling land use patterns. Poor air quality can increase short-term and long-term health care costs, and lead to social stress. It can also affect economic activity, especially tourism. People come to our region to see crystal clear skies, not brown clouds (Healthy Mountain Communities, 1997).

Air quality, an indicator categorized under “Health of the Environment,” affects issues like health care and economic activity. Indicators of physical health and cost of health care could fall under both the “Health of the Family” and Health of the Community” categories.

Categories are only a part of the organization of the community indicators report. A community indicators project is a three-tiered framework. The first tier, the policy goal or guiding principle (sustainability, wealth, health, or quality of life) gives a focus for the indicators report. The second tier, the categories of issues and indicators, link to this policy goal. The third layer is comprised of the issues and indicators themselves; the trends in the data may show whether the community has achieved progress for the respective issues toward the policy goal. Step four (“review existing information to identify community issues and potential indicators”) encourages communities to focus on the issues before developing indicators. By doing so, the reader of the report will be able to understand why the indicator is important.

An example of a community who first analyzed the community issues before identifying indicators is Boulder County, Colorado. Boulder’s report also uses the three-layered structure. The Quality of Life in Boulder County 1998: A Community Indicators Report considers Boulder’s quality of life and progress toward or away from the vision of a healthy community in four focus areas: people, environment, economy, and culture and society (Boulder County Healthy Communities Initiative (BCHCI) 1998). Together, quality of life and healthy
community are the principles that comprise the first layer. The four focus areas are the second tier of the CIP. In the third tier, “each area of focus is further broken down into several dimensions. Some dimensions are measured by only one indicator while others contain several indicators” (BCHCI 1998). These dimensions are the issues important to Boulder County. Similarly, when the Applegate Partnership chose ecosystem health as a category to structure monitoring projects, it further divided ecosystem health into four components: aquatic, soils (edaphic), terrestrial, and atmospheric. These four components represent four major issues. Boulder’s report “represents three years of public process and one year of professional data work” (BCHCI 1998). Since BCHCI scoped community members and the existing literature about the area to determine the major issues and then presented those issues in the community indicators report, residents are able to understand it (BCHCI 1998).

The presentation and publication of an indicators project helps managers and community members learn what monitoring study results mean. The general trends in the data about a specific indicator are shown graphically. Although an indicator is shown quantitatively, the community qualitatively weighs it against the other indicators in each sector, allowing for a more holistic understanding. After reviewing the trends, the agency, organization or community adjusts its management strategies to better meet the established goals. This step, adaptive management, is the last step in The Ecosystem Approach, and it is the link between the publication and the use of the community indicator report. Many communities, such as the Applegate, already operate under an ecosystem approach. Therefore, incorporating a community indicator project into their current approaches will be much easier than starting from scratch.
Step 10: Update the Report Regularly

Publishing an indicator report only once defeats the purposes of indicators because indicators show changes in issues over time. Therefore, many groups publish their CIP reports annually or biannually, updating the report with current data and reflecting any evolution in the CIP process. Redefining Progress et al. (1997) also suggests that “periodically you may want to revise the indicator list itself, repeating Steps 6-9 with the involvement of both citizens and technical researchers” (24). However, frequent changes of basic indicators tend to undercut the goal of providing a consistent reflection of changing trends. Occasionally, a community also reconsiders the purpose of the project (step 2) and the vision and guiding principle behind the CIP (step 3). As a community changes, reflecting on past and present conditions and evolving goals for the indicator project will help a CIP report lead to actions that improve the community.

The Sierra Nevada Wealth Index describes how indicators look now and how they looked historically by answering the questions: “how are we doing?” and “Why is it important” (SBC 1996; 1999)? The Ecosystem Approach lists establishing ecosystem goals (Step E) after characterizing the ecosystem past and present conditions (Step D). However, defining goals may be a part of every step of the process, especially when visioning the desired future conditions of the ecosystem. Once the community understands the current state of the ecosystem, it may refine its desired future condition. Establishing ecological goals may include trade-offs between separate values people wish to protect. Therefore, a community must have mechanisms for dealing with inevitable conflicts. The Applegate Partnership members have received training in conflict management, developed mutually accepted ground rules and have agreed-upon visions for the community. The development and implementation of an action plan for reaching the
visions (step F) comes next in *The Ecosystem Approach*. Actions may range from field projects to writing proposals or reports.

**Different Communities, Same Underlying Mission**

The Applegate community is unlike many other communities with indicator projects. In each of the five projects described in *Land Use in America* (A Sustainable City Plan for Berkeley; Sustainable Cambridge Coalition; Chattanooga Venture; Jacksonville Community Council Indicators, and the Sustainable Seattle Indicators Project), the community was in an urban setting (Diamond and Noonan 1999, 101-103). Projects like the *Sierra Nevada Wealth Index* have a larger scale and include entire regions with urban centers (SBC 1996). Like the Sierra Nevada, the Applegate community defines itself by ecological rather than political boundaries, but it does not contain any incorporated towns. Furthermore, it is dependent on the ecosystem’s natural resources, and actively seeks ways to manage those resources. Even though the Applegate community is different from most others that have created a CIP, its underlying mission for an indicator project is the same: to assess the natural, social, and financial sectors of the community. However, the Applegate community may choose how it approaches this mission by identifying the guiding principle (or principles) behind its indicator project: quality of life, health, wealth, and/or sustainability. In *Land Use in America*, the concepts of quality of life, health and sustainability blend together:

> As quality of life becomes an increasingly important requisite for a community’s economic health, local officials and citizens across the country are trying to define what a “sustainable” community is and in some cases track progress using quantifiable measures. Although as diverse as the communities exploring them, these attempts in
general take an integrated look at the social, economic, and ecological aspects of their community (Diamond and Noonan 1996, 101).

Diamond and Noonan use the terms “quality of life,” “economic health” and “‘sustainable’ community” without defining them. They stress that communities are trying to define sustainability and are tracking progress using indicators. Before taking “an integrated look at the social, economic, and ecological aspects of their community,” the Applegate community members may want to gain a solid understanding of the themes or goals behind their work. To aid in improving this understanding, chapter four investigates four principles that communities choose to approach a community indicator project.
CHAPTER FOUR

GUIDING PRINCIPLES FOR COMMUNITY INDICATORS PROJECTS

The second part of step 3 in the CIP process is the identification of the guiding principle behind the indicators report: “the indicator movement is not just about indicators, but about sustainability, [health, total community wealth], and quality of life. We need to remember the big picture” (Scruggs et al. 1996, 7). Almost all communities choose one of these four themes for their indicator project. For example, the Sierra Nevada region chose the wealth model to characterize its social, financial, and natural capital. The Jacksonville Community Council adopted quality of life as its central principle behind its indicator project. The Healthy Cities and/or Healthy Communities movement has encouraged places like Missoula County, MT to expand the community’s definition of health for its Missoula county Health Profile indicator set. Lastly, Sustainable Seattle has not only adopted sustainability as the theme for its indicators, but has woven in the principles of health as well: “Sustainable Seattle's mission is to protect and improve our area's long-term health and vitality by applying sustainability to the links between economic prosperity, environmental vitality, and social equity” (Sustainable Seattle 1999). In order to choose one of these themes, or integrate them as Sustainable Seattle has done, it is important for communities contemplating CIP efforts to develop an understanding of each principle in theory and in practice and consider the models’ goals, strengths, and weaknesses.
Wealth

Cities, communities and regions have begun to think about their region’s total wealth. Where communities seek to improve their economic, ecological, and socio-cultural assets, assessing wealth may be a first step. In order to assess wealth, a community must first define it. As used in economics, the terms wealth or capital are useful concepts for thinking about the resources people have and use to help themselves. The Sierra Business Council (SBC), a non-governmental organization comprised of businesses, declares: “wealth is not just monetary worth but the different types of capital that, taken together, make up the real riches of a region” (SBC 1996, 3). In the Sierra Nevada Wealth Index, a CIP comprised of 42 indicators in three sectors (social wealth, financial or economic wealth and natural or natural resource wealth), total wealth is the culmination of all forms of wealth. In this case, wealth and capital are synonyms: “our wealth is our total capital – social, natural and financial” (SBC 1996, 5). Their meanings are very close, but the differences may cause confusion and may make the model problematical. In theory, wealth is a stock and capital is the investment of the stock; wealth is “an abundance of … materials or possessions” while capital is “any form of material wealth used or available for use in the production of more wealth” (American Heritage Dictionary 1991). Since the goal of the wealth model is to assess a community’s total stock of wealth and guide decisions and investments that would increase it without diminishing any sector of capital, the wealth model in practice is rooted in theory. A strength of the model is that it recognizes that all forms of capital support a region’s economy. For example, “deteriorating natural assets, such as polluted streams, degraded forests, or lost farm lands, reduce property values, drive away new businesses, and undermine the quality of life for current residents” (SBC 1996, 3). Total wealth indicators
include both monetary and non-monetary measures to indicate how all the community’s assets increase or decrease as a result of changing practices or policies.

Both community indicator practitioners and researchers consider a community’s total capital. Many social scientists and some economists think of total capital as a culmination of three categories besides the traditional financial capital: physical, human, and social (Hempel 1999). The physical category is the natural environment and its direct or indirect benefits to humans. Human capital includes “people and other human investments that enhance their potential, such as education. Social capital represents group arrangements that enhance the capacity of individuals to better achieve their aspirations” A weakness of the wealth model is that social capital does not have the same meaning in theory and in practice. The Sierra Business Council refers to first-rate education, volunteerism, and the reduction of poverty as social capital. Although volunteerism may lead to an increase in social capital, education and declining poverty are indicators of human capital. In practice, human capital is a synonym of social capital (SBC 1996, 3). As long as people in a community developing a CIP agree on a definition of the term “social capital” versus “human capital,” this academic debate has no implications. However, unless clarified, the discrepancy may weaken the model by introducing confusion.

Other weaknesses of the wealth model may be more substantial for communities like the Applegate whose goals include protection of the ecosystem for species other than humans. The notion of wealth or capital conjures up images of monetary worth and daily investments and returns. In this way, it encourages a short-term mentality focused on resource extraction and ecosystem services rather than ecosystem function. In the model, each form of capital exists to support the economy, rather than itself or basic life functions; the value of natural capital comes from the services and resources the ecosystem provides to humans. Also, the wealth model does
not address how investments in financial capital could help improve natural or social capital, except through the local tax base: “Yes, we need better education; we need better crime control; we need healthier families; we need a stronger work ethic. But without a thriving local economy, none of these goals is possible. Without a strong tax base, a community cannot possibly hire decent teachers, social workers, or police” (Shuman 1988, 34). Although the principle includes both monetary and non-monetary measures, each sector of wealth does not necessarily receive equal weighting.

**Health**

Community health is another useful principle for the Applegate watershed to consider in developing a community indicator project. The *Applegate Adaptive Management Area Guide*, published jointly by the Forest Service and the Bureau of Land Management (1998) in collaboration with community members, asserts that goals for the community are to “achieve healthy, diverse and functioning ecosystems” and “foster healthy social and economic systems” (16). It did not define “healthy,” but noted that “the term ‘health’ needs clear definition” (BLM and USFS 1998, 17). Other communities have sought a definition: community “health is more than the absence of disease, it includes physical, mental, social and environmental dimensions and strongly overlaps the concept of well-being [for] all persons and organizations within a reasonable circumscribed geographic area in which there is a sense of interdependence and belonging” (Coalition for Healthy Cities and Communities in the United States 1999). The healthy cities movement stemmed from the idea that human health would improve if all parts of the community, like the environment and economy, were strengthened (Kemmis 1995, 80). CIP developers may choose the health model to encourage the community to design and implement
projects focusing on all its dimensions. Indicators measure the success of the projects both toward addressing an issue and reaching the vague goal of community well-being.

A weakness of the health model is the difference in how researchers and practitioners perceive it. Instead of focusing on physical, mental, social, and environmental dimensions of the community that need improvement, community health researchers stress four attributes of community health: attitudes and values, capacities, organization, and leadership (Lackey et al. 1987). Persons and organizations aim toward community well-being when they have leadership and a sense of belonging, value interdependence, and build capacities or horizontal ties. The strengthening of Gemeinschaft relationships could lead to citizen participation in the implementation of projects, but in practice, strong relationships are not enough; participation and projects must improve overall community well-being. Regardless of disparity, researchers and practitioners would agree that the concept of health encourages people to work toward making their communities a better place to live.

A strength of the healthy cities and communities movement is how it relies on both horizontal and vertical linkages to build social capacity. Horizontal linkages occur when the community members design and implement the CIP process from the bottom-up. By choosing to join the healthy communities movement, these citizens encourage vertical linkages that may secure needed resources for the project. State, regional and national public health networks and non-governmental organizations provide outside funding for local community health projects, making the health principle popular among places embarking on a CIP. However, these vertical linkages are also a potential weakness; since resources for the indicator report may come from outside the community or from the public health sector, the community may rely on a top-down approach to structure the indicators. In such cases, some places copy other indicator projects,
possibly ignoring their own unique defining qualities. Likewise, the project foci may not give
equal weight to social, economic, and ecological issues.

A final weakness in the health model is the assumption that the community is unhealthy
and must be healed. Few communities will claim that they are “sick.” They may use indicators
to “diagnose” problems in the community, but the problems may not lead to an assessment of
overall illness. To “treat” the problems, they may undertake projects, but those projects alone
will not lead to overall health. The healthy cities and/or communities movement also implies a
reciprocal relationship between citizen and community well-being: “what the healthy cities
movement seems to be rediscovering is the age-old understanding that no individual citizen can
be whole or healthy except as a member of a whole and healthy community (Kemmis 1995, 81).
This premise suggests that in order to heal themselves, individuals must make their communities
more healthy. Many individual citizens, like communities, are unwilling to claim that they are ill
and few will blame their illness on their community. Regardless of the assumptions inherent in
the health model, it is a useful construct for helping people take pride in and improve themselves
and their communities.

Quality of Life

The healthy community approach overlaps with the quality of life model. Working
toward a better place to live is akin to improving the overall life satisfaction of individuals within
a community: “One of the most important goals of community development is to improve the
quality of life of the community members involved” (Van Der Merwe and Barnard 1991, 57).
Some researches believe quality of life is impossible to define but invokes terms such as well-
also asserts that “the quality of life is, admittedly, a vague and elusive concept.” In the report, *Quality of life in Jacksonville: Indicators for Progress, November 1998*, quality of life “refers to a feeling of well-being, fulfillment, or satisfaction resulting from factors in the external environments” (JCCI 1998). The external environments are a combination of the man-made (or built), physical, activity and community environments; they are the places where people spend time (UNESCO 1978). Others note that quality of life is partly determined by the community members’ satisfaction with their standard of living (Sirgy 1998). With so many definitions of quality of life, localities may struggle finding which parts of life they want to measure in a community indicators project. They tend to measure areas they can improve for the short term: “In order to make monitoring and evaluation of improvement of the quality of life in the process possible, it is essential to measure those facets and dimensions of community life within which change is to be brought about…and against which change can be measured on a comparative basis” (Van Der Merwe and Barnard 1991). Often, social indicators measuring human welfare and standard of living, and environmental indicators measuring environmental conditions (not environmental quality) comprise these dimensions of community life.

Though researchers have not established an accepted definition of quality of life, they have developed an extensive literature on quality of life indicators. Since the 1960’s, social science research investigated how to measure environmental and life quality in both developed and developing countries (UNESCO 1978). The social indicators movement followed with the publication of the journal, *Social Indicators Research*. The journal contributes conceptual and empirical information valuable to communities developing a CIP by establishing quality of life as a principle for organizing social, economic and environmental indicators. A strength of the quality of life model is its integration of these multiple aspects of life and its acknowledgement
that economic prosperity does not equate to life satisfaction (Inglehart and Rabier 1986).

Despite its strengths, the quality of life model is subjective. Quantitative indicators combine to
measure life quality, which is qualitative. These indicators trace conditions of environment,
society or economy, not the quality of these aspects (Milbrath 1978, 36). The qualitative
indicator that is often used to describe quality of life is “satisfaction of life.” Since this indicator
is based on surveys rather than empirical data from every individual in the community, it may
not represent the entire community.

CIP practitioners using the quality of life model have a big task. After deciding what
satisfaction of life means for the whole community, they choose an amalgam of social,
environmental and economic indicators that best reflect it. They rank the indicators by
characterizing which contribute most and least to the community’s well-being. Lastly, they
consider their community’s wants and needs in relation to others to judge if improving life
quality in one community may undermine it elsewhere. In developed countries, satisfaction with
life tends to relate to materialism and consumption, but in poorer countries, life satisfaction may
depend on meeting basic human needs. A caveat of the quality of life principle is that it has
different meanings in poor versus affluent communities. Despite this problem, the abundance of
literature on the topic may make it worth consideration when creating community indicators.

Sustainability

Like the life quality concept, the principle of sustainability also seeks to improve human
welfare, standard of living and environmental conditions. It differs from the concept of quality
of life because its focus is on meeting present and future needs. It also has a broad scale, where
needs of all people, not just those within a single community must be considered. The concept
of sustainability is coupled (often with criticism) with “sustainable development.” The UN World Commission on Environment and Development (WCED) agreed that sustainable development is “development that meets the needs of the present without compromising the ability of future generations to meet their own needs. It contains within it two key concepts:

- The concept of ‘needs,’ in particular the essential needs of the world’s poor, to which overriding priority should be given; and
- The idea of limitations imposed by the state of technology and social organization on the environment’s ability to meet present and future needs” (WCED 1987, 43).

The first part of the definition, excluding the two key concepts, is the most cited definition of both sustainability and sustainable development (Roseland 1997, 9). It can be interpreted in many ways, but generally reminds us that sustainability is an obligation to future generations.

The concepts of needs and limitations are often omitted from other definitions of sustainability, perhaps because the needs of the poor and limitations of technology continue to be overlooked and because they carry re-distributive policy implications that will alienate business—a critical stakeholder in communities. Definitions earlier than that of WCED instead focused on conserving specific resources and leaving the natural environment virtually untouched (Anand and Sen, 1996, 14). Such a definition is not practical in places like the Applegate watershed, where the ecosystem is managed but not left alone. These are some of the many reasons why communities are looking for another application and/or definition of sustainability:

Partly in response to dissatisfaction with the sustainable development concept and partly in response to growing concerns about urban quality of life, a splinter movement of sorts has arisen in an effort to focus sustainability strategies on the social, economic and
ecological well-being of communities. Participants in this movement define community sustainability in ways that highlight relationships between local quality of life and local or regional levels of population, consumption, political participation, and commitment to intertemporal equity. A sustainable community is one in which economic vitality, ecological integrity, civic democracy, and social well-being are linked in complementary fashion, thereby fostering a high quality of life and a strong sense of reciprocal obligation among its members (Hempel 1999, 48).

Thus, in theory, sustainability requires action, such as the distribution of resources, not just an “obligation” to meet present and future needs. However, what are the actions that a community must make to be sustainable? Is it the responsibility of one community to distribute its resources elsewhere? Conceptually, no one knows the answers to these questions, which is why the above definition of sustainable community discusses merely linking the economic, ecological, political and social systems within a community in order to improve it. In practice, sustainability is “an evolving process that improves the economy, the environment, and society for the benefit of current and future generations” (SDI Group 1998, v). Indicators are part of the process; they measure economic, environmental and social trends to determine if these sectors are improving. Decision makers must infer whether or not current and future generations benefit from policies and actions rooted in the principle of sustainability.

Not only do national governments participate in defining sustainable communities, they also provide funding for sustainability projects. For example, the U.S. Environmental Protection Agency (USEPA) Sustainable Development Challenge Grant Program offers grants to encourage citizens, organizations and businesses to work toward improving their community’s environment while maintaining a healthy local economy (USEPA 1999). Government grants
motivate many local governments and communities to pursue sustainable community as their CIP theme. However, when funding for a community project comes from outside the community, the project may not reflect the local values. Sustainability can be a top-down process for other reasons as well. If using WCED’s definition, its scale is not for a single community or country but for the earth as a whole. An improvement in the local economy, environment, and society that benefits present and future generations within one area may detract from the needs of a separate community. According to this viewpoint of sustainability, economy, environment and society cannot be confined within a boundary because they are shared by all people. Furthermore, finite resources often come from outside the community, so discerning how to use those resources in a “sustainable” way is difficult to determine.

**Linkages**

Though each of the four concepts has a different underlying theme, the overlap between them is substantial. For example, Hempel (1999) used both well-being and quality of life in his definition of sustainable community. In quality of life literature, health, social capital, financial wealth, and the environment are listed as important social indicators. Both the wealth and sustainability models have a goal of improving the same three sectors: economy, environment and society. Lastly, the sustainability model encourages improvement in the short and long-term, while the wealth model focuses on the near future. Community indicator projects may choose one of the models for a title, but will often incorporate several models. For example, Sustainable Seattle “defines sustainability as the long-term health and vitality of cultural, ecological, economic, and social systems” (Sustainable Seattle 1999). The Sustainable Community Roundtable also chose health as part of the definition of a sustainable community; a
sustainable community has a “healthy and diverse ecological system,” a “social foundation that provides for the health of all community members,” and a “healthy and diverse economy” (SCN 1999). In turn, a CIP that utilizes a health framework, An Index of Values and Indicators that Measure the Health of our Communities for four Colorado counties, groups indicators into several categories including quality of life (SCN 1999). Sustainability of agriculture was an indicator in one of the other categories. These examples show that choosing a central principle does not require rigid adherence to a single concept. What all four models have in common is the goal of improving the interconnected aspects of the community.

What principle is the Applegate community choosing to guide ecosystem management in the watershed? Is it a clear choice of a single principle or does it embrace a mixed model? The data from the Applegate literature sources suggests that the community has already pondered these concepts. After choosing the guiding principle (or principles) for the indicator report, the Applegate community can focus on the issues familiar to many community members and on indicators that could monitor changes within these issues.
CHAPTER FIVE

ISSUES AND INDICATORS IN THE APPLEGATE WATERSHED

This chapter provides a description of the central principles that the Applegate community will likely integrate to guide the process of developing community indicators. It then discusses the methods this thesis project uses to identify the top ten issues facing the Applegate watershed, describes these issues and potential indicators for each of the issues, and gives examples of how other communities measure changes within similar issues. The research methods apply step four in the Community Indicators Process described in Chapter Three: “review existing information to identify community issues and potential indicators.”

Both the Applegate Partnership and the Adaptive Management Area agencies emphasize the concepts of health, sustainability, and well-being. The Applegate Partnership mission statement mentions its desire to “promote ecosystem health and diversity,” and “support management…that sustains natural resources…and that will…contribute to economic and community well-being and resilience” (emphasis added) (Applegate Partnership 1999). Furthermore, the Applegate Partnership discussed reports on proposed criteria and indicators for measuring sustainable forest management nationally (e.g. a draft report from the Forest Service distributed during fall 1993 Partnership meetings) and locally (i.e. a draft report from the Rogue Institute for Ecology and Economy, also distributed in 1993). Additionally, in July of 1999, a Partnership member attended a “Healthy Forests, Healthy Communities Partnership” workshop (Applegate Partnership 8/21/99). The Healthy Forests, Healthy Communities Partnership is “a group of people, organizations, and businesses working together…[who] value and support those who refuse to sacrifice the long-term good of the land for the good of the people, or the good of
the people for the good of the land, who seek to find a new path which honors and sustains both” (Healthy Forests, Healthy Communities Partnership 1999). The Applegate Adaptive Management Area Guide also states that the community wishes to “achieve healthy, diverse and functioning ecosystems that are sustainable over time,” to “foster healthy social and economic systems,” and to “develop indicators of sustainability…” (emphasis added) (BLM and USFS 1998). The goal of the Applegate community, as defined by residents, industry, and public land agencies, is to improve the natural, social, and economic health of the forest ecosystem and the communities it supports. Specifically, the Applegate’s policy goals use words such as sustainability, health and well-being. The last goal listed in the Adaptive Management Area Guide calls for developing sustainability indicators. For these reasons, the Applegate watershed already combines the concepts of sustainability and health, and may use this integration for the creation of their community indicator project.

**Research Methods and Results**

This section clarifies the research methods used in this thesis project. These methods are best summarized as three steps: the review of literature about the Applegate watershed and the identification of major community issues discussed in this literature; the condensation of topics from the review into a list of issues; and the selection of the top 10 issues and methods for developing potential indicators for each issue. This section also presents the results of these three steps.
Review of Literature About the Applegate Watershed

In order to identify important community issues, I reviewed the Applegate Partnership meeting minutes and available literature. I chose to review the Partnership minutes because they were documented weekly; other community groups in the Applegate were not as diligent about recording information discussed in meetings. Likewise, the Partnership comes close to representing the diversity of the entire Applegate community. Its board members live throughout the entire watershed and represent the views of environmentalists, farmers, loggers, ranchers, agency employees, and other interests (Sturtevant and Lange 1996). The Partnership also strives to outreach to other community groups (Sturtevant and Lange 1996; Applegate Partnership 1993-1999). Lastly, its meeting notes are readily available; the office of the Applegate River Watershed Council keeps them filed for the public to access during regular business hours.

Besides reading the meeting minutes, I reviewed published literature about the Applegate watershed. The criteria for choosing the literature sources included accessibility and whether the source focused on the entire watershed rather than on a small community within the watershed. The complete set of sources had to present social, economic, and ecological issues for the watershed, and not focus only on the ecological functions of the forest. The literature reviewed to determine issues important to the Applegate community include the following sources: *Words into Action: A Community Assessment of the Applegate Valley* (Preister 1994); *Applegate Adaptive Management Area Ecosystem Health Assessment* (BLM and USFS 1994); *Analysis of Demographic and Economic Aspects of the Applegate Watershed* (Reid et al. 1996); *Applegate Valley Strategic Plan* (RIEE 1997); *Ecosystem Restoration in the Ashland Resource Area* (BLM 1998); *Applegate Adaptive Management Area Guide* (BLM and USFS 1998). These six sources,
together with the Applegate Partnership meeting minutes, meet the criteria listed above and discuss a wide range of community concerns.

To make a list of those concerns and issues, I read the weekly Partnership meeting notes, from January 1993 to July 1999, and the literature sources. The Partnership has structured the printed meeting minutes to have a listing and brief description of the topics covered in the meeting. These topics were often, though not always, issues important to the community. I recorded the relevant topics, the date the Partnership discussed the issue, and a brief quote or description, or a reference to a handout given in the meeting. Appendix B includes the Review of the Applegate Partnership Meeting Minutes. The Review of Literature Sources for the Applegate Community, in Appendix C, presents a synopsis of each source. The literature sources contained sections or subsections that were also categories of issues, which I recorded and briefly summarized. For example, chapter 2 of *Words into Action: A Community Assessment of the Applegate Valley*, had a section titled “Social and Economic Trends Identified By Residents” (Preister 1994). I labeled and described the issues mentioned under this section using Preister’s wording. I followed the same procedure for each of the six literature sources.

Condensation Into a List of Issues

Although the written survey of the Applegate Partnership minutes culminated in a rudimentary list of important community topics, the review of the other sources did not. Therefore, I read the review I had prepared, highlighted names of issues, and generated a list of over 50 topics. Many of these issues were also on the list from the Applegate Partnership meeting minutes. Adding the topics not on this list resulted in 62 total issues, many of which were redundant. Therefore, I condensed the roster of issues by grouping similar topics. For
example, transportation and traffic were two separate issues that were interrelated; traffic is a problem in the watershed partly due to a lack of public transportation. I joined traffic and transportation into one single issue. The second phase of condensation occurred by omitting issues that were referenced in only one source. By scanning the Partnership and literature reviews, I recorded the number of reference sources and the number of pages or meeting dates where each issue was mentioned. Omitting issues discussed in only one source resulted in a list of 36 issues, presented in Table 2. Appendix D includes complete reference sources for each issue.

Selection of Top 10 Issues and Development of Potential Indicators for Each Issue

Discussing all 36 issues is beyond the scope of this thesis project. Therefore, I chose to write an example indicator report and apply step four of the indicator development process (“review existing information to identify community issues and potential indicators”) for only the top 10 issues. In order to determine the top issues, I utilized Table 2, which shows the number of sources, pages and meeting minutes dates where each topic received mention. I made the assumption that the most important community issues usually are cited in the most sources, written about on the greatest number of pages, and talked about most frequently in meetings. Therefore, the number of meeting minutes where an issue was cited measures frequency, the number of pages in which the issue was cited measures duration of interest in the issue, and the number of sources where an issue was discussed measures the breadth of community interest in that issue. Sorting the issues only according to the regularity of citation, the total number of all sources cited, resulted in a list of seven top issues (Table 3), but using the above method results in ten issues that are representative of all the literature sources combined.
<table>
<thead>
<tr>
<th>Issue</th>
<th>Sources Cited</th>
<th>Pages Cited</th>
<th>Dates Cited</th>
<th>Relative Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
<td>Ratio</td>
<td>Number</td>
<td>Ratio</td>
</tr>
<tr>
<td>1. Economic Ties to the Land</td>
<td>7</td>
<td>1.00</td>
<td>47</td>
<td>0.96</td>
</tr>
<tr>
<td>2. Fire</td>
<td>6</td>
<td>0.86</td>
<td>49</td>
<td>1.00</td>
</tr>
<tr>
<td>3. Water Issues</td>
<td>6</td>
<td>0.86</td>
<td>28</td>
<td>0.57</td>
</tr>
<tr>
<td>4. Wildlife</td>
<td>6</td>
<td>0.86</td>
<td>36</td>
<td>0.73</td>
</tr>
<tr>
<td>5. Fish</td>
<td>6</td>
<td>0.86</td>
<td>33</td>
<td>0.67</td>
</tr>
<tr>
<td>6. Aquatic and Riparian</td>
<td>5</td>
<td>0.71</td>
<td>44</td>
<td>0.90</td>
</tr>
<tr>
<td>7. Land Use and Development</td>
<td>6</td>
<td>0.86</td>
<td>34</td>
<td>0.69</td>
</tr>
<tr>
<td>8. Density Management (Forest Health)</td>
<td>5</td>
<td>0.71</td>
<td>22</td>
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<td>9. Recreation</td>
<td>5</td>
<td>0.71</td>
<td>38</td>
<td>0.78</td>
</tr>
<tr>
<td>10. Agency/public Interaction</td>
<td>5</td>
<td>0.71</td>
<td>22</td>
<td>0.45</td>
</tr>
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<td>11. Roads</td>
<td>5</td>
<td>0.71</td>
<td>8</td>
<td>0.16</td>
</tr>
<tr>
<td>12. Community Building</td>
<td>4</td>
<td>0.57</td>
<td>17</td>
<td>0.35</td>
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<tr>
<td>13. Balanced Forestry Practice</td>
<td>6</td>
<td>0.86</td>
<td>21</td>
<td>0.43</td>
</tr>
<tr>
<td>14. Terrestrial Vegetation</td>
<td>4</td>
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<td>20</td>
<td>0.41</td>
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<tr>
<td>15. Biological, Ecological, Species Diversity</td>
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<td>0.71</td>
<td>9</td>
<td>0.18</td>
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<tr>
<td>16. New Market Development</td>
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<td>0.57</td>
<td>14</td>
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<td>17. Local Employment</td>
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<td>0.71</td>
<td>6</td>
<td>0.12</td>
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<td>18. Data Availability, Data Bases</td>
<td>4</td>
<td>0.57</td>
<td>7</td>
<td>0.14</td>
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<tr>
<td>19. Late Successional Habitat, Old Growth</td>
<td>5</td>
<td>0.71</td>
<td>11</td>
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<tr>
<td>20. Insects and Disease</td>
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<td>21. Transportation and Traffic</td>
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<td>0.71</td>
<td>14</td>
<td>0.29</td>
</tr>
<tr>
<td>22. Economic Diversity, Development</td>
<td>4</td>
<td>0.57</td>
<td>8</td>
<td>0.16</td>
</tr>
<tr>
<td>23. Interface Issues</td>
<td>4</td>
<td>0.57</td>
<td>11</td>
<td>0.22</td>
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<tr>
<td>24. Atmospheric</td>
<td>4</td>
<td>0.57</td>
<td>5</td>
<td>0.10</td>
</tr>
<tr>
<td>25. Education</td>
<td>4</td>
<td>0.57</td>
<td>5</td>
<td>0.10</td>
</tr>
<tr>
<td>26. Spraying of Herbicides, Pesticides</td>
<td>3</td>
<td>0.43</td>
<td>2</td>
<td>0.04</td>
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<tr>
<td>27. Edaphic (Soils)</td>
<td>4</td>
<td>0.57</td>
<td>6</td>
<td>0.12</td>
</tr>
<tr>
<td>28. Native Americans</td>
<td>3</td>
<td>0.43</td>
<td>3</td>
<td>0.06</td>
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<tr>
<td>29. Unemployment or Low Income</td>
<td>3</td>
<td>0.43</td>
<td>15</td>
<td>0.31</td>
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<tr>
<td>30. In-migration</td>
<td>4</td>
<td>0.57</td>
<td>5</td>
<td>0.10</td>
</tr>
<tr>
<td>31. Cost of Land or Housing…</td>
<td>3</td>
<td>0.43</td>
<td>8</td>
<td>0.16</td>
</tr>
<tr>
<td>32. Health Care</td>
<td>3</td>
<td>0.43</td>
<td>5</td>
<td>0.10</td>
</tr>
<tr>
<td>33. Land Ownership</td>
<td>2</td>
<td>0.29</td>
<td>14</td>
<td>0.29</td>
</tr>
<tr>
<td>34. Economic Links to Larger Region</td>
<td>2</td>
<td>0.29</td>
<td>12</td>
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<tr>
<td>35. Age Demographics (Retirees)</td>
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<td>0.29</td>
<td>4</td>
<td>0.08</td>
</tr>
<tr>
<td>36. Poverty</td>
<td>2</td>
<td>0.29</td>
<td>2</td>
<td>0.04</td>
</tr>
</tbody>
</table>
Table 3: List of Top Issues According to the Most Sources, Pages, or Meeting Dates Cited

<table>
<thead>
<tr>
<th>Regularity of Citation in All Sources</th>
<th>Duration of Citation in Literature Sources</th>
<th>Frequency of Citation in Partnership Meetings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td># Name</td>
<td>#</td>
</tr>
<tr>
<td>Economic Ties to the Land</td>
<td>7 Fire</td>
<td>49 Economic Ties to the Land</td>
</tr>
<tr>
<td>Fire</td>
<td>6 Economic Ties to the Land</td>
<td>47 Water Issues</td>
</tr>
<tr>
<td>Wildlife</td>
<td>6 Aquatic and Riparian</td>
<td>44 Density Management (Forest health)</td>
</tr>
<tr>
<td>Land Use and Development…</td>
<td>6 Recreation</td>
<td>38 Fire</td>
</tr>
<tr>
<td>Fish</td>
<td>6 Wildlife</td>
<td>36 Fish</td>
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<tr>
<td>Water Issues</td>
<td>6 Land Use and Development…</td>
<td>34 Roads</td>
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<td>Balanced Forestry Practice</td>
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<tr>
<td></td>
<td>Water Issues</td>
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<td></td>
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<td>22 Community Building…</td>
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<tr>
<td></td>
<td>Density Management (Forest Health)</td>
<td>22</td>
</tr>
</tbody>
</table>

Economic ties to the land, cited in the six literature sources plus the meeting minutes for a total of seven sources, is the number one issue. However, many of the issues cited in six separate sources are not the top issues for the community because they only received a brief mention in either the literature or the meeting minutes. Therefore, arranging the topics according to pages in the literature or the Applegate Partnership meeting minutes resulted in a more representative list of the top ten issues (Table 3). Six of the top issues are the same for both the literature and the Partnership: Economic ties to the land, Fire, Wildlife, Fish, Water issues, and Agency/public interaction.

In order to compose a list of the top ten issues (not six or seven) that accounted for breadth, frequency, and duration of citation without bias toward either the Partnership or the
other Applegate literature sources, I developed a function that gave equal relative weight to the number of sources, pages, and dates cited. Table 2 presents ratios of the number of sources, pages and dates cited for each respective issue divided by the maximum number cited. By summing these three ratios, I generated a list of the 10 issues (numbers 1 through 10 in Table 2). Besides the six issues common to both the literature and the Partnership, the top ten issues include: Land use and development, zoning, and subdivision; Density management (Forest health issues); Aquatic and riparian, and Recreation. The top ten issues found using the method of relative ratios are the same as the top ten found according to the most number of pages cited, although in different order. Therefore, I conclude that the issues discussed in the literature sources with the most duration are also the most important issues to the entire community.

Once the top ten issues were determined, I began brainstorming potential indicators that could represent the trends within each issue. During the literature review, I located data sources of existing indicators. I also read about the indicators that other communities use to monitor their key issues. A listing of potential indicators for each of the top 10 issues is in the following section.

A Report on the Top 10 Issues and Potential Indicators

This example indicator report completes only step four (“review existing information to identify community issues and potential indicators”) but uses some criteria from step nine of the CIP process (“publish and promote the report”). The criteria include: a definition of the issue and what is being measured, the sources for the data, explanations for how and why the indicators were chosen, and a graph depicting the trends and an interpretation of the data. Only a few of these criteria are met because the Applegate community itself must choose, analyze and
present the indicators and complete the steps of the CIP process. Using references to the literature sources, the example indicator report gives a brief description of each issue and proposes indicators that have originated from a review of the existing literature about the Applegate community and from knowledge of other community indicator reports. The indicators are not intended to be technically sound or meet any set of indicator selection criteria, which the working group would develop in step five of the CIP process while it drafts a set of indicators to present to the community. The Applegate community may choose to add other indicators to the following lists of proposed indicators. The following description of issues and list of proposed indicators is an example of what the working group may have developed after completing steps one through four in the indicator process. It could serve as a guide for the Applegate community to use to start its own CIP process.

**Economic Ties to the Land**

For over a century, the Applegate watershed has been a rural area supported by an economy based in resource-extractive industries. Residents relied on mining, logging, farming, and ranching for their economic livelihood. For this reason, many community members wish to maintain these strong ties to the land and maintain the rural character of the watershed (Preister 1994). The *Analysis of Demographic and Economic Aspects of the Applegate Watershed* labeled economic ties to the land as the tenth economic issue: “[several residents were upset to see the loss of economic ties to the land. [They have] concern that fewer people are oriented toward resource-based and local economic activities” (Reid, et al. 1996). Furthermore, many residents assert that “the rural culture still works” and that people who use the resource for their economic basis will also help sustain those resources (Preister 1994). “Fearing a future as bedroom
communities of housing developments, community members seek to maintain their agricultural and resource-based heritage while developing opportunities for participating in the growing service sector” (BLM and USFS 1998). The five ways that residents have economic ties to the land are through the agriculture, timber, special forest products, mining, and tourism industries. Tourism is considered to provide service-based, rather than resource based, employment.

**Possible Indicators**

One way to assess the rural character of the community would be to measure the percentage of Applegate residents who must supplement their primary source of income with work from outside the watershed (e.g. in Medford, Ashland, or Grants Pass). Another way is through an existing composite indicator, such as “employment in the agriculture/fishing/forestry sector” and number of jobs gained or lost in these sectors (Reid, et al. 1996, 83). The community already has indicators for the agriculture, timber, and mining industries. It desires to find indicators for special forest products and for tourism. An indicator that would show the status of all five industries providing economic ties to the land is a composite measure, which combines several indicators (Scruggs et al.1996). The following are possible composite measures:

1. The degree of dependency of Applegate residents on the agriculture, timber, special forest products, mining, and tourism industries. This could be measured as the relative number or ratio of residents with 75 percent or more of their income depending on these sectors;
2. The number of residents involved in both the resource-based industries of agriculture, timber, special forest products and mining (or a combination of the four) and the service-based tourism industry as any portion of their income or as a personal hobby.\(^7\)

3. The average wage of each of these industries compared with the cost of living within the Applegate watershed.

The Applegate community may wish to gather separate indicators for agriculture, timber, special forest products, mining, and tourism and make a single aggregate measure of economic ties to the land. Therefore, these five industries are described in detail and potential indicators are listed for each.

- **Agriculture:**

  Since the agricultural surplus of the 1890’s, agriculture “was a way of life that sustained three to four generations of valley residents, offering stability from the vagaries of mining and providing the basis for an expanding local economy” (Preister 1994). However, farming and ranching in the Applegate may “soon be a thing of the past” (Preister 1994). Residents labeled agriculture and ranching as one of the 10 major economic issues facing the community. They have “concern about the development of farm land. Many are sad to see the lifestyle of farmers diminish. For them, the rural lifestyle is what they sought by moving to the Applegate Watershed” (Reid et al. 1996). Though “newer residents are less involved in agriculture than their neighbors, they express high interest in preserving agricultural activity in order to maintain

\(^7\) Boulder County Healthy Communities Initiative, in its 1998 report, measured employment by major industry, a similar economic-based indicator (BCHCI 1998). However, the intent of this indicator was not to track changes in residents economic ties to the land, but to measure economic diversity by including the industries of services, manufacturing, finance, government, retail, construction, wholesale, transportation, agriculture, farm and mining.
a rural lifestyle and to preserve open space” (RIEE 1997). The “Agricultural Goal for the Applegate Valley,” “to preserve farmland without penalizing those who own it,” seeks to sustain agriculture, conserve water, and maintain the number of farms in the valley (RIEE 1997). It states that agriculturists in the watershed should be able to make a living. Unlike the farming and ranching sectors in the Applegate, “some agricultural sectors have done extremely well in recent years, particularly tree fruits and nuts (primarily pears) and specialty horticulture, including nursery stock, vineyards, and bulbs (Preister 1994).

**Possible Indicators**

The *Applegate Valley Strategic Plan* mentions many indicators for agriculture that the Applegate community is measuring or wants to measure:

1. Number of farms and grazing allotments in the watershed;
2. Land zoned as agricultural land;
3. Parcel size of lands large enough to farm or ranch;
4. Number of land trusts with development rights;
5. Participation in local growers’ markets;
6. Ratio of local produce to imported produce supplied in local stores;
7. Ratio of farmers involved in community supported agriculture, integrated pest management and/or organic agriculture; productivity of land for different sectors of agriculture;
8. Average distance from markets for each agricultural sector;
9. Number of youths (relative to the population of the Applegate watershed) involved in Future Farmers of America and/or Josephine County Young Farmers (RIEE 1997).
The *Community Assessment* also gives an indicator for agriculture: gross farm sales (in thousands of dollars) for the Applegate watershed as compared to both Jackson and Josephine counties (Preister 1994).\(^8\)

- **Timber**

  The Applegate watershed has had a timber-dependent economy throughout the latter half of the 1900s. Historically, half of the timber receipts from O&C (Oregon-and-California Railroad grant land given to the government), and a quarter of the USFS and BLM public domain lands have returned to the counties (BLM and USFS 1998). These payments have provided county services to Applegate residents and fund the sheriff patrol, the rural action team station in Ruch, the District Attorney’s office and related county offices, health clinics, juvenile protection and detention programs and road maintenance and schools (BLM and USFS 1998). During and after injunctions related to the spotted owl, logging on public lands decreased in the watershed (Reid et al. 1996). Employment in the timber sector for millworkers and loggers declined, although logging on private lands increased (Preister 1994; Reid et al. 1996). These shifts caused both businesses and residents to identify “the timber issue” (timber harvests, the logging industry, and/or forestry) to be the number one issue facing their community (Reid et al. 1996). Residents felt the following: “concern about unemployment of industry workers such as loggers, mill workers, and truck drivers; the need to continue harvests—but in a managed way—

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\(^8\) Boulder County’s indicator for agriculture is the total acreage of Boulder County in farmland and rangeland from 1959 to 1992. The data are based on the Census of Agriculture, which was conducted every five years by the U.S. Census Bureau (BCHCI 1998). Now the U.S. Department of Agriculture administers the Census (BCHCI 1998).
to satisfy both industry and environmentalists; concerns of the effect logging reductions have had on other industries, such as construction and reforestation, and on funding of public services, such as public schools, [and] environmental concerns about the logging industry” (Reid et al. 1996). Businesses expressed concern over how lower timber harvests affected the overall economy, or how unemployment in the timber industry affected their client base and sales. However, “twenty-five percent of those who mentioned the timber industry also mentioned that logging should not continue. They feel that the timber industry is too economically cyclical, and that industry in the Applegate should continue to diversify away from timber cutting” (Reid et al. 1996). Although Applegate residents perceived a dramatic decline in timber harvests, the Analysis of Economic and Demographic Aspects of the Applegate Watershed found no evidence of such a decline. Instead, the amount of timber harvested varied yearly with no discernable trend. Timber harvests did decline sharply between 1989 and 1994 in the larger two county area. In the Applegate watershed, they shifted away from public to private lands, but not necessarily for the long-term (Reid, et al. 1996).

Possible Indicators

Possible indicators for the timber industry can be found in The Community Assessment data:

1. Timber production (in MMBF-million board feet of timber sold) from two National Forests and a BLM District with lands in the Applegate watershed,

2. A ratio of local timber contracts to outside contracts yearly awarded;

3. The average size (large or small) of timber contracts (Preister 1994).

Other possible indicators in this area are:
1. The rate of locally-awarded federal agency contracts; \(^9\)

2. The amount of timber harvested on public versus private lands;

3. The ratio of Applegate residents employed in multiple sectors of the timber industry, such as milling, harvesting, production, shipping, etc.;

4. The percentage of private land held by private timber companies (Reid et al. 1996);

5. The percentage of private land zoned “Forest Use” (Reid et al. 1996).

- **Special Forest Products and Firewood**

  Special forest products include “medicinals, herbals, decorative plants (conifer boughs, mosses), and edibles (mushrooms)” (Preister 1994). Wildcrafters, people who make a living gathering and selling special forest products, harvest on both private and public land. Public land harvest comprises 20-40% of the total volume sold to regional and national buyers (Preister 1994). Recently, “the collection, use and management of special forest products has become an increasing problem for collectors and natural resource agencies. Demand for special forest products has increased. Expanded collection activity by local and non-local gatherers has lead to conflict over rights. A “tragedy of the commons” dynamic has developed: with a publicly-owned resource, gatherers have no incentive to conserve because the next gatherer will collect the remaining resource” (Preister 1994). The Applegate does not benefit economically from the area’s special forest products when non-local collectors, who may operate illegally by not obtaining permits, sweep the area. Local wildcrafters have expressed their concern about these

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\(^9\) The BLM and Forest Service want to “monitor the percent of contracts awarded to Applegate and Rogue Valley residents, in number and dollar amount, to insure local economies benefit from forest management programs, including timber sales, reforestation, restoration, monitoring, special forest products, construction, services and others. Obstacles to locally-awarded contracts should be identified for policy change” (BLM and USFS 1998).
out-of-area collectors, the agencies’ limits on permits and inability to inventory and manage the resource, the over-exploitation of some species, and resource degradation caused by the lack of education of newcomers to the activity (Preister 1994). Agencies desire to “monitor the percent of contracts awarded to Applegate and Rogue Valley residents, in number and dollar amount, to insure local economies benefit from forest management programs, including…special forest products” (BLM and USFS 1994).

Possible Indicators

The literature about the Applegate watershed did not suggest many potential indicators for special forest products and firewood. However, the community could measure these:

1. The number of permits issued by the agencies for gathering special forest products and/or for firewood;

2. Of these permits, the number of them issued to collectors from both inside and outside the area;

3. The number of permits issued compared to the estimated number of collectors inside and outside the area without permits and/or the number of people caught collecting special forest products yearly without permits (assuming consistent efforts taken by the agencies to find violators);

4. The threat of over-harvest measured by the number and type of species in danger of exploitation and one of the above indicators;

5. The number of wildcrafters living in the watershed and the percent of those that harvest on private versus public land.
Mining

Historically, mining brought the first European American settlers to the Applegate watershed in the 1850’s. These settlers built ditches to divert water for their mining operations. In the 1870’s these ditches shifted to agricultural use and are still used today. The “hydraulic mining in the last century dramatically altered the Applegate River watershed’s streams and rivers” by stripping away the vegetation, sediment and bedrock along the streams, and by their paths (BLM and USFS 1998). Mining has also compacted and disturbed soils, which are prone to erosion (BLM and USFS 1994). Both aggregate and mineral mining occur in the Applegate watershed. Aggregate mining for sand and gravel occurs on the mainstem of the Applegate River near Murphy. Removing gravel bars may affect the morphology of the channel as well as the size and distribution of spawning gravels. The citizens of Murphy have complaints about “the gravel operation in the Applegate River [that relate to] noise, dust, number of sites, impacts on the river, cumulative impacts, [and] whether the state is subsidizing gravel extraction” (Preister 1994). Two kinds of mineral mining exist: recreation panning/dredging, and mining according the Mining Law of 1872. Recreation panning and dredging is a hobby for residents and visitors. It occurs in 6 areas in the Applegate watershed. It has little effect on the stream banks, but may change the gravelly bed of the stream that salmonids require for laying eggs in “redds.” Those who mine under the 1872 law are either international companies interested in chromium, small companies interested in gold, copper, and silica, and small claimants interested in gold or soapstone. Claimants must pay $100 per claim if they have more than 10 claims (Preister 1994). These types of mining also affect the streams and may strip away hillsides as well.
**Possible Indicators**

Data for three possible indicators that show the extent of mining in the Applegate are currently available:

1. The number of proposed aggregate mining sites in the Applegate River;
2. The number of permits for recreation panning and dredging;
3. The number of claimholders under the Mining Law of 1872 (Preister 1994).

- **Tourism**

  Both residents and businesses expressed in interviews for the *Analysis of Demographic and Economic Aspects of the Applegate Watershed* a “desire for more tourism in the Watershed” (Reid et al. 1996). Residents of the Applegate watershed have an environmental sensitivity, and they search for economic activities that provide employment and income without damaging the environment as much as an extractive industry. As a community seeks to capitalize from a region’s natural beauty, it “provides …the services that make access to the landscape and local culture possible” (Power 1996). Jobs in tourism are often readily accessible to local residents who have a familiarity with the area. These jobs are part-time or seasonal in nature and may complement other pursuits such as home-making farming, or school. However, tourism may increase traffic, attract other residents or vacationers to the area, drive up property values, and show disregard for the natural environment.

**Possible Indicators**

Indicators for tourism are not publicized readily in the Applegate watershed at this time. Potential indicators are:
1. The number of visitors at the watershed’s hotels, motels, or bed and breakfasts;
2. The number of recreation and tourist related businesses in the watershed.\textsuperscript{10}
3. The percent of the Applegate area economy devoted to tourism.

**Fire**

Within the Applegate watershed, fire is a complex natural process that has helped the ecosystem evolve for thousands of years. In time, the species that persisted in the presence of frequent fire became both adapted to and dependent on fire (BLM 1999). Low intensity, short-lived, and frequent fires regulated the density of the forest, creating open, park-like stands of large trees (BLM 1999; BLM and USFS 1994; BLM and USFS 1998). At low densities, trees tend to be large, tall, resilient and vigorous, which enhances the vertical, structural and species diversity of the forest (BLM and USFS 1994). Low-density, low-intensity fires enhanced understory forage for deer. However, the current absence of fire since 1920 is the longest fire-free period in the Applegate watershed in the last 300 years (BLM and USFS 1998). Prior to fire suppression, fire frequency was once every 7-20 years (BLM and USFS 1998). Fire suppression during the last century has caused forests to change: “many of the ecological processes that sustained their productivity and resiliency are being dismantled” (BLM 1999). It has resulted in very dense riparian and upland vegetation: the forest densities “are two to five times greater than would be expected to maintain healthy stands of trees” (BLM and USFS 1994). Many areas are “overstocked,” which occurs when the number of trees in an area is greater than the site’s ability

\textsuperscript{10} The Sierra Nevada region monitored tourism by two similar indicators: “recreation and tourist-related employment in lodging, restaurants, recreation services, and private campgrounds,” and “estimated travel and recreation oriented businesses in 1995,” which served as a baseline for future indicator reports (SBC 1996).
to provide water and nutrients (BLM and USFS 1998). Trees in overstocked stands are small in
diameter—many 100 year old trees are less than six centimeters wide—and are susceptible to
drought, diseases, insects, and catastrophic fires. Unlike the historic fires, wildfires in dense
stands are intense and difficult to control. Such fires damage soils, completely consume the
forests, diminish forage for deer, and cause stand replacement, which diminishes diversity (BLM
1999). They also threaten valuable resources, property and life. Residents of the Applegate
watershed want to reintroduce wildfire while protecting their own property (BLM and USFS
1998; RIEE 1997). They seek to emulate the role of natural fire and reduce the potential damage
of a catastrophic fire by thinning the dense stands of trees (also called the reduction of fuel
loading) on their property (RIEE 1997).

Possible Indicators

In the issue category of “fire,” community members have already developed an initial list
of potential indicators including:

1. Fire hazard maps that show fire hazard ratings over the entire watershed. “Fire hazard
   is the assessment of vegetation by the kind, arrangement, volume, condition, and
   location that forms a special threat of ignition, spread and difficulty of control (BLM
   and USFS 1994). The calculation for developing a fire hazard rating involves the
   selection of an appropriate fire behavior fuel model (BLM and USFS 1994).

2. Fire risk maps showing the areas in the watershed with high fire risk ratings. Fire risk
   is the chance of an ignition source (e.g. the vegetation assessed in a fire hazard rating)
   causing a fire, threatening life, property, and or valuable resources. Risk assessment
   is based on human values: life, property and resources.
Water Issues

“Water issues are widespread across all publics in the valley. With the rise in population from the influx of newcomers, the existing water allocation system has been put to the test. Drought conditions during the last several years have exacerbated the difficulties. Water issues fall into the following categories of concern: shortage, declining water table; ditch maintenance; newcomers, too many people; farmers; loss of rights; Savage Rapids Dam [on a tributary to the Applegate River]; fish, [and] the regulatory context” (Preister 1994; BLM and USFS 1994). Water issues are also of economic importance to residents. In a survey, they identified “water problems” to be the third major economic issue in the watershed. They specified the sub-issues as the “lack of diverted water rights, [the condition where] more water is being left in the streams for fish, [and the] general lack of water in the dry valley with increasing population” (Reid et al. 1996). Though residents do not agree on how to deal with these issues, they are interested in learning about the amount, availability, and use of the water resource. The Applegate residents have constructed a water goal: “We want to understand the limits and opportunities of our water supply, striving for efficient use, high quality, and healthy riparian areas, while creating a balance between agricultural and residential use. We want to limit growth the carrying capacity of the water supply” (RIEE 1997). To achieve their goal, they have several strategies, which include: a better understanding of the groundwater resources and the link between carrying capacity of the water table to land use; [a desire to] explore, with the Army Corps of Engineers,

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11 The Applegate Partnership meeting minutes mentioned a fuel reduction program that the agencies and organizations are coordinating with the private landowners (Applegate Partnership 5/10/95).
the idea of periodic floods from intentional releases from Applegate Dam; [the] education of valley residents and newcomers about the effects of their water use; better ways to conserve water; and the promotion of “clean farming to keep water clean” (RIEE 1997). Many farmers are learning that they must switch from flood irrigation to the more expensive sprinkler irrigation to conserve water (Applegate Partnership 6/6/94). However, this transition is slow because the status of the water resource is not known.

Possible Indicators

Since the Applegate community wants to balance agricultural and residential use, it could consider asking residents to report on their household and agricultural water consumption using the following indicators:

1. The average per capita per day water consumption of residents (see also Sustainable Calgary 1998);

2. The yearly water use, measured in acre-feet, as well as the percentage of the water used for agricultural versus municipal purposes (see also BCHCI 1998), or rate of change from municipal to agricultural use.

3. The total number of wells in the watershed, or the aggregate quantity of surface water rights for the Applegate River and all its tributaries, which would not separate agricultural and residential uses.

4. The average water consumption per household account and water level in aquifer wells (see also JCCI 1998).
5. The ratio of irrigators using flood irrigation versus sprinkler irrigation, which would show the degree of change from more to less consumptive agricultural use (or vice versa).

Wildlife

“The Applegate River watershed contains a variety of habitats for different wildlife species. Habitats on private land have been heavily modified. Wide river valley areas have been developed and riparian and marsh-like areas have been channelized and drained” (BLM and USFS 1994). Despite modification of wildlife habitat, several threatened, endangered, or protected animal species, including the peregrine falcon and the northern spotted owl, find refuge in the watershed. Residents and agencies want to protect these species and the unique habitats that the valley provides for them (Preister 1994; RIEE 1997). As more people settle in the rural-forest interface and build roads, habitat may become more fragmented. Also, timber harvests must be sensitively chosen so they do not adversely affect wildlife habitat. Therefore, agencies want to “increase understanding about sensitive species in the Applegate, focus on filling information gaps, and improve management of sensitive species...[and] better understand fragmentation of wildlife habitat” (BLM and USFS 1998). They are developing Geographic Information System maps that show known sites of sensitive species, and they are assessing fragmentation using satellite imagery.
Possible Indicators

The following possible wildlife indicators are available from the BLM and the Forest Service:

1. The number of sensitive and endangered species in the watershed. The Applegate community could categorize this by showing the number of endangered and or sensitive mammals, birds, fish, reptiles, amphibians and invertebrates (see also SBC 1999).

2. The number of roads or the acres of roadless area in the watershed, which is an indirect, but easily measured, indicator of wildlife habitat fragmentation.

3. The locations of critical habitat for a single species (e.g. the northern spotted owl), or for a variety of species shown on a map of the watershed.

Fish

“The Applegate River watershed contains several large sub-watersheds important to resident and anadromous salmonids. The Applegate River has significant populations of resident cutthroat trout and rainbow trout, coho and chinook salmon, and winter steelhead, as well as several non-salmonid species” (BLM and USFS 1994). Some of these fish are listed under the Endangered Species Act. Both residents and the agencies want to improve fish habitat and improve salmonid populations (BLM and USFS 1994; Preister 1994). Humans have altered most streams in the Applegate watershed. Factors such as mining, timber harvest, clearing of riparian vegetation, dam construction, sediment erosion from new or poorly-maintained roads, and reduced streamflows from irrigation have taken their toll on streams and riparian areas (BLM and USFS 1998; Preister 1994). Habitat for many species, especially coho salmon (which
is listed as “Threatened”) occurs in private ownership. Therefore, improving fish habitat often counters with landowners’ desires for their streamside property. Landowners tend to clear riparian vegetation that fish require for shade or cover. They also try to channelize streams, damaging the gravels where fish spawn, to prevent floods. Some make their own dams or fail to maintain culverts, which become fish passage barriers. Lastly, residents who live adjacent to streams may have water rights that they are unwilling to relinquish in order to increase in-stream flows. However, restoration projects work to identify and improve or maintain priority stream habitats. Projects with agencies and residents “are now documented in the newsletter, ‘Streamshare’ distributed by the Bureau of Land Management. The Applegate River Watershed Council and private citizens are cooperating with public agencies to identify priority stream habitats. Restoration project location often depends more on landowner willingness than biological and ecological priorities” (BLM and USFS 1998).

Possible Indicators

Data for the following possible indicators about salmonid populations in the Applegate River and its tributaries are available from either the Applegate River Watershed Council, the Oregon Department of Fish and Wildlife, the BLM, and the Forest Service:

1. The total estimated spawning stock of chinook, coho, and steelhead in the Applegate watershed each year (see also SBC 1996), or the estimated number of wild salmon returning to spawn (see also Sustainable Seattle 1995);

2. The number of man-made fish passage barriers (e.g. old culverts, dams) in the Applegate mainstem or its tributaries;

3. The number of dysfunctional fish screens and/or head gates for irrigation ditches;
4. The estimated miles of stream that has been channelized within the last year or several years (from remote sensing data or aerial photographs);

5. The average yearly streamflow in the Applegate and/or its tributaries (which is a factor of climate as well as surface water use);

6. The number of residents who relinquish part of their water right to help maintain in-stream flow;

7. The number and types of restoration projects for habitat improvement (e.g. tree plantings, removal of fish passage barriers, or repair of faulty fish screens) done yearly.

Aquatic and Riparian

As an issue, “aquatic and riparian” overlaps with wildlife, fish, vegetation, edaphic (soils) and many others. Water sources allow wildlife to congregate, fish to live, diverse plants to grow, and sediments to be transported. Aquatic species certainly include fish, but fish is a separate issue because of the concern of salmonids. Wildlife is a separate issue because many critical wildlife habitat areas do not include aquatic and riparian areas. “Aquatic and riparian,” as labeled by the *Ecosystem Assessment* is a complex issue because “the health of aquatic and riparian ecosystems, including streams, lakes, ponds, and wetlands, is dependent on the interactions of climate, soils, vegetation, animals including humans, and disturbance processes such as fire and erosion” (BLM and USFS 1994). Riparian areas are the most ecologically productive part of the landscape. They are “areas where the vegetation is complex and microclimate conditions are products of the combined presence and influence of perennial and/or intermittent water, associated with high water tables and soils which exhibit some wetness
characteristics” (BLM and USFS 1994). The riparian zone normally refers to the areas where plants grow rooted in the water table. Riparian areas: provide breeding habitat, cover, migration corridors, and water sources to upland range and forest animals, and to species that require both open water and dry land; purify water; maintain low temperatures for salmonid reproduction; support high densities of breeding birds; and satisfy recreational wants such as fishing, hunting, hiking, picnicking camping, boating, and bird watching. Although riparian zones are vital to the survival of wildlife species, humans desire to reside, work, or vacate near water. Streamside areas and floodplains are flatter than the surrounding hillsides, which ease difficulties in constructing roads or buildings without basements. In the Applegate watershed, miles of streambanks have been bulldozed, landscaped, and channeled for the development of houses. Likewise, to increase their water supply, agriculturists construct push-up dams and change the stream channel (Applegate Partnership 1999). Logging landings are occasionally found within the riparian zone, although law mandates no cutting within a given distance from the streams. Bridges for new road construction changes the sediment loads and stability of the bank. Currently in the Applegate, “streams lack structure, complexity, and species diversity when compared with pre-1800 conditions” (BLM and USFS 1994). However, “riparian areas surrounding perennial streams play a major role in maintaining ecosystem health and diversity across the Applegate AMA” (BLM and USFS 1994). Therefore, the Applegate community strives to make these riparian and aquatic areas more healthy (RIEE 1997).

Possible Indicators

The Forest Service and BLM desire to measure the health of aquatic and riparian ecosystems. They assert that “structures such as banks, pools, riffles, the composition of the
streamside vegetation, and the processes such as water flows give a reasonable indication of heath” (BLM and USFS 1994). Stream surveys, done by the Applegate River Watershed Council, the Oregon Department of Fish and Wildlife, the Bureau of Land Management and the Forest Service, collect data about the physical attributes of in-stream and bank conditions and help scientists rate the health of the aquatic and riparian ecosystem. The following indicators related to these physical attributes or rating of health could be used:

1. The number of Applegate tributaries with high and poor ratings of aquatic and riparian ecosystem health;
2. The number and condition of aquatic course woody debris (CWD) structures, which are standing dead trees and downed boles (trunks) and large branches;\(^{12}\)

Instead of focusing on health, the Applegate community could measure changes in the human modification of riparian zones. Two possible indicators are the number of housing developments proposed and the number of timber harvests that occur along streamside zones. Some of these data may be found by reviewing taxlot information, aerial photographs and remote sensing data.

**Land Use and Development, Zoning, and Subdivision**

Land use and development affects the economic, social, and ecological sectors of the Applegate community. Development along riparian areas or the forest uplands may diminish wildlife habitat and cause more road building and sediment transport into streams. Subdivision of farmland in the valley bottoms removes agricultural land from production and changes the

\(^{12}\) CWD has a major influence on the structural features of streams, especially by regulating sediment transport and storage, causing pools and shade for salmonids, providing energy and nutrient sources, and improving bank stability. Approximately 50% of the habitat in small forest streams is influenced by CWD (USFS 1997).
“rural character” of the area: “Fearing a future as bedroom communities of housing developments, community members seek to maintain their agricultural and resource-based heritage” (BLM and USFS 1998). Therefore, residents want to “protect farming through zoning” (RIEE 1997). The zoning of each taxlot describes and limits current and potential land use of the privately held Applegate watershed. Development may also affect the Applegate’s economic opportunities. One of the four questions motivating the Analysis of Demographic and Economic Aspects of the Applegate Watershed was “what are the land use and ownership patterns in the Watershed, and how might these affect future economic opportunities” (Reid et al. 1996)? To guide land use, the sub-communities of Applegate, Williams, Murphy and Wilderville have developed their own land use goals. For example, Murphy expressed that “we want land use and zoning decisions that make sense for this area. Development should respond to community and family interests, not growth for its own sake. Open space should be protected” (RIEE 1997). In the past, some residents felt that “our zoning preferences were ignored” by the counties (RIEE 1997). Therefore, residents desire to monitor trends in land use, development, zoning, and subdivision.

Possible Indicators

A possible indicator that measures land use or development along riparian areas is the number of housing developments and the number of current timber harvests that occur along streamside zones. Another is the number of farms and ranches with cultivation or grazing occurring immediately adjacent to the stream banks (available from remote sensing data). The Applegate residents also want to track land use and ownership patterns in the watershed; the
Analysis of Demographic and Economic Aspects of the Applegate Watershed will be useful.

From its data, the following indicators can be derived:

1. The average lot size for the watershed and for its sections in Josephine County compared to Jackson County. The taxlot size might indicate if more land is being subdivided, even if its zoning classification does not change. A composite indicator related to lot size is the percentage, predominate zoning classification, and ownership (e.g. by timber companies or non-timber residents) of the watershed’s private land held in various lot sizes (e.g. lot sizes over 300 acres, 100-299 acres, 25-99 acres, 10-24.9 acres, 5-9.9 acres, 2.5-4.9 acres, and less than 2.5 acres) (see Graphs 19 and 20 in Reid et al. 1996, 69-70). Another indicator is the number of small lot sizes with higher assessed valuations (due to improvements such as buildings and other structures (Reid et al. 1996, 66);

1. The ratio of new buildings built yearly compared to the total number of units. Of these new buildings, the type of building, (such as residential homes, barns, or offices) is another indicator.

2. The percentage of land zoned under zoning classifications (Reid et. al 1996). Jackson and Josephine county differs in zoning classifications. Therefore, Reid et al., aggregated zoning codes into four major groups: farm use, forest use, residential, and commercial/industrial/other. A map showing the predominate zoning classifications and taxlot sizes would help show land use and ownership patterns (note that “land ownership” is a separate issue, found in Table 2 and Appendix D).
Property values could also be monitored in the Applegate watershed. However, this was identified as a separate issue: “cost of land or housing, property values” (see Table 2 and Appendix D).13

Density Management (Forest Health)

Forest health, or terrestrial health, is an issue frequently mentioned in the Applegate literature: “it means that an area has the following characteristics:

(1) Intact physical, biotic, and trophic (soil) networks to support productive forests;

(2) Resistance to catastrophic change and the ability to recover on the landscape level (Recognizing that insects, disease, wildfire, and death are all part of the natural system and are not, in themselves, indicative of health problems. When the rate of change associated with these agents becomes greatly accelerated and the effects perceived as intense or significant, then the term ‘catastrophic’ is appropriate);

(3) A functional equilibrium between supply and demand of essential resources (water, nutrients, light, growing space) for major portions of the vegetation; and

(4) A diversity of seral stages (transitory plant communities over time) and stand structures (layering of canopy) that provide habitat for any native species and all essential ecosystem processes” (BLM and USFS 1998).

13 The Quality of Life in the Truckee Meadows, Washoe, Reno Counties, Nevada report lists four indicators under the category of “Land Use and Development:” housing sales affordability, housing rental affordability, weekly wage by industry and the cost of living (Predefining Progress et al. 1997). “Affordability,” however, may be difficult to quantify in a rural area like the Applegate watershed. Instead, the Applegate community may want to use indicators similar to those in the Quality of Life Indicators in Toronto: the value of building permits, the percent living in dwellings in need of repair, and the population density (Predefining Progress et al. 1997).
The agencies’ landscape projects “have been driven by forest health concerns, primarily watershed restoration, reduction of fuel hazard, increasing resistance of remaining trees to insects and fire” and have involved timber sales that used “thinning from below” instead of clearcutting (BLM and USFS 1998; BLM 1999). Forest health therefore links to many other issues, including fire, insects and disease, wildlife, aquatic and riparian, and terrestrial vegetation. The common tie between all these issues is the density of the forest stands. In overstocked forest stands, the physical, biotic and trophic networks and the resistance and ability to recover to catastrophic change weaken. The demand for water, nutrients, light and growing space exceeds supply. Since many dense stands are monocultures that were seeded after a clear-cut, a diversity of seral stages and stand structures is absent. Therefore, density management projects are human actions or projects used to improve forest health. They include the use of selective thinning or prescribed burning, or the re-vegetation of a clear-cut. The community and agencies recognize that forest stand overstocking has resulted in decreased forest health, increased fire hazard, and small diameter trees, which are not marketable. Therefore, they ask the questions, “How can we learn about improving forest health and test the validity of what we have learned? Specifically, how can we increase vigor of trees across the landscape to increase their vitality and resistance to wildfire, insects and disease? How can we increase the entire ecosystem’s ability to ‘respond to a variety of stressors, natural and man-made’ (Lackey 1996)” (BLM and USFS 1998)?

**Possible Indicators**

The BLM and the Forest Service have data about the stand density in Applegate public forests. Dense stands are not necessarily the same as overstocked stands. Possible indicators for stand density are:
1. The number of trees per unit area in a sample plot;
2. The volume of timber in a given area (e.g. a basal area);
3. The percentage of an area that is covered with a vertical projection of tree crowns (crown competition factor).

Stocking is a relative measure according to some norm, such as the condition of forests decades ago. The agencies have data on both density and overstocking. Other readily available indicators include (BLM and USFS 1998, also see Appendix C):

1. The understory density (number of trees per square feet or acre in sample plots);
2. The overstory density from remote sensing data;
3. The total acres of overstocked stands;
4. The percent of federal lands covered with dense conifer stands with trees less than 11 inches in diameter (BLM and USFS 1998, 23).

Comparing photographs is another useful way to show the increase in forest densities, but these are representative only of a single location at a given time. Although stocking or stand density indicates a condition of the forest, the issue is about density management. Therefore, public participation in density management projects on private lands, such as a ratio of number of the number of people participating to the number eligible to participate, may be a useful indicator (Applegate Partnership 12/14/94).

Recreation

Recreation has been part of public land use in the Applegate watershed from a very early time; the Applegate District of the BLM first published a recreation report in 1935 (Preister 1994). The watershed continues to provide a variety of recreational opportunities to local and
region-wide residents. It “contains opportunities for dispersed recreation, (activity which occurs outside of developed recreation sites, like campgrounds and picnic areas). Among the designated areas are one Wilderness Area, four Unroaded Areas, four Special Interest areas, and 13 Botanical areas. The watershed also provides great opportunity for recreation in developed areas at low elevation” (Preister 1994). The “dispersed recreation is the predominant type of recreation use on the Forest,” and it “exceeds developed recreation by a six-to-one-ratio” (Preister 1994). Most people, such as hikers, using dispersed recreation prefer areas near water, although off road vehicle (ORV) users access remote areas. ORV use and access to streams or remote areas are issues that many Applegate residents identified. They are also contentious issues because recreation user group populations may want access, or may want to limit access, to remote areas. For example, ORV users oppose road closures, while many residents encourage road closures for wildlife habitat preservation. In the late 1980’s, residents circulated a petition against off-road vehicle use (Preister 1994). Habitat fragmentation, erosion, and sedimentation in streams results from road building and ORV use. Additionally, the noise and pollution from ORVs force hikers and other recreators to find other sites. However, ORV use is increasing on the Applegate’s secondary road systems (Preister 1994). The agencies must balance this increasing demand with other recreational and ecological uses for the public lands. Besides ORV use, access to both dispersed and developed recreation sites is an issue that many Applegate residents and non-resident recreation user groups identified. The agencies, not the users, pay for trail or campground maintenance. Therefore, simultaneously providing access to recreation, maintaining recreation sites, and providing for wildlife habitat needs is a challenge for the agencies.
**Possible Indicators**

The report *Words into Action: A Community Assessment of the Applegate Valley* discusses many potential recreation indicators:

1. The estimated increase in recreation demand in percent increase per year;
2. The acres of unroaded area with semi-primitive recreation opportunity;
3. The per capita rates of off road vehicle ownership;
4. The number of daily trips on the Ashland/Siskiyou Crest Road (Road 20, which may be considered as a Byway or Scenic Highway);
5. The yearly use (according to capacity) for Forest Service and BLM Recreation sites;\(^{14}\)
6. The yearly visitor use at Cantrall Buckley Park (in terms of campsites occupied during peak month-August, total annual campsite occupancy, annual percent of campground capacity; and total annual day-use visitor through the front gate) (Preister 1994).
7. The locations where people recreate yearly, to show on a map, with estimates of increased or decreased recreation in each location. The user groups or recreation types are identified in the *Community Assessment*: hikers, backpackers; nordic skiing; equestrian, llama; hunters; fishers; off-road vehicle users; snowmobilers; motorized vehicle; bicyclists; hang gliders; rafters; and multi-use trails coalition (Preister 1994).
8. The percent change in participation in each of the above activities (also an indicator in the national sustainable development report) meets the objective of measuring ORV use in relation to other forms of recreation (SDI 1998).

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\(^{14}\) Preister (1994) mentions how the agencies gather data from anecdotal use reports: “Methods for determining recreation use in the Applegate Watershed consists of employee observations, trail cards, registration cards at regulated campgrounds and road counters.”
9. The per capita parks and recreation expenditures, because the Applegate residents and agencies may want to know if recreation spending keeps up with local population growth (see also JCCI 1998 and SBC 1996).

Agency/Public Interaction

Regarding recreation, “Agency/public interaction” was listed as one of the five major agency concerns in the Community Assessment. However, it is an issue not limited only to recreation. One of the goals of the agencies using the adaptive management area approach “is to develop working relationships with other landowners, stakeholders, interests, and individuals” (Shannon et al. 1996, 9). The issue, “agency/public interaction” is best characterized as these relationships and the “agency processes and routines …conducive to creating social learning in localized civic forums” (Shannon et al. 1996, 9). Community goals that emerged through the RIEE’s strategic planning process (1997) are similar: “coordination between citizens, watershed councils and agencies; …consideration of social and economic goals in development of agency programs and projects; …development of positive, on-going relationships with federal agencies regarding management of natural resources” (BLM and USFS 1998). Applegate residents stress “the inadequacy of the ‘black box’ approach to public involvement in which residents provide their input but do not hear another word until the decision;” this “black box” approach refers to the NEPA process (Preister 1994, 108). Additionally, “agency personnel are aware of the shortcomings in the way decisions have been made in the past” (Preister 1994, 102). Applegate residents want the agencies to involve them in planning and decision making in more ways than formal meetings and mailings. Therefore, they attend field trips, educational seminars, workshops and training sessions, and they volunteer to participate in forest thinning and
watershed projects on private lands. In 1993, people expressed to the Applegate Partnership that they were baffled by the information from the agencies; they suggested that the agencies “cut out the bureaucratic language” (Applegate Partnership May 1993, Public Meeting Agenda). Since then, the agencies have responded by publishing a public involvement guide: “One of the goals of creating this guide is to facilitate a new level of cooperation between communities and federal agencies in the context of new directions in public land management and community settings; this can only be achieved when citizens, resource managers, and governmental leaders work to support and sustain an open process of integrated community/ecosystem planning” (BLM and USFS 1998, also see Appendix E).

Possible Indicators

Existing indicators for “agency/public interaction” are hard to find. However, researchers have suggested that the Applegate agencies and residents measure of the effectiveness of adaptive management as “the extent to which [agency/public] relationships are improving in their capacity to foster local public problem-solving across organizational, administrative, and jurisdictional boundaries” (Shannon et al. 1996, 9). In order to measure how these relationships foster local problem-solving, one looks to “the presence of vigorous civic political forums which are regularly engaged in the solving of public problems related to land management” (Shannon et al. 1996, 9). Therefore, the possible indicators for agency/public interaction are:

1. The number of such political forums, like the Applegate Partnership;
2. The percentage of community members that respond in a survey that they feel like they are a part of public land planning and decision making. This indicator would be useful because not all residents are part of forums like the Partnership;

3. The number of federal projects directly involving local knowledge, “where local knowledge includes field staff, community members, and scientists with local experience” (Shannon et al. 1996, 10);

4. The number of field trips and informal meetings, or the attendance at such events.

Discussion

This section contains two parts: a description of the Applegate Partnership’s issues not included on the top ten list and a discussion of some of the Applegate’s issues and potential indicators.

Description of the Applegate Partnership’s Issues not Included the Top Ten List

Top issues of the Applegate Partnership (see Table 3) not in the top ten list are “Community building, involvement and/or outreach,” and “Roads.” Partnership members are concerned about community building because they want the Partnership to represent the broad diversity of constituents in the community. The Partnership’s vision states: “Through community involvement and education, this partnership supports management of all land within the watershed in a manner that sustains natural resources and that will, in turn, contribute to economic and community well-being and resilience” (Applegate Partnership 1999). The group believes that community building—improving the community’s well-being and resilience—occurs through its outreach and ability to involve other citizens in land management decisions.
Community building is a frequently discussed issue in the *Applegate Valley Strategic Plan*, but not in the other literature sources, most likely because the citizens surveyed in the other reports do not feel as strongly about citizen involvement. “Roads” was a second issue discussed frequently in the Partnership meetings but not in the other literature sources. Road building, maintenance and use is a controversial issue for Applegate residents. Since much of the watershed has a checkerboard pattern of public and private land, roads accessing private holdings may pass through public land, and roads accessing public domain pass through private lands. Furthermore, the counties, the agencies, and private citizens jointly maintain the roads, which leads to complications and often to lack of road upkeep. Road building is also a controversial issue because new roads needed for new homes in the rural/forest interface, or for access to unharvested timber may diminish wildlife habitat and increase soil erosion leading to slope failure and sediment loading in streams. The Partnership actively seeks solutions to these problems and discusses roads frequently during its weekly meetings, yet the authors of the other sources may skirt the issue because it is so unresolved and controversial.

**Discussion of the Applegate Community’s Issues and Potential Indicators**

The following discussion of the most important issues illuminates four themes in structuring a community indicators project. First, the working group must consider how to manage the overlap and linkages between the issues. It might insure that the indicators for separate issues measure those issues and not others. Next, some issues are controversial. The working group must decide how to measure change in these issues without alienating some sectors of the community. Likewise, some issues may unify the community. Unifying issues may sustain the community members’ interest in the indicator project and help them work
together toward achieving the goal of progress toward sustainability, or increased community wealth, health, or quality of life. Lastly, criteria for selecting indicators addresses the question: “with what appears to be an infinite number of indicators, how do we determine and limit what we measure” (Scruggs et al. 1996)? Examples of indicators in other communities are integrated into the discussion of these themes.

Determining how to group sub-issues into a single issue may be a hurdle for any community embarking on a CIP. For example, Economic ties to the land, the number one issue for the Applegate community, is comprised of five topic areas: agriculture, timber, special forest products, mining, and tourism. The Applegate community would likely want to consider these topic areas as separate issues. Each of these sub-issues links to other issues. For example, the timber industry links to education through providing timber receipts to counties for services and schools. It simultaneously links to land ownership and to new market development for small diameter trees and value-added manufacturing. The timber industry logs more on private land rather than public lands because the trees on Forest Service and BLM lands are too small to be marketable (Reid et al. 1996). The community has many choices in how to group issues and design indicators for them.

Many community members, regardless of their employment and views, want to maintain the rural character of the Applegate watershed (Preister 1994). Therefore, economic ties to the land could be seen as a unifying theme for the residents. However, considering the resource-based sectors separately introduces controversy. Some Applegate environmentalists gather special forest products yet desire to end logging on public lands (Preister 1994). Residents do not agree about what level of public land logging is considered “healthy” or “sustainable” for the community or ecosystem, although they strive toward a “balanced forestry practice” (see
Appendix D) (BLM and USFS 1994). Some community members may perceive a decline in dependence on the timber sector, or the timber production (in million board feet) as a positive trend toward a healthy ecosystem, while others perceive it as a negative trend moving toward a less healthy economy.

*The Community Indicator Handbook* claims “there is no such thing as an objective indicator. Every piece of data has a value attached to it; if it did not, there would be no reason to include it in an indicator set” (Predefining Progress et al. 1997). It tries to prove its point by using the example of Sustainable Seattle, which evaluates the trend as either undesirable or desirable. If the Applegate community followed the advice of Redefining Progress and Sustainable Seattle, it would not include any controversial indicators, such as the timber production on both National Forest and BLM lands. Other controversial issues are Land use and development, zoning, and subdivision, Recreation, and Water issues. For example, many Applegate residents want to prevent the subdivision of agricultural lands while increasing the number of small businesses and home-based businesses in the area (Reid et al. 1996).

Likewise, residents desire to recreate in the Applegate watershed, but disagree about whether to allow types of recreation that negatively impact wildlife habitat, increase soil erosion, and produce noise, such as off-road vehicle (ORV) use (Preister 1994). Community members agree that an adequate water supply should be maintained for use by both fish and people, but many refuse to allow their own water use to be publicly monitored (Preister 1994; BLM and USFS 1994). The working group likely wants to avoid such issues that introduce controversy. However, conflict has led groups like the Applegate Partnership to work together to create a vision of a better place to live for humans and other species.
Including controversial indicators, with no discernable positive or negative trends, encourages the community members to dialogue about what the trends mean for themselves, others, the ecosystem, and the economy. Additionally, the working group could find indicators for a controversial issue that could lead to solutions for conflict. For example, by assessing per capita rates of off road vehicle ownership, an indicator the Applegate community has already measured, residents will know how many people want to continue recreating with their vehicles (Preister 1994). This indicator leads to another: an estimate of a ratio of users who use established ORV trails versus those who make their own trails. Understanding this could lead to dialogue between ORV users and other residents regarding how to manage ORV use for the least environmental impact. After discussing what the trends mean, the community could also assess how the trend relates to the guiding principle of the report. They may ask how the trend may lead toward improvement and progress toward sustainability, a more healthy community, an improved quality of life, or a greater amount of total community wealth.

With so many ways to measure the trends and possible progress toward a goal for a single issue, communities need to define indicator selection criteria. Community indicator practitioners have developed countless guidelines for determining what to measure. For example, “many current indicators measure the symptoms, and the key to making indicators meaningful to both decision-makers and the public was to ‘peel back the layer of onion’ to find the root cause and relate these causes to the problems that grip our communities” (Scruggs et al. 1996). This guideline is more easily stated than enacted. For an issue like water quality, easily measurable indicators are the concentrations of dissolved oxygen, nutrients (nitrogen and phosphorus), pollutants, or suspended sediments (turbidity). The root causes of diminished water quality are more complex. For example, when people build their houses in the floodplain, they may cut
down streamside vegetation, possibly lowering the dissolved oxygen levels by decreasing shade and increasing stream temperature. If they water their lawns, they introduce fertilizers into the system, potentially causing eutrophication. Construction activities, coupled with the loss of riparian vegetation and the increased amounts of concrete (water runs off concrete in high velocities, causing erosion elsewhere) would possibly cause high turbidity. However, the cause and effect link between these supposed “root causes” and the “symptoms” are not clear. As is often the case with water issues, it is nearly impossible to identify the point source of a water quality problem. Measuring the cause as an indicator, the number of housing developments in the floodplain, for example, does not necessarily show a corresponding effect.

Environmental indicators tend to measure the symptoms that result from problems—the environmental conditions: “most sets of indicators developed so far have focused on the state of the environment rather than on the relation between society and ecosystems” (Azar et al. 1996, 89). The first reason why this occurs is discussed in the above example of the effects of floodplain housing development on water quality: “the complexity of the ecosystem makes it impossible to predict all possible effects of a certain societal activity” (Azar et al. 1996, 90). Azar, Holmberg and Lindgren (1996) also explain that the second aspect involves the temporal scale; long time delays can occur between a specific activity and corresponding environmental damage. This means that indicators of environmental conditions may give a warning too late. No easy solution exists for communities to couple the anthropocentric causes of environmental effects in their indicators, especially in forest ecosystems. Forest ecosystems change over time as a result of a wide variety of both natural and human-induced processes (Kimmins 1990). In order to monitor and predict the effects of human activity on environmental conditions, a community must separate these two processes. By including some indicators of resource use and
modification to ecosystems, such as fire suppression and road building, the Applegate can attempt to include indicators of environmental conditions and environmental effects.

Besides considering the temporal scale of human or natural causes and their corresponding effects, the spatial scale of indicators must be addressed. The potential indicators for the Applegate are a mixture of indicators about the entire Applegate watershed, indicators about sub-populations (e.g. the five industries that make up “Economic ties to the land”), and indicators about individuals (e.g. the average water consumption per household). These indicators are referred to as place versus people indicators, respectively: “Clearly, we need to develop indicators that measure changes related to both people and places” (Sawicki and Flynn 1996, 175). For each issue, the Applegate community must determine which of these levels the indicator and the possible resulting policy changes or improvement projects should target. For example, a hypothetical indicator about adult literacy could be either the number of illiterate adults in the entire community, at the individual level, or the literacy of various populations according to spatial areas of income distribution within the community. A program to increase adult literacy could focus on reaching all illiterate adults or only the specific areas with lower incomes and lower literacy. The indicators could also measure results or achievements (adult literacy rates) or efforts (money spent on literacy education), although efforts do not always lead to results.

A community can get overwhelmed with the choices it has in developing and choosing indicators. That is why it must develop clear indicator selection criteria: “Indicators are as varied as the types of systems they monitor. But there are certain characteristics that effective indicators have in common. Selection criteria help ensure that indicators meet tests of accuracy and usefulness. They also create common guidelines within which a diverse team of people can
work together” (Redefining Progress et al. 1997). Many groups have developed lists of their criteria, which they publish on web sites. Redefining Progress et al. (1997) studied these lists and compiled the results. Community indicators need to be relevant; valid; credible; measurable; consistent and reliable; comparable; understandable; leading; compelling, interesting, exciting; engaging to the local media; and accessible and affordable (Redefining Progress et al. 1997, 26). Using some of these criteria will help a community get a good list of indicators. Now it needs to narrow the list down to a more manageable number. In order “to be effective and successful, indicators should also: relate to the whole community…, connect with vision and values…, make linkages and relationships…, focus on resources and needs…, [and be] creative and action-oriented…” (Redefining Progress et al. 1996). Using these guidelines will help the Applegate community determine which potential indicators for their top ten issues would help them reach their goals of forest sustainability and ecosystem and community health.
CHAPTER SIX
CONSPECTUS

The examples of community indicator projects in the preceding chapters reveal that the community indicators movement is in its infancy—since it began in 1985 in Jacksonville, Florida. However, the publication of social and economic indicators has occurred since the first U.S. Census. What makes community indicator projects different than earlier indicator projects is that CIPs are both processes and reports, where the process involves the community in developing the indicators, and the report publishes the indicators. This chapter investigates a cycle of how the process and report can lead toward progress in reaching a community’s goals.

Step one of this cycle is visioning (which includes the first three steps in the CIP process detailed in Chapter 3 and presented in Table 1c). Step two is the identification of issues and indicators and making the indicator report (steps 4 through 10 in Table 1c). Step three is application—incorporating indicators into policy and/or planning processes—and assessment, where the community evaluates whether it is actually getting on-the-ground results. While exploring lessons about these three steps from this thesis project, the Conspectus identifies the need for further research on community indicator projects and/or the community indicators movement.

The Community Indicator Continuum: From Visioning to Realizing the Vision

Visioning

People embarking on a CIP develop a vision of what they hope their community will be like in order to design indicators that show progress toward that vision. It is the community members, from various educational and career backgrounds, rather than academics, who are
making and trying to implement sets of indicators that include natural, social and economic measures. Meanwhile, researchers such as Alex Michalos, editor of *Social Indicators Research*, are finding fault with such sets. Michalos, in his paper “Combining Social, Economic and Environmental Indicators to Measure Sustainable Human Well-Being” recognizes that: “In short, what is required is a comprehensive system of measuring the wide variety of aspects of human well-being, as well as the means of improving and sustaining it” (Michalos 1997, 222). However, he asserts that “unfortunately such a system…would involve the construction of something like a general theory of a good society (something like a utopia) which would be generally acceptable to most people” (Michalos 1997, 222). During the participatory part of an indicators project the community members try to agree on a general theory of “the good community” and come to consensus about a vision of their community in the future. They also identify the guiding principle(s) behind the report (such as sustainability, health, wealth, or quality of life), by asking and answering questions like, “what is a sustainable community and how can we strive to become one?” Michalos points out, however, that a consensus agreement involving most people in a community is unlikely. He claims that designing a view of utopia acceptable to most people in a community “is practically impossible because we cannot get agreement on the elements of utopia or on the proper evaluation of those elements” (Michalos 1997, 222).

Yet community indicators practitioners are not concerned with this academic brain teaser. Instead, they come together to find enough common ground, and perhaps a partial vision of the “good community” to build a community indicator project. Instead of pondering what an utopia would be for their community, they must be able to define and understand the central principle or combination of principles (sustainability, health, wealth, or quality of life) that guides the making
of the indicators. There is little sense in measuring sustainability indicators if community members cannot picture a sustainable community: “care should be taken in choosing terms like ‘sustainability,’ ‘quality of life,’ ‘healthy communities,’ or ‘well-being,’ that may or may not be meaningful to the community” (Scruggs et al. 1996). Without knowing what to strive for, a community might lose interest in the time-consuming process of developing indicators.

**Identifying Issues and Indicators and Making the Report**

For people to sustain interest in what the indicators are saying about the community, the indicator report must be about issues important to them—about what residents voiced in the community visioning process. Since, “an issue is a statement which can be acted upon and reflects a desire for change on the part of the issue holder,” first identifying the issues before listing indicators helps people think about what actions to take if the indicator shows a negative trend (Preister 1994, 42). Delia Clark, the Upper Valley 2001 (Upper Connecticut River Valley) coordinator, says “the indicators process begins with the questions, ‘What do we care about most? And what do we need to maintain it?’” (Andrews 1996, 18). After answering these questions, a community needs to choose its indicators wisely, which is why identifying the top issues for a community is a vital step: “until we can articulate what matters, we will not be able to measure it. And what we measure is important, because what we measure is what gets looked at, and in turn gives people a way to respond” (Flynn 1996, 5). Yet an indicator report needs to mention more than the issues; it needs to present the trends.

Indicators about issues that community residents find important can also reveal misperceptions about the trends. That is why an indicator project helps to focus residents’ attention on “real” rather than “perceived” issues (Scruggs et al. 1996). For example, in the
Analysis of Demographic and Economic Aspects of the Applegate Watershed, the authors found that census and timber industry data do not support many of the common perceptions found in the resident and business surveys completed for the report: “We see, for example, that the Applegate has no higher proportion of retirement-age population than the surrounding area, in contrast to the sense which people have that retirees are moving into the area in large numbers. Related to the concept of inmigration, it actually appears that fewer Applegate residents have moved into their current homes in the five to ten years prior to the census than in the surrounding area” (Reid et al. 1996, 48). Additionally, timber industry data since 1989 show that “there is no evidence of the dramatic decline in Applegate timber harvests often mentioned by Watershed residents” (Reid et al. 1996, 75). The amount of timber harvested in the Applegate varies each year with no discernable trend. The larger two-county area (Jackson and Josephine counties), of which the Applegate watershed is only a small part, experienced a sharp decline in timber harvests during this period (Reid et al. 1996, 75). Residents, who read the newspapers of nearby Medford (in Jackson County) or Grants Pass (in Josephine County) believe that the trends in the neighboring region also hold true for the Applegate watershed. Although the trends from outside the community may still affect their economic and social livelihood, the community members can do nothing to reverse the trends in the Applegate watershed because the trends simply do not exist. Using indicators to dispel misperceptions about the issues also has a public policy benefit because the new information decreases the change that government efforts will be wasted on non-problems.
Application and Assessment

What makes indicators important, besides building bringing community together to make new visions for the future, is how they are applied. Indicators, as published in the final report, are not an end in themselves:

“To be important, indicators need to be useful. They need to result in cleaning up rivers, putting people to work, and feeding poor children. At a minimum, indicators can help create change by focusing attention on critical issues. At their best, indicators can help mobilize communities and draw people toward a common vision. Indicator projects create not only new information, but new relationships among participants that can lead to new work toward common objectives” (Scruggs et al. 1996, 4).

Another viewpoint states: “indictors must be capable of affecting citizen action and public policymaking” (Sawicki and Flynn 1996, 165). Evidence of how indicator projects draw people together exists in the many enthusiastic statements published on web pages of community indicator groups like Sustainable Seattle and Jacksonville Community Council. However, abounding evidence of how indicators lead to action—in the form of projects, planning, or policy making—is difficult to find. One example is how the mayor of Jacksonville Florida “mounted a neighborhood initiative that includes code enforcement and public works for ‘intensive care’ neighborhoods. Much of the effort is based on feedback from the Quality of Life indicators” (Andrews 1996). Yet, the Quality of Life indicators had been published for ten years before leading to this new policy.

Indicator projects launched by local governments have had results that happened more quickly. Santa Monica’s City Council and planning team created 16 sustainability indicators in 1994. Finding that only 15 percent of the municipal fleet of vehicles used reduced-emission
fuels led to an immediate “Vehicles Management Plan...so that Santa Monica can hit a target of 75 percent of its fleet running on low-emissions fuels by 2000” (Redefining Progress 1999). Unlike the 10-year lag time for action to take place after the Jacksonville Report, the Santa Monica indicator project resulted in action that took place less than two years after the report. A possible reason for the slower response of policy makers and/or planners to indicators made by the community instead of by the government institution is that the government may choose to measure issues that are not controversial or have readily apparent solutions. The slow link from indicators to action may also be due to the amount of time needed for indicators to show discernable trends; “many people are impatient and want quick results, yet, indicators tend to move slowly. This makes it difficult to keep people interested” (Scruggs et al.1996).

Jacksonville and Santa Monica are only two examples of the application of CIPs. Unfortunately, there are only a handful of such examples in the literature. Thus, further research for how community indicator projects lead to action and policy changes is needed.

Communities embarking on a community indicators project must remind themselves what indicators can and cannot do. Indicators do not substitute for action; “it is the process of developing and discussing indicators that encourages action” (Scruggs et al.1996). Action could be new projects, such as when a local watershed council decides to plant trees to minimize soil erosion after measuring turbidity, an indicator of sediment loading and water quality. Action could be new policies, like those directed at improving the housing availability for low-income residents after reviewing the trends of an indicator. Action could be a change in planning as well. These actions, however, do not substitute for results; they may or may not help the community realize the vision of a sustainable or healthy community, or of improved quality of life or the investments of financial, social and environmental wealth. Indicators may lead to
action, but action does not necessarily lead to “progress.” That is why researchers need to explore what kind of projects, policies, or plans result from community indicators, and how these relate to the community vision and goals. It is also why communities must update their reports, re-examine their indicators, revisit their vision, and investigate progress toward community goals (Redefining Progress et al. 1997). Communities must assess whether their indicator projects are getting on-the-ground results. Realizing the vision of what a community wants to be for the future generation may take a generation. By that time, the community will have new issues and perhaps a different community identity and future vision.

**Conclusion**

Creating a community indicator project is not easy. The community has so much information to consider while using limited time and resources. Some places begin the process and end it when volunteer interest decays. Yet the Applegate community has the dedicated residents that can make a CIP happen. When Applegate residents began talking to each other about their community and their forest—instead of disputing in court rooms regarding the spotted owl controversy—they might not have envisioned the creation of a nationally known partnership and Adaptive Management Area, or the time consuming processes of developing a community indicator project. Nevertheless, the Applegate community has the horizontal structure and capacities needed to embark on a CIP. Many volunteers, at least the Applegate Partnership members, have committed one evening a week to learn, listen, talk, plan, and build trust. Most people living in the Applegate watershed share common ground and a vision of hope (Sturtevant and Lange 1996). To some, “success creates hope, and hope is fragile” (Shannon et. al 1996). However, while creating a vision of a community free from the spotted owl
controversy, but bountiful with both spotted owls and foresters, community members created hope without first enjoying successes. Hope may come from realizing that humans are more alike than they are different. When people who are dependent upon an ecosystem for their livelihood and/or lifestyle can come together as a community, they can better understand their interactions with the non-living and living components of that ecosystem. A community indicators project can help them do both—build trust, and learn about the ecosystem and community. The Applegate Partnership members wear buttons that say, “No They’” to remind themselves that a sense of community does not flourish when community members blame others for local problems. Instead, the Partnership members shift their focus to “we,” by asserting “we’re all in this together” (Applegate Partnership 1996). Hope really is about us—all of us together. Though “we” as a world entity may feel powerless to help better manage our environment and change our lifestyles, we as a community can.
REFERENCES


Sturtevant, Victoria, and Jonathan Lange. 1996. *Applegate Partnership Case Study: Group Dynamics and Community Context.* Ashland, Oregon: Departments of Sociology/Anthropology and Communication; Southern Oregon State University.


APPENDIX A

COMMUNITY GROUPS IN THE APPLEGATE WATERSHED

Source: Applegate Adaptive Management Area Guide

- American Legion #50
- American Legion Auxiliary
- Applegate Partnership
- Applegate Watershed Conservancy
- Applegate Valley Community Center
- Applegate Information Center
- Applegate Valley Historical Society
- Cantrall-Buckley PARC
- Applegate Lions
- Applegate Valley Community Forum
- Applegate Valley Garden Club
- Buncom Historical Society
- Communiversity
- Carberry Creek Association
- Forest Creek Community Association
- Friends of the Applegate Library
- Dakubetede Environmental Education Programs
- McKee Bridge Advisory Committee
- Friends of the Ruch Library
- Friends of the Williams Library
- Jackson County Stockman’s Association
- Logtown Cemetery
- Josephine County Farm Bureau
- North Applegate Watershed Protection Association
- Provolt Grange
- Rural Action Team
- Ruch T.O.P.S. (Take Off Pounds Sensibly)
- Upper Applegate Grange #839
- Threatened and Endangered Little Applegate Valley (TELAV)
- Murphy Neighborhood Association
- Murphy Citizens Advisory Committee
- Thompson Creek Residents for Environmental Education (TREE)
- Williams Citizen Advisory Committee
- Williams Rural Fire Protection Dist. Bd.
- Williams Town Council
- Williams Grange
- Applegate Core
- Applegate Agrarians and Gatherers
- Jacksonville/Applegate Rotary
- Applegate River Watershed Council
- Williams Creek Watershed Council
- McKee Bridge Lions

Groups Who Have Supported the Applegate Video
Source: Applegate Partnership Video (Banny 1995) Partnership

- Rogue Institute for Economy and Ecology
- Southern Oregon Small Woodland Owners Association
- Pacific NW Research Station
- Association of Oregon Loggers
- Applegate Stockmen’s Association
- North Applegate Watershed Protection Association
- Aerial Forest Management Protection Association
- Northwest Forestry Association
- Southern Oregon Timber Industries Association
- Williams Watershed Protection Association
- Applegate Watershed Conservancy
- Thompson Creek Residents for Ecological Education
- Oregon Guides and Packers
- Threatened and Endangered Applegate Valley
- Rogue Fly Fishers
- Southern Oregon Izaak Walton League
- Josephine County Farm Bureau
- Murphy Citizens Advisory Committee
- Western Forest Industries Assoc.
- State of Oregon Governor’s Planning Team
- Carberry Creek Association
- Rogue Valley Audubon
APPENDIX B

REVIEW OF APPLEGATE PARTNERSHIP MEETING MINUTES

Topics are listed as they were originally labeled during the initial review of the issues. The labels are not the same as the names of the issues given in Table 2. In this Appendix, the names of topics were derived using the wording given in the Applegate Partnership Meeting Minutes.

Following each bulleted topic is the date that the Applegate Partnership discussed the topic and a brief explanation of what was discussed. Handouts distributed at the meeting are referred to in italics.

- **Agency Compliance with NEPA**
  1. 12/14/94. “Insuring federal compliance of NEPA” is listed as one of the issues of the Applegate Partnership.
  2. 3/10/99. “AP and agency folks present agreed that continuing problems over local communities not wanting forest management in [adjacent] NWFP matrix lands should be recognized and discussed in depth.”
  3. 3/17/99. Handout: “Progress Report on the Applegate AMA from outside the Agency.” Some community members feel like the AP is a cloak for the same extraction-based management as before.

- **Availability of Data and Maps**
  1. 3/10/93. GIS technicians blending maps for the whole area.
  2. 5/19/93. Assessment team—a task for them is to provide tools to access the extensive data base compiled by 20 + agencies and OSU.
  3. 6/2/93. Common data bases for geographic province. [Directions the administration is headed] include: how to involve Northern California, assure consistency of data gathered, coordinating riparian and fisheries work and data. Lots of data needs to be gathered over a 15-20 year period to arrive at information needed for ecosystem based management.
  5. 8/11/93. Other challenges are drawing issues together in easily understood form; finding ways to deal with private owners; maintaining control of trees after they have been planted; maintaining already good existing habitat; promoting community awareness by including landowners.”
  6. 12/14/94. Pacific GIS is a group interested in making GIS accessible to local people.
  7. 9/22/95. Landowner information needed by the ARWC and the AP from the counties is very expensive. However the watershed council’s work is supported by the state, so why should it pay for the info?
  8. 12/6/95. Both Ed Reilly and Pacific GIS have completed GIS work. Ed discussed funding, merging agency and county databases, equipment, training, data manipulation, data elements covered, and past and future projects.
  9. 2/7/96. The GIS project for the Applegate (through Interrain Pacific GIS) has two broad categories: “community access to information, and capture of local knowledge data in usable and maintainable format. Protocol will be developed. Collection of data could be
accomplished similarly to community outreach data. Location and type of computer(s) and software was discussed. PNW motivation is to use this as a pilot project for refinement and exportation to other communities.”

**Applegate Lake**

1. **12/8/93.** Need for an up-to-date management plan. Issues arose from increasing use and multi-use: “status of concessionaire at Hart-Tish; hazard tree removal; wildlife, including bald eagle, peregrine falcon, goshawk, osprey; water quality; increasing trash in the lake; better defining working relationships with the Corps of Engineers; increasing use of recreational vehicles; public requests for dump stations; trail uses; future development; noxious weeds; increasing use of pontoon and houseboats; more sedimentation in upper end of the lake; dispersed camping; more bear activity; cumulative nature of impacts on wildlife; changes in ground water and concomitant health concerns.”

2. **8/23/95.** Recreational Opportunities at Applegate Lake. “Year-round hiking biking, horse trails abound. Fishing for trout is good and for bass is excellent. Surplus hatchery steelhead were released this summer. The speedboat limit of 10 mph has contributed to a more family-oriented environment. A local concessionaire operates fee sites. Some camping sites are accessible only by boat. Use of the area is well within carrying capacity. A long-range recreational plan is needed but not funded. Swimmers jumping off bridge are warned of hazards but cannot be cited. The large disbursed recreational area up the middle fork presents problems in law enforcement, especially due to California-Oregon interface. Better cooperative enforcement arrangements are pending.

**Business**

1. **11/1/95.** The Community Development Report is developing a business directory for the Applegate Valley.

**Catastrophic Events**

1. **2/17/93.** A site’s composition of sp. and structure needs durability to withstand such events. Measure natural events-event frequency, duration and intensity to find overall rate of change within the watershed and general biome.

2. **1/6/99.** Integrated flood plain planning. Attempts to build a historical picture with regards to event frequency, intensity, impact on channel, lower river function. “Project goals are to 1) help people on the lower river reduce future damage and develop realistic expectation and 2) find ways to improve water quality and channel diversity.” After interviews and evaluation of data, Todd will prepare a packet of info to give landowners.

**Community Outreach, Participation and Education**

1. **3/3/93.** Brochures were placed at community locations, presentations to schools and area organizations, publicizing the principles and objectives document. –Agency and AP representatives toured salvaged areas to see that harvesting has been done in an environmentally acceptable manner.

2. **3/10/93.** Projects for community participation, such as riparian enhancement for private riverfront property owners, improving woodlots, small logging opportunities. –Outreach to pull together Williams, Ruch, Applegate, Murphy.
3. **3/11/93. Retreat** Partnership goals are increased local visibility, response, education, more public involvement in activities, projects. Another goal is consensus: “Each member can support decisions.” –AP role in watershed assessment/research is to communicate, coordinate, advocate, and have a strategy (all between agencies, industry, community, environmental groups, academic, state, county). –Presentations to local groups, local politicians. Mailing to residents and local groups –Publish in Magazines.

4. **4/21/93.** Many fieldtrips are planned (during each meeting). Some for learning are outside of the watershed.

5. **4/14/93.** Southern Oregon Land Conservancy helps to manage farms (120 Acres farm “Ellis” near Applegate). Suggested projects: native seed sources, bird boxes, star thistle management, re-establishment of blue heron rookery in Provolt, salmon, irrigation methods and organic crop production.

6. **4/14/93.** Common ground statement with WFIA. Does the Partnership want to join with WFIA? They might submit a statement together to the Clinton administration.

7. **4/14/93.** Series of presentations. Suggestions for an office to take advantage of community interest.

8. **5/5/93** Newsletter suggested to follow presentations, or use monthly community meetings.

9. **5/19/93.** BLM research social and biological situation to improve public participation. –Old timers were present at the public meeting.

10. **6/2/93.** “Database on people in the community willing to work on projects.”

11. **6/9/93.** The Newsletter could be put at local stores, libraries, etc. to out-of-staters who have expressed interest in the Partnership.

12. **6/22/93.** Goals and objectives of outreach and coordination: one was “develop residential/work/education programs.

13. **7/14/93.** The Rogue Institute was ready to begin an outreach effort with two primary objectives: 1) “community assessment to identify resources and trends; 2) identification of interests and issues of people related to Applegate Partnership decisions.” A brainstorming of all the types of people in the community then occurred. “ Desired results will be reporting to the community, working together, targeted approach to contacts, issue-driven direction for AP, job potential, skills inventory, product development, alternative forest products, involvement of young people.”

14. **8/4/93.** Monthly meetings held with the Josephine County Soil and Water Conservation as part of the Resource Conservation and Development Program. Someone from the Partnership should attend.

15. **8/18/93.** When Applegate dam was built, landowners on streams were asked to remove dead logs to prevent floods. Now the landowners are asked to put them back. Communication about this new understanding with the farm community is necessary, and could involve the Corps of Engineers and the Partnership.

16. **9/15/93.** 160 volunteers worked on the Jenny Creek project.

17. **9/22/93.** Community assessment in progress. Recommend to AP was an accountability system, “that people in the community want assurances that issues have been heard and action is being taken.”

18. **12/8/93.** Efforts to develop an Applegate Valley Community Center (and library). A group will be meeting with an architect specializing in ecologically sustainable facilities.

19. **2/23/94.** The Rogue Institute suggested, in a memo to the AP, that the Partnership should form an outreach committee and develop an outreach plan.
20. 5/6/94. Headwaters resigned from the board. The group has a no-cut stand and has aligned with national organizations instead of local communities.

21. 11/16/94. Community will need 7.5 acres to meet the master plan of a community center/library. “Goals for the center are 1) enhance the local library and build on to that for the community meetings 2) be a focal point as an information center for valley events.”

22. 1/4/95. Watershed Council is talking to schools about installing hatch boxes, “intended to acquaint students with fish life cycles.” Schools will also be working on creek projects and with plantings.

23. 2/8/95. The goals for community development are: “1) Facilitate GIS computer access in Ruch/Applegate/Williams libraries; 2) Two or three jobs efforts involving approx. 10 local positions: -inventory assessment, -ecosystem workforce training; density management; 3) Educate community re economics/local transfer of wealth –Generate knowledge about basic economic bases. Tie in with new Rogue River National Forest position. –Work with Rogue Valley agriculture, forest products, manufacturing, retail sectors to focus on how to provide continuity and continuance of our economic base. –Coordinate and integrate with appropriate current community and agencies efforts.” Handout. The AP listed the outreach and education sub-committee’s goals and objectives for 1995-1996.

24. 3/15/95. Handout. ROE, Rural Outdoor Education. Visits to rural areas are balanced with classroom sessions. The program wants to introduce a stewardship-outdoor program to both K-12 and the larger community, to develop a partnership with local businesses and agencies to assist in projects and/or teaching, and to have 3rd graders adopt-a-project. Program Manager is Jim Hutchins, in Medford at 770-2703.

25. 7/12/95. Youth Corps Proposal. Discussed the feasibility in establishing a AP youth core of high school students and young adults to do brush handcutting, reducing density and improving forest health on private lands.

26. 8/2/95. Agencies will be writing a proposal to employ up to 40 local youths at about $8/hr on vegetation management during 1996. The work would first be done on fire proof breaks for rural homes (perhaps selected by a lottery).


28. 11/1/95. Williams resident described interest and need for help in setting up a community cooperative serving local farmers.

29. 9/25/96. A pilot entrepreneurial program begun with SOWAC (Southern Oregon Women’s Access to Credit, inc.) to understand what small business opportunities would work in a rural setting. “SOWAC (which serves men and women) holds workshops, sets up mentoring, and has a revolving loan program to help new, small businesses.”

30. 6/19/96. Community stewardship wants to keep Cantrall Buckley Park open. Enforcement programs at river and wayside sites needed (cleanup, enforcement of 14 day camping limit, trail maintenance) may include retired law enforcement personnel or volunteers that have minimal deputy training.

- “County Receipts”
  1. 1/27/93. Timber receipts can’t (yet) be used for other work or income.
• Cultural
1. 4/21/93. Handout on sales (Buncom). Cultural surveys will be handed out.

• Ecosystem Health and Community Stability (Economic Issues As Well)
2. 3/3/93. Ecosystem assessment process (was distributed) may help ensure forest health and community stability. “Assessment should not be a prerequisite to moving ahead on projects.” Such efforts should be coordinated with the FS and BLM. Article distributed from American Forests entitled “The Changing Science of Forest Health.” Conditions in the Upper Malheur River area are similar to the Applegate watershed.
3. 3/11/93. Retreat “Identify ways to ensure local contractors can get work.”
4. 3/17/93. Philosophy Statement “The key principle in the Partnership philosophy is to maintain and improve the ecosystem health of the entire watershed, which will in turn improve the forest-dependent economy.” Research Project proposal: Ecological and Managerial Basis for managing young stands and landscapes.
5. 4/14/93. Southern Oregon Land Conservancy helps to manage farms (120 Acres farm “Ellis” near Applegate). Suggested projects: native seed sources, bird boxes, star thistle management, re-establishment of blue heron rookery in Provolt, salmon, irrigation methods and organic crop production.
6. 5/19/93. Define “ecosystem management” in order to understand the concept.
7. May 1993 Public Meeting Agenda. Current conditions: overstocked stands, shifting species, higher human populations, administrative allocations (lines on a map) make management difficult. –Hopes: Partnership wants to do away with LCDC control, replant clear-cut patches, reforest burn areas, additional products, maintain successful plant/tree species, maintain wildlife and bears, cougars, coyotes, wolves as natural balance species to control rodents, plan for harvesting using dead and dying trees, reduce insect infestation.
8. 6/9/93. Ecosystem workshop with scientists. –Handout (unlabelled) The Partnership’s guidelines for evaluating management activities within the project are: “1) Establish or maintain forest health and ecosystem diversity across the watershed and simultaneously provide sustainable resources for community stability; 2) Maintain or enhance the diversity of plant communities and wildlife habitat in abundances and disruptions that prevent the loss of specific native plant community types or wildlife habitat; 3) Consider resources, social and economic values together when management actions are being designed (healthy forests = healthy communities); 4) Consider all the lands within the watershed; 5) Build partnerships to facilitate and enhance the management of the watershed.”
9. 7/14/93. Adaptive Management Areas Handout. The Applegate Watershed is named as an adaptive management area. The handout explained the goals of AMA’s.
10. 8/25/93. Fieldtrip helped people learn “what kind of thinning is needed to maintain the oldest component along with young healthy growth. Conclusions included the need for site specific thinning, the importance of retaining hardwoods, the need to recognize the interrelationships of hardwoods and conifers, and the need to take active steps to retain snags and large woody material.”
founded on the shared vision of sustainable economic activity in managed ecosystems. The goal of these partnerships is to assess responses in the structural and functional components of ecological systems to disturbances (past, present, and future) associated with essential economic activity. These assessments provide the basis for developing and evaluating ecologically sound, economically sustainable, and socially acceptable ecosystem management options.” USBM developed an Ecosystem Management Support Program. For info: Carl Almquist, Western Field Operations Center, Spokane, WA (509) 353-2700, or almquist@zircom.usbm.gov. Also, Tom Gunther in DC, Branch of Economic Analysis (202) 353-2700.

12. 8/24/94. Recommendation “that the Partnership take on the threat to ecological health of a growing population, including shifting water rights, public access to the river, land use regulations, impact of ‘mega-homes,’ and other issues that agencies do not address.” Suggestion that the newsletter could serve as a community forum on these topics.


14. 7/12/95. Concern that an upcoming salvage bill will affect on-going AMA projects, though the general opinion was that no effects will occur. The current projects “are designed to enhance forest health and thus will avoid future abnormal mortality.” The language of the bill seemed to be consistent with these projects.

15. 9/13/95. Handout. Letter to Northwest Economic Adjustment Initiative. “The Applegate Partnership wholeheartedly supports the Rogue Institute’s proposal to conduct strategic planning in the Applegate Valley. Usually, an existing local organization or government would undertake such a task, but as you know, there is no incorporated entity in the valley. We hope that one outcome of the plan would be the development of local capacity for planning and economic development. WE see a strategic plan as identifying the major interests of residents and shaping an action plan, capable of being implemented, which reflects those interests. It is our sense that the benefits of strategic planning would be a plan for:” (see meeting minutes for 5 reasons).

16. 10/25/95. Mike Dombeck listed a top eleven list about ecosystem management.

17. 12/18/96. Handout—“Collaborative Learning: A Method to Support Ecosystem-Based Management” Steve Daniels and Gregg Walker, OSU. The article defines Collaborative Learning, states how it works, how it relates to ecosystem management, what the role of federal agencies entails, what it produces, and gives references.

18. 12/11/96. Handout—International Model Forest Conference Summary. The summary “addressed the need for socioeconomic indicators for sustainability, redistribution of wealth, power and policy changes for cooperative development.” Also, publication “Sharing the Wealth” by Lisa Cohn of the Oregon Quarterly, Winter 1996. It has an article about the AP.

19. 10/9/96. Voice of Community Values: “changes in the timber industry, need for sustainable jobs and communities, attitudes held by stakeholders, divisiveness, community building, need for forums to express anger and frustration, opportunities to convey understanding and concern, need for expanded programs like Jobs in the Woods, and where we go from here.”

20. 9/11/96. Port Orford Cedar Disease. The disease, caused by the pathogen “PL” clogs the vascular system, prevents moisture from rising from roots, and is completely fatal. “It spreads primarily through waterways and also through dirt and root grafts. Douglas fir, hardwoods, and yew (except for 30 known instances) are not affected. Its life cycle is 4 to 7 years or longer with diminishing frequency. Heat such as summer drought is detrimental to
it.” Next, the general objectives of a project were listed, including maintaining Port Orford cedar as part of the forest ecosystem, and reducing PL.

21. 1/17/96. The AMA research and Monitoring Committee has proposed the following objectives: “creating and maintaining late successional and riparian habitat conditions; integrating timber production with wildlife and fisheries habitat (particularly sensitive and threatened species) and water quality; restoring forests, range and streams; developing low-impact logging and transportation systems; landscape level assessments; reducing fire hazards and increasing stand vigor (controlled fire and silvicultural approaches); develop inventories and assessment of a wide variety of forest resources.”

22. 2/14/96. Handout: Seventh American Forest Congress Individual Response Form of Jim Saveland The handout discusses what the words in a vision statement look like. What does sustainability and diversity look like? Then, it answers with “Jim’s” vision looks like, the principles that should guide us in achieving the vision, what concrete first steps people can take.

23. 8/28/96. “The Applegate Core group has been meeting for the last nine months with the focus of increasing economic opportunities and keeping wealth within the Applegate Valley. They are especially interested in sustainable agriculture and preserving open space.”

- **Density Management, New Market Development for Small Diameter Trees and Special Forest Products**
  1. 1/27/93. Assess ecological and economic feasibility of density management thinning (2”-14” trees).
  2. 2/24/93. Fire suppression created the over-density. Density management is a forest health, not timber sale issue. Hardwood lumber opportunities —The need for salvage repeated in several meetings.
  4. 3/24/93. Insure steady flow of material for making investment in technology worthwhile. Domestic market is the primary concern, including the market for hardwoods.
  5. 5/5/93. Discussed industry’s requirements for wood supply.
  6. 6/23/93 Ed Reilley Presentation. He and other woodlot owners (on Sterling creek) were looking to the Partnership for assistance in harvesting timber. Specifically—the best ways to harvest, a listing of forestry consultants and loggers, how to sell logs at the best price, networking for the woodlot owners, realizing other resources of the land, inventories and log banks.
  7. 9/2/93. OSU-Rogue Institute for Ecology and Economy workshop—identify “knowledge and skills requirements for the forestry related work force under the new forestry.”
  8. 2/16/94. Biomass One is a company that operates a power generating station and supplies steam to other industries in White City as a by product. They do two types of processing: hog processing, which reduces big material to small, and pulling usable material called agrimulch out of log yard waste. They contribute to the AP goals of reducing field burning, decreasing material going into landfills, preventing the leaching and combustion of wood waste or slash piles, and managing forests more efficiently. The company will soon have a yard in Grant’s Pass.
  9. 12/14/94. Density management program—would teach displaced workers how to use new tools, and to use private lands.
10. 10/26/94. People met “to consider whether ecosystem objectives could be attained in a more economic way, what expertise could be made available to teams, and appropriate AMA experimentation.” Various factors “might influence the ‘desired future outcome:’ vegetation (burning, density management, girdling); forest operation (developmental role of PNW, etc.); conversion to product (helicopters, benefit rural economies); results (residual landscape); monitoring at all stages.

11. 4/12/95. Engineered wood products. Presentation from Medite Corporation, which makes MDFB (medium density fiber board) “a product that is made from a mixture of Douglas Fir and other trees species. Primarily, Medite gets their material from the waste products of other milling operations. Chips must be free of bark and foreign matter. MDFB is used in cabinets, furniture, and mill work such as moldings as well as specialized industrial applications. It is not a structural product but can be used outdoors under some circumstances.” Options are available to landowners with small diameter logs. People could collect their logs in one spot and set up a debarker/chipper, or they could transport the logs to Medite’s Rogue River plant.

12. 1/11/95. “Proposed wood center cooperative in Medford, funded by lottery funds, to include market/product development.”

- Evaluation Criteria of Timber and Watershed Projects
  1. 1/27/93. Design team (DT) should show improvements for projects.
  2. 2/17/93. Draft criteria suitable for screening timber sales was handed out.
  3. 3/3/93. Ecosystem Assessment Process discussed. Assessment should not be a prerequisite for moving ahead on projects. –Initial projects endorsed by the Partnership would not require injunctive relief.
  4. 4/21/93. Handout on Transition Sales Information for R&R. The Partnership’s objectives for evaluating timber projects were discussed for “Matrix” lands. Those objectives considered for the sale were: biodiversity, forest health, old growth, special habitats, water/fish, soils (concerning road density as well), restoration, community stability, injunctive relief, data availability, multi-agency, other projects (habitat for black tailed deer and special forest products), time frame, local contracts, planning approach (how was the project planned—interdisciplinary or with another method), level of controversy (letters asking for comment on proposed sale—how many written responses?), level of outputs (spotted owl? Home range radius?).

- Fisheries
  1. 2/24/93. Placement of structures for fishery enhancement.
  2. 8/18/93. A petition was filed by several groups to declare coho salmon as an endangered species on the Applegate. –When Applegate dam was built, landowners on streams were asked to remove dead logs to prevent floods. Now the landowners are asked to put them back.
  3. 3/22/95 Handout. Letter to Western Region Manager of the Oregon Water Resources Department about the installation of fish screens and headgates as a priority for funding.
  4. 11/15/95. Handout: SW Oregon Salmon Recovery Planning Meeting notes and Slides—Fisheries in the Applegate River. See meeting minutes for specifics shown on the slides and during the planning meetings.
5. 11/27/96. Designating a fishstock as having heritage status could draw anglers to them and defeat the purpose of preserving the stock. Watershed councils won’t have to designate (could change watershed council’s role as watershed managers). Oregon Department of Fish and Wildlife will decide, aside from any public involvement.

- **Forest Decline Through Disease, Fire, Insects and Drought Stresses**
  1. 3/3/93. *Handout Gray and Clark, American Forests, Nov/Dec 92.* Past logging practices, aggressive firefighting, changed forests from open, Ponderosa pine and larch stands to dense stands of true fires, Douglas-fir, and lodgepole pine. “These stressed and overcrowded forests—where too many trees compete for scarce moisture and nutrients—are ripe for invasion by insects and disease.”

- **Funding**
  1. 3/3/93. Show what AP is and what they are doing in order to gain support from agency heads and local politicians.
  2. 3/10/93. Funding jointly with agencies and with grants.
  3. 3/24/93. Partnership budget and cost of brochures discussed.
  4. 10/6/93. Northwest Economic Adjustment Initiative will make funds avail. to communities and counties in OR, WA and northern CA. The Southern Oregon Economic Development District collects and review proposal submissions. The four categories of project impacts are workers and families, business and industry, communities and infrastructure, and ecosystem investment.

- **Fuels (Fire)**
  1. 4/21/93. *Handout.* With cultural surveys, fire information will be collected.
  2. 7/7/93. The Applegate Valley Fire District #9 hoped to cooperate with the AP in salvage operations near the fire station, and in showing the community methods for managing lands surrounding houses.
  3. 8/25/93. *Handout—“The Diverse Klamath Bioregion.”* Geology, transverse orientation and global position make the Klamath bioregion the most floristically diverse in the country. Fire is the most active agent of change within the region; “change is what keeps the ecosystem healthy.”
  4. 5/10/95. *Handout. FS letter.* The FS is proposing a cooperative fuel break project with neighboring landowners who want to participate. A fuelbreak is the removal or treatment of decaying brushfields that are understory to the timber canopy. They decrease the risk of a fire spreading.
  5. 8/2/95. *Handout: Applegate Fire Management Project.* There is increased home building within the rural-forest interface. Many lands are checkerboarded between private and BLM management. “Coordination of fire management practices of suppression, prevention, and fuels management across federal and private lands is critical to prevent large, catastrophic fires from destroying life, property, and valuable resources (e.g., special habitats).”
  6. 11/1/95. Kanaka Research Burn Project; Research and Monitoring Notes. “The site is just below Applegate Dam; landscape is oak savanna; fire has been very much a part of this ecosystem, and will be reintroduced experimentally in a way similar to that previously practiced by Native Americans.” Not much work on controlled burning has been done, so this project will be a good opportunity for monitoring and research.
7. 9/7/99. Handout: “Act Now, or Wait for the Fires.” by James K. Agee. “Fire behavior, although complex to predict, depends on the interaction of 3 factors—topography, weather, and fuels—only one of which we can control.” Restoration forestry and fuel reduction are 2 alternatives. Prehistoric pine forests were stable; frequent, low intensity fires maintained open forests with low fuel levels. Natural fire-resistant large pines existed. This 2-3 page document responded to pleas of people to let natural fires burn, which is too hot. The article addresses questions with management nature’s fires.

8. 9/14/99. BLM produced a video to educate others on fire conditions in southern Oregon. The area has shifted from fire tolerant to fire intolerant species in the last century. Historically fires occurred about every 16 years. Now, to preserve riparian areas (and homes) fuel treatments are needed.

9. 6/15/99. The importance of fire ecology and fire disturbances discussed. “Four components have been identified: (1) climate, (2) define specific vegetation zones, (3) define fire risk and fire hazards, (4) analyze, draw conclusions, make recommendations. Being very clear about objectives will avoid ‘ecosystem schizophrenia.’ Because prescribed fire is very site specific, designers should ask whether it is reasonable, appropriate, and possible.” Also discussed—integration with air quality standards.

- **Grazing**
  1. 5/24/95. Allotment Management Plans. FS has draft EAs due for AMPs. In the meeting the FS representative “covered issues of open range, control, enforcement, monitoring, overgrazing, Klamath and Togue National Forest overlap, permittee relations and communications, and allotment renewals... Water contamination and possible utilization of grazing as a management tool were also discussed.”
  2. 7/26/95. “Discussion occurred about the need for some focused efforts to sustain a viable ranching and farming community in the Applegate Valley. Other concerns relating to grazing were expressed, including the need for good quality data through experimentation and monitoring grazing similar to that being done for forestry.”
  3. 8/2/95. Grazing Allotments with the FS in the Applegate Ranger District has not been implemented. In the Carberry area, the allotment had been inactive for ten years, and some good baseline data would be valuable. Other allotments for “the grazing experiment” were considered, but the AP must first investigate: “1) can cattle grazing be compatible with forest management? And 2) what can we do to help sustain the farming and ranching community.”

- **Health**
  1. 4/5/95. Community Health Center. Applegate Health Cooperative representatives gave the AP information on planning and a brief history to date. “They have talked to a number of local groups and compiled a list of services desired by the community as follows: urgent care, primary care, well child exams and immunizations, chronic illness monitoring and visits, health education, access to other related services, pharmacy (limited), laboratory (limited), women’s health care, children’s health care.” They distributed a handout, “Statement of Applegate Health Cooperative.”

- **Herbicide Use**
  1. 3/17/93. Find methods of dealing with herbicide use and application for herbicide use.
2. 3/24/93. Partnership was invited to a company interested in using herbicides (Medco) and Medco was invited to a partnership meeting.

- **Local Contract Development (Local Labor)**
  1. 1/27/93. Funds available for such economic diversification. Possible contracts incl. stocking surveys maintenance such as pre-commercial thinning and gopher control.
  2. 3/3/93. If funding for the Jobs Bill comes in, and no strategic plan is present, jobs may go to outside contractors. –Proposal for “offering locally a training program on procedures for bidding on government contracts.”
  3. 3/10/93. Workshops for becoming a licensed, bonded contractor (5 required).
  5. 6/23/93. AP goal was to compile a list of people with small logging systems and to work on ways to make them viable bidders.
  6. 4/23/94. Handout: Ecoforestry Institute. EI is a group made of ecologically-oriented scientists and philosophers and experienced on-the-ground foresters. The group wants to work with the partnership and agencies to practice ecoforestry and train workers.

- **Mining, Aggregate or Mineral**
  1. 5/10/95. The USFS has a minerals program with 39 claimants. “Most are placer or instream operations looking for gold.” The FS representative though that mining caused little disturbance to the stream banks, and that the operators are responsible, cooperative, and “good forest citizens.”
  2. 11/1/95. Handout: Notes on the Aggregate Mining Luncheon and Field Trip by Daryl Jackson. Aggregate Mining. Two sites chosen to illustrate the potential and the past gravel mining activities. “The confluence of Slate Creek, the second greatest producer of all native Salmon and steelhead in the Applegate Watershed, is currently designated by Josephine County as a proposed aggregate mining site for the next 30 years… The solar-heated pond in the Noble gravel pit is home to literally thousands of shiners and squaw-fish that represent tremendous competition for salmonid juveniles. It is now connected to the Mainstem Applegate.”

- **Monitoring**
  1. 3/3/93. Need to collect data on private lands, ensure future credibility. Measurement criteria must be in place.
  2. 3/11/93. Retreat Advisory group needs to coordinate monitoring needs.
  3. May 1993 Public Meeting Agenda. 75% of the group present was interested in monitoring.
  4. 8/18/93. With respect to funding and the budget, “Doing whatever is necessary to make research and monitoring happen was agreed upon…”
  6. 12/14/94. A tentative list of issues to stimulate thinking about AP. The Partnership picked the top 5-7 issues for presentations. Some issues can be combined: “-Protecting forest and community values in the rural interface. -Fire prevention for sensitive wildlife habitat. -Restoring forest health in fire hazard areas. -Economic and social history and trends in Northern California and Southern Oregon around community well-being. -Monitoring and how it relates to adaptive management. -Investment and disinvestment as it relates to adaptive management. -Common and acceptable data bases. -If we bio mass it, will they
come? -Insuring federal compliance of NEPA. –Stewardship contracting – what would it look like? -Sustainable strategies for sustainable forests and communities. –Reserves in ecosystem management. –Single species vs. ecosystem management. –Use of prescribed fire as a management tool. –Use of mechanical means to mimic fire as a management tool. –Education and training for natural resource management. –Restoration implementation. –Restoring forest health from epidemic insect levels.”

7. 11/11/98. All-Party Monitoring Conference anticipated. “Purpose of all-party monitoring is to ‘monitor the monitoring’: agree on nomenclature and protocols, identify and collect information in a central location, and make it widely available.”

8. 1/6/99. All-Party Monitoring Workshops: “Purposes of project include collection of information on various on-going monitoring activities, mutual education, establishing standard language and data protocols, making monitoring less esoteric, and encouraging collaboration among various stakeholders.”


- **National and Regional Support and Management**
- 1. 3/3/93. Forest service employee (Mandy Cole Schmidt) detached to coordinate regional activities. –Forest Summit in Washington going forward at the top, with no local groups involved. AP believes management to be bottom up. Pressure on president to get something done soon, so show him what the AP is and what they’re doing in ecosystem management. Then AP should get support from agency heads and local politicians. –Northwest forest summit beginning to occur.
- 2. 3/17/93. A need for a 3-5 min. statement of “what we are and how we fit into the rest of the country.”
- 3. 3/24/93. People are excited about the Partnership. Media calls for Jack are 11-16 per day.
- 4. 4/7/93. Forest conference. The Group was well received by president Clinton.
- 5. 5/5/93. Four men in Washington D.C. assisting administration with formulating forest policies.
- 6. 4/14/93. Southern Oregon Land Conservancy helps to manage farms (120 Acres farm “Ellis” near Applegate). Suggested projects: native seed sources, bird boxes, star thistle management, re-establishment of blue heron rookery in Provolt, salmon, irrigation methods and organic crop production.
- 7. 6/2/93. The creation of a video was proposed.
- 8. 6/16/93. Sierra Club opposes adaptive forest management areas and local involvement in management as envisioned by the Partnership and included in Option 9. Issues discussed were legality, sufficiency language, concerns of the environmental community, whether to respond, and the effect of the Sierra Club lobbying on the Applegate Partnership.
- 9. 7/7/93. Potential intrusiveness of researchers from the academic community.
- 10. 9/1/93. “Ecofund will consider advocating for the Partnership with national environmental groups.”
- 11. 9/22/93. $10,000 allocated to Jackson and Josephine Counties at the 5-County Rural Conservation and Development meeting ($5000 each). –Stockman’s association and Rogue Fly Fishers have interest in connecting with the AP and helping in next summer’s restoration work.
12. 5/6/94. The Gang of Four (Su, Jack, Sharla, Brett) made presentations in Washington DC to the Congressional Research Service’s Ecosystem Management Symposium, the White House, the Department of the Interior, the Department of Agriculture, an interagency briefing (BLM, FS, SCS, F&W, EPA), the Reinvention Team for the FS. A positive outcome is the “increasing interest in the Partnership and the enthusiasm for broad based watershed assessment, [as well as] finding support for people at ground level willing to talk across their differences.

13. 5/13/94. Handout of Sierra Club anti-AP email. Daniel Stotter at Sierra-Club-SF criticizes Jack Shipley but acknowledges his influence nationally. The Sierra Club thinks that AP lacks regional and local support: “as the Applegate Partnership is NOT a popular item back in Oregon, I suspect that Jack would like to get some leverage to use back home, where he will suggest that local groups should respect/follow the lead of the National Groups in allowing the AP to move forward without hindrance…” Then the letter describes the Partnership One timber sale calling it “bad news forestry.” From a tour, the writer alleged that “’stand health’ is utilized as an excuse for getting volume from large diameter trees… hardly the thinning from below that the AP loves to talk about!!” The author also claimed to have seen logging in riparian areas and indignancy of Jack and the AP when the environmental community raised its concerns. Then the letter criticizes that the process is very much local control oriented with no strong environmental presence, and deals made with insiders although outsiders may participate in the NEPA process.

- Native American Issues
  1. 3/17/93. A need for communication on the protection of Native American sacred sites in the Applegate Watershed exists.
  2. 5/5/93. A special guest from another country interested in the tribes and in land management had been present. –Concert (John Trudeau) and Pow Wow.
  3. 10/20/93. Site for Cultural Landscape. The American Indian Cultural Center wants to develop an interpretive center and experimental restoration project on government owned land, to bring together agency and native American perspectives.
  4. 7/13/94. The Takelma Intertribal Project “seeks to create a government-to government relationship between the Siletz Tribes and the /USFS to promote management of the land in harmony with Native American traditional practices and beliefs. Proposed to be included are management by fire, selective planting, reversing degradation, monitoring, thinning and restoration.” Also, the first salmon ceremony of the tribe in 150 years had just occurred.
  4. 1/14/96. Looting of the Native American site of the Pyramid Lake Paiute Tribe was discussed. A guest opinion from the Partnership about historic and prehistoric antiquities had been sought.

- Noxious Weeds
  1. 2/24/93. Star Thistle Control.
  2. 2/22/95. Handout. Letter to Josephine County Commissioners and Public Works Department about alternatives to herbicides and pesticides on an experimental road-side management program in the Williams Watershed. The letter is partly in support of the Williams Association for Alternatives to Herbicides and Pesticides; AP supports, in concept, innovative management approaches to solve problems.
3. 1/13/99. Grant request for noxious weed management group activities. Funds used for education, field trips, workshops, public relations, eradication, and mapping of the valley. A valley plan using the Greater Yellowstone Area model will start the work. FS has an EA for their noxious weed program. 6 noxious weeds in the Applegate are targeted: tansy, spotted and diffuse knapweeds, scotch broom, puncture vine, and star thistle. “Eradication methods will include insects, manual pulling, mowing, some herbicides (avoiding residential areas). An Oregon Department of Forestry representative said that problems are diminishing because of a transition from clearcutting to structure-based management.

4. 3/10/99. A noxious weed matching grant covers “planning, mapping, formulating management plan, education and outreach, some implementation. Work will focus on star thistle, purple loosestrife, and blackberries. NO herbicides will be utilized on this project, although private landowners could use herbicides on private lands.”

- **Old Growth and Other Sensitive Areas**
  1. 1/27/93. Projects in these areas take time to develop.
  2. *May 1993 Public Meeting Agenda.* A fear listed was of losing all old growth.

- **ORVs (Off Road Vehicles)**
  1. 1/27/93. The use & control of ORVs.
  2. 3/3/99. Off-highway vehicles are more heavily used for recreational use in public and private lands in the John’s Peak area. “Uncontrolled usage is adversely affecting private and public lands by degrading the landscape, causing property damage, harassing wildlife, and creating a nuisance for nearby residents.” The BLM is working with stakeholders to formulate an OHV management plan. The objectives are to protect natural resources, provide for visitor safety, and minimize conflicts among various users. Many issues were raised and suggestions given in public comment. The issues included: “erosion, sedimentation, wildlife assessment, connectivity, special habitats, OHV straying off roads/trails, pollution, noise, noxious weed spreading, increased fire hazard.”
  3. 3/10/99. “This is an opportune time to discuss impact, monitoring, and enforcement regarding OHV access to BLM lands in general since BLM is doing its NWFP third year assessment and PSQ update.”

- **Planning: Development of a Strategic Plan or a Credible Ecological Assessment, and Identification of the Desired Future Conditions of the Area**
  1. 3/3/93. If funding for the Jobs Bill comes in, and no strategic plan is present, jobs may go to outside contractors.
  2. *Handout from Su Rolle, “Applegate Partnership: Ecological Assessment for the Applegate Watershed” 3/3/93.* “Ideal future of Applegate Partnership would include an overall ecological assessment for the Applegate watershed.” Information on inventory and monitoring for vegetative, riparian, aquatic, terrestrial systems would be compared with the desired future condition (DFC). The partnership would then ID activities most important to move towards the DFC: watershed restoration, density management, wildlife habitat improvement, etc. An integrated GIS would be needed to manage the data.
  3. 6/2/93. “Possibly make the Applegate Watershed a scientific research area. Fish and Wildlife would oversee the project with a habitat management plan for the entire watershed and moving toward a landscape approach.”

5. 9/15/93. Draft “Articles of Corporation, Non-Profit Corporation” “To help manage the lands within the Applegate watershed the Partnership will work toward a desired future condition that: *establishes and/or maintains forest health and maintenance of ecosystem diversity on a landscape level and provides a sustained flow of resources for community stability. *maintains or enhances the diversity of plant communities and wildlife habitat in abundances and distributions that prevent the loss of specific native plant community types or indigenous wildlife species habitat. *considers all resources and social and economic values simultaneously when designing management actions, *considers all lands within the watershed, and *builds partnerships to facilitate and enhance watershed management.”

6. 9/22/93. Draft: “Information Needs and Monitoring Project Objectives.” Also, another draft: “Proposed Criteria and Indicators for measuring sustainable forest management in the US.” Recommended that criterion #8 (Efficiency of Forest Use) be included under Partnership’s Economic Opportunities category of what is valued in the region.

7. 10/12/93. Adaptive Management Area Guides (Draft) Handout. Area assessment must be done. It includes information on biophysical, social and economic aspects of the area.

8. 9/24/94. Land Use Planning—Jackson County Zoning Issues. Jackson County is making zoning issues available for the public and the AP to learn about.

9. 11/8/95. ARWC letter to the Josephine County Rural Planning Commission. Planning in the county deals with the Goal 5 process, which has three objectives: 1) insure open space; 2) protect scenic and historic areas and natural resources for future generations; and 3) promote healthy and visually attractive environments in harmony with the natural landscape character.

10. 11/15/95. “The Siskiyou National Forest and BLM have collaborated a Late Successional Reserve Assessment for the Applegate Watershed…The Assessment’s logic for project planning goes into Environmental Assessments and Records of Decision.”

11. 12/11/96. “Land Use and Local Governance.” Jackson county citizen’s league, Rogue Valley Council of Governments and Jackson County Commissioners are encouraging local citizens to participate and be interested in current planning processes.

12. 11/6/96. Planning for Unincorporated areas in Jackson County. 2 planning efforts: strategic planning by RIEE and LCDC (Land Conservation and Development Commission) by RVCOG (Rogue Valley Council of Governments).

13. 11/20/96. “Local Representation on Land Use Planning.” Some members, along with Sue Kupillas met about land use and local representation. They are inclined toward forming a group to interact with the county on Applegate Valley land use planning. Although consensus is desirable, land use issues are divisive. Reports from the majority and the minority to county planning entities may ease tension.

14. 10/23/96. Unincorporated Rural Planning. The group “discussed the significance of the Unincorporated Rural Planning Process in the Ruch/Upper Applegate area currently being hosted by Rogue Valley Council of Governments. The timeline for applying the new state rules and revising the comprehensive plan is January of 1997. This planning effort is separate from the strategic Planning effort (funded by the Forest Service) and will have important zoning consequences for the area.” The Oregon Administrative Rules for unincorporated rural planning, as well as an article on the topic, will give some background on the topic. Confusion exists due to the unfortunate timing of unincorporated rural planning happening during the strategic planning effort. “Many felt that RVCOG should use the
social assessment of the Applegate Watershed (‘Words into Action’) as a place to start in understanding community values and concerns.

15. 10/12/96. “Growing concerns about Jackson County rezoning efforts to zone property ‘Rural Residential’ rather than ‘Woodland Resource’ and ‘Exclusive Farm Use.’”

16. 10/2/96. Strategic Planning. “Phase I—small group planning—is now completed and a 50-pp document assembled. Neighborhood level planning process will now begin. Valley-wide meetings on agriculture and water will be held. RVCOG has been given a grant for planning in the Applegate, and efforts are being made to link the two.”

17. 1/21/96. General steps in strategic planning: “1) Existing, current trends affecting us; 2) strengths, weaknesses, opportunities, threats; 3) goal formation; 4) strategic development; 5) plan development; 6) system improvement/evaluation. The Applegate Valley strategic planning will focus specifically on: trends—forests (interface with land managers), waterways (shift from agricultural to residential use), community (crime, organizations, youth programs), valley land, jobs and economy (shift to trades and services); how did we get there—data collection from community; big picture—gather and analyze data, establish and rank priorities, build in measurement indicators.

• Population, Quality of Life and Traffic
  1. May 1993 Public Meetings Agenda. —A hope is to “determine human population capacity [in the valley] so quality of life can be maintained.”
  2. 12/1/96. Traffic and big roads: the Oregon Department of Transportation and Jackson County Roads and Parks are joining up: “State and City Programs are merging some of their programs to better utilize resources and avoid duplication.” Comments included: “potential road widening, shoulder work, bike paths, parking, weight and speed limits, vegetation control and use of herbicides.”
  3. 7/3/96. Handout on Strategic Planning Meeting. Initial effort to see if there is interest in alternatives to commuting. Possibility of setting up a ride-sharing program to alleviate traffic and pollution on Hwy. 238.

• Public Participation with Agencies
  1. 3/10/93. Field trip to determine spotted owl habitat with biologists, USFS, BLM, Fish and Wildlife and others. —Division between Grants Pass and Ashland District BLM boundaries. —Lists of all projects to be put out within the year and future projects available with the FS, not the BLM due to different reporting methods. —Full time employee could coordinate activities among agencies and community members to be funded jointly by agencies.
  2. 3/17/93. Coordinated Resource Management Planning committees in both counties working getting small watershed projects under way—part of USDA and Soil Conservation Service. —USFS and BLM agreed on a need for common language and compiling info and data understandably. Look at the watershed with “a shoe to the soil” approach, and consider what migrates from the Klamath side, and what values will be used in making assessments.
  3. 4/14/93. Question of considering enjoined sales. Environmental groups possibly are the only objectors.
  4. 5/5/93. BLM under stricter injunction than the FS—everything defined as habitat, but there are 2 criteria that weaken the heading: “may affect but not adversely” and “no effect.” -- Agencies have different criteria for defining owl habitat.
  5. 5/19/93. Network BLM with USFS and OSU.
6. *May 1993 Public Meeting Agenda.* People are baffled by the information from agencies. Suggestion: agencies cut out bureaucratic language in letters. AP could facilitate understanding by a glossary, orientation pamphlet, and community seminars.

7. 9/1/93. The interagency Adaptive Management Area team (FS, BLM, EPA, National Marine Fisheries) was meeting to determine how AMA implementation can best proceed. --Topics in the partnership meeting covered a “need for agreement on the meaning of the term ‘ecosystem management’; looking at the whole landscape; recommendations from the ground rather than management from above; producing a group comment on the draft EIS; accomplishing projects and then evaluating what went right or wrong; reasons why agencies are going with ‘safe’ projects; agency considerations on working within the ‘old plan’ and the ‘new plan’; and attempts by Headwaters to obtain agreement from the other plaintiffs to seek release from injunction for local sales that meet ecosystem management criteria.”

8. 9/8/93. The role of the interagency liaison with the agencies, partnership and other AMAs was brainstormed. The agencies are formulating a job description.

9. 9/22/93. Criteria to define owl habitat is still not developed from biologists of both agencies.

10. **Handout June 1993. Training in Public Participation for the Applegate AMA and Key Watershed Analysis: A Proposal** RIEE proposed a training program in public participation for BLM and FS staff, in conjunction with AMA planning & key watershed analysis efforts. Objectives of training are similar to goals of a wealth index.

11. 7/13/94. **Handout-Collaborative Learning.** OSU professors discuss collaborative learning as a method to support ecosystem-based management.

12. 4/7/99. **Handout:** “Relationships between Watershed Councils and Conservation Districts” Issues about how districts and councils can work together are discussed. Relates to all-party monitoring by reducing duplication of work and ignoring another group’s work. Another handout, “Issues Affecting Oregon’s Soil and Water Conservation Districts” describes funding, infrastructure, process concerns (“a landowner needs one plan for natural resource practices” that meets 6 objectives), landowner/decision maker concerns, and balance and interdependence of natural resources.

**Recreation**


2. 6/9/93. Replacement of Outhouses at McKee Bridge Park, and work at Beaver-Sulfur campground.

3. 5/17/95. **Handout.** The ARWC is applying for funding to build a Waters Creek Interpretive Loop Trail.

4. 8/23/95. Recreational Opportunities at Applegate Lake. “Year-round hiking biking, horse trails abound. Fishing for trout is good and for bass is excellent. Surplus hatchery steelhead were released this summer. The speedboat limit of 10 mph has contributed to a more family-oriented environment. A local concessionaire operates fee sites. Some camping sites are accessible only by boat. Use of the area is well within carrying capacity. A long-range recreational plan is needed but not funded. Swimmers jumping off bridge are warned of hazards but cannot be cited. The large disbursed recreational area up the middle fork presents problems in law enforcement, especially due to California-Oregon interface. Better cooperative enforcement arrangements are pending.”
Research Projects

1. 3/17/93. Ecosystem Management Project Proposal—to determine the vegetative, wildlife, economic, and social affects of managing young stands. –OSU graduate students researching the partnership.

2. 7/793. Scientific retreat planned. Letter to Scientific Retreat participants. Questions asked (to the scientists) deal with the most important ecosystem health problems in the watershed and ways to research/address these problems. Also, “We are open to any and all ideas which will make the Applegate project the center piece of scientifically credible and socially acceptable ecosystem management-systems.”

3. 8/18/93. With respect to funding and the budget, “Doing whatever is necessary to make research and monitoring happen was agreed upon…”

4. 8/25/93. Southern Oregon State College “is excited about working with the Partnership, especially in research and monitoring, and there is a strong prospect of developing an Applegate curriculum.”

5. 9/15/93. AMA guidelines require three replications of a project in order to be scientifically valid.

6. October 93. Project Proposals to Northwest Economic Adjustment Initiative. 7 projects, with name and type of project listed, respectively: (1) Remote Sensing of the Applegate Watershed—Ecosystem Investment; (2) Applegate Watershed Research and Monitoring Program—Workers and Families/Business and Industry, Communities and Infrastructure, Ecosystem Investment; (3) Applegate Watershed Ecological Restoration and Enhancement Projects—Workers and Families, Business and Industry, Communities and Infrastructure, Ecosystem Investment; Applegate Partnership Administrative Staff and Facility—Workers and Families, Business and Industry, Communities and Infrastructure, Ecosystem Investment; (4) Thompson Creek Irrigation System Renovation—Workers and Families, Business and Industry, Communities and Infrastructure, Ecosystem Investment; Applegate Partnership Administrative Staff and Facility—Workers and Families, Business and Industry, Communities and Infrastructure, Ecosystem Investment; (5) Laural Hill Irrigation System Renovation—Workers and Families, Business and Industry, Communities and Infrastructure, Ecosystem Investment; (6) Applegate Watershed and Ecosystem Health Assessment through GIS—Workers and Families, Business and Industry, Communities and Infrastructure, Ecosystem Investment; (7) Special Forest Products Assessment—Workers and Families, Business and Industry, Communities and Infrastructure, Ecosystem Investment; (8) Williams Valley Arboretum/Ecosystem Restoration Training Center—Workers and Families, Business and Industry, Communities and Infrastructure, Ecosystem Investment (Package Project); Applegate Watershed Forest Health Project (separate grant on separate page, includes GIS, condition assessment and monitoring, restoration and enhancement) —Workers and Families, Business and Industry, Communities and Infrastructure, Ecosystem Investment.

7. 10/20/93. Economic Development Projects that were submitted (81 in total from the region) “were judged by whether they addressed forest health, created jobs, was economically feasible, made common sense, and could be accomplished by the end of April.”

8. 5/11/94. The research/monitoring committee was writing a grant proposal for State watershed money to train high school faculty about monitoring, and to introduce students to ecosystem management.
• **Restoration Projects**


3. **4/14/93.** Southern Oregon Land Conservancy helps to manage farms (120 Acres farm “Ellis” near Applegate). Suggested projects: native seed sources, bird boxes, star thistle management, re-establishment of blue heron rookery in Provolt, salmon, irrigation methods and organic crop production.

4. **4/2/93** Map of Applegate Partnership Projects

5. **6/23/93.** Develop community-wide restoration programs by 1994; seek other watershed opportunities and interface with agencies.

6. **8/11/93.** A guest speaker presented the idea of stream survey projects. “Suggested areas for action include encouraging private landowners to plant conifers; assembling volunteers to measure stream temperatures for hot spots, in sub-regions to catalyze communities; assembling all data available; physical and biological surveys; ‘pilots’ on agricultural, private, and forest lands; finding funding (Job Council, State Forestry, Soil Conservation Service, environmental foundations).... –Other challenges are drawing issues together in easily understood form; finding ways to deal with private owners; maintaining control of trees after they have been planted; maintaining already good existing habitat; promoting community awareness by including landowners.”

7. **9/1/93.** Possibility of conducting a coordinated resource management workshop in the fall.

8. **9/22/93.** Applegate Watershed Conservancy Project. 5th and 6th grade classes at Ruch Elementary, as many of their parents as possible, and the AWC members will replant the Burton Butte area above Ruch.


10. **1/6/99.** Tree planting. BLM offered to help grow stock for future years.

• **Road Building**

1. **1/27/93.** Redesign projected roads for less impact.

2. **5/26/93** Using property owner’s road system. Low standard roads would not be environmental problems.

3. **8/25/93.** Many areas to be logged that lack road access will by logged by helicopter. The Partnership may be beneficial in its ability to negotiate with private landowners about roads, right-of-ways and easements.

4. **9/8/93.** Medco has applied for a road use permit across FS lands. The road needs restoration work. Alternatives, such as constructing a new road or helicopter logging are possibilities. A dialogue between Medco, the OR department of forestry, and the Partnership was suggested.

5. **4/6/94.** Roads are identified as the solution to help fish habitat in the Little Applegate. Putting roads to bed would require a full EA, so the FS will only focus on replacing culverts, spot rocking and heavy maintenance. The BLM plans to decommission or obliterate 6 miles of roads that eventually will be closed.

6. **8/24/94.** Handout: Rush Creek Road Restoration. Outlines problems caused by roads and what might be done.
7. 9/28/94. Suggestion to use weed-free straw bales to line a new logging road to prevent sediment loading into creeks. Use bales instead of seeding with non-native grass because it’s “a cheap and effective temporary measure which allows the landscape to heal and native plants to regenerate.”

8. 2/24/99. Controversy over BLM contractor access through private roads. Some contracts written involving walk-in access. “The frequency of access issues is increasing as the agencies plan projects on a landscape basis.”

9. 4/7/99. A petition opposing road construction with residents of Slagle Creek (BLM logging) was signed by 80 people. Helicopter landings on private property is a possibility. “Issue of permanent easements is under discussion but still unresolved.”

10. 4/14/99. Full page and a half description of the 18 month effort the USFS and BLM undertook to understand what kind of roads are required for resource management. The study was “to determine the minimum roading system needed to permit the various management activities described in the Northwest Forest Plan.” See meeting minutes for full description.

11. 5/5/99. The FS/BLM/ARWC has improved problems on Rush Creek Road. “However, diversion of Rush Creek to Ridge Line Ditch has caused saturation of the ground which then resulted in slides and sedimentation in the creek. Recent ATV activity has caused further slides. The road is an un-maintained county road for which no entity is willing to take responsibility. The county has indicated its unwillingness to actually close the road, which is heavily used. All parties need to meet and agree on solutions to the problem.”

12. 6/12/96. “There is concern about yew wood theft, used by veneer cutters. License number and vehicle type of cutters should be reported to Star. Permits are being limited for bear grass harvesting because of sensitive soil and plants. Placing limitations in permits is problematic because additional regulations/higher permit expense causes more people to avoid permitting process altogether. Introduction to noxious weeds is increasing. Permittees are requested to wash their vehicles. Information on yellow Starthistle and a pamphlet on Special Forest Products are available at Star and are attached to archives minutes. A new state law requires identification tags on any special forest products. The possibility was discussed of exchanging firewood permits for pre and post timber sale thinning, brushing and piling.”—Handout: designing timber sales with a specific type of product in mind...(Coville Presentation notes)

13. 11/11/98. Ecoforestry project where the economizer (produces boards from small diameter logs, IN the field) and pole peeler were of interest to agency people and contractors/loggers. Few industry attended the “ecoforestry demonstration.” Also shown off (in the newspaper articles as well) was a plastic log flume from Austria. The articles were about the demonstration of low impact logging.

14. 1/6/99. Small diameter activities have lost momentum and focus since Terry Black left. A SDM task force is suggested to be activated.

15. 1/20/99. The Wood Center, working closely with Rogue Community College is a not-for-profit manufacturing and training facility; it is working to develop secondary wood products industry and to revitalize the economy.

16. 2/24/99. The Jackson County Small Woodlands Association and Oregon State University Extension Service offered an educational program on new methods of forest resource management within a watershed. (Examples include land within the Applegate—Little
Applegate small woodland property of Matt Epstein. Epstein “has practiced thinning and fuel reduction while fostering wildlife habitat on his property,” and on adjacent BLM land.

17. 4/14/99. Also see handout: “Evaluation of Small-Diameter Timber For Value-Added Manufacturing: An Integrated Approach. John Punches, an OSU Assistant Professor, presented on the Fund for Rural America’s research project on small diameter timber for value added manufacturing. “The project’s objective is to increase the economic opportunities for small-diameter timber utilization from overstocked stands by relating standing tree characteristics to secondary wood products manufacturers’ wood raw material needs. Specific objectives include 1) assess secondary wood products manufacturers’ wood raw material requirements, 2) define the relationship between primary breakdown and secondary manufacturers’ raw material requirements through adaptation of existing computer models, 3) identify the relationship between standing tree characteristics and secondary manufacturers’ raw material requirements, 4) conduct education outreach and technology transfer to forest managers, primary and secondary manufacturers.” “The Applegate Watershed is being studied because of the prevalence of small diameter materials and the fact that it is an adaptive management area. The Applegate Partnership has agreed to conduct the evaluation of this project.” AP people will either provide guidance, read the proposal and evaluation plan, and/or report on progress.

18. 6/16/99. An informal group, called “the Casual Small Diameter Bunch,” is meeting to think about SDM issues and to try new approaches. “They are discussing projects using 14” – 5” material to make projects more attractive to industry. 1999 projects include: 1) Northeast thin (head of Red Dog) – tractor cable 2) Duncan Gap - cable/zigzag, 3) Yale thin – ATV, 4) Squaw Elliott (pine) – tractor, 5) Toe Top – tractor. Zigzag equipment is now available but is being modified to make operational; RIEE / Jobs in the Woods involved. Will be working in September, when a tour will be scheduled. A model service contract is being written to permit usage by small operators on SDM projects. RIEE has issued a ‘must read’ Small Diameter Materials booklet.” OSU is doing a project where 40 Applegate trees will be selected, and their wood properties and characteristics will be tested. Some research is done by the University of Wisconsin.

• **Species Diversity**

1. 2/17/93. Species reserves drawn on a map won’t save the biome (Tom Atzet- forest ecology USFS). The importance of SW OR must be recognized. Species, gene migration and morphologies are highly dynamic within Klamath Province.

2. 2/24/93. Del Norte Salamander in far NW corner of Partnership Area. Learning Process and Monitoring Program. Also black tailed deer winter range enhancement, band-tailed pigeon forage enhancement, anadromous fisheries habitat enhancement (on private and federal land).

3. 3/17/93. Philosophy Statement “The [Applegate] watershed...[is] known to be one of the most biologically, botanically and geologically diverse and unique areas in the country.”

4. 4/7/93 Handout on the Ramsey Prescription. Stand structural diversity and forage/cover ratio for big game.

5. 4/21/93 Handout on sales herptiles on the special species status

6. 12/14/94. “Single species vs. ecosystem management” is listed as an issue of the Applegate Partnership.
7. 12/7/94.  Handout—Draft Introduction to the Applegate Watershed Assessment: Aquatic, Wildlife and Special Plant Species and Habitat. Key questions asked in watershed assessment that relate to monitoring and indicators.

8. 7/5/99. Bats. There are 12 species of bats in Southern Oregon. “A small bat can eat 12,000 mosquitoes a night.” Seven species in the forest plan need special attention because of their decline. Agencies are trying to protect them by having a 250 foot buffer site around their known roost sites.

- Threatened and Endangered Plants
  2. 12/11/96. Dwarf mistletoe—causes abnormal growth of branches but creates habitats for forest wildlife. Dwarf mistletoe is used as a reason for harvested Douglas fir. It can kill trees and increase fuel loading. Some people think of it as a noxious weed.

- Timeliness of Planning Harvests for Ecosystem Management
  1. 2/17/93. Time spent in surveying and mapping site conditions and processes.
  2. 2/24/93. Forest health projects (thinning) takes longer than 1 year.
  3. 3/10/93. “The basic question remains…whether to push projects out or take time for ecosystem assessment before proceeding.”

- Tourism
  1. 8/21/96. “To balance tourism promotion, a careful look should be taken at economics, job levels, environmental degradation, impact on infrastructure, etc. Recreation should be part of assessments. An APPLEGATOR article along these lines would be timely.”

- Water, Aquifer Use/Surface Water Use
  1. 9/22/93. Oregon Water Resources Commission is considering Josephine County as a “test county” to determine how much water exists in the aquifer and how many homes per acre should be allowed.
  2. 6/15/94. Work completed with volunteers, FS and BLM people on Laurel Hill Ditch. “Emphasis now is putting more responsibility on farmers to keep ditches in good condition and not waste water.”
  3. 6/6/94. Regarding the Laurel Hill ditch project, farmers are “having trouble realizing that everyone will have to change to sprinkler irrigation because not enough water is available for flood irrigation.” Also, some people (called detractors in the minutes) allege that “outsiders are forcing changes upon the community, water rights will be lost, and the pipes are too small.”
  4. 12/7/94. Values, opinions of irrigators and skepticism of ARWC voices at AP and ARWC sponsored meeting where 60 landowners attended. The purpose of the meeting was to identify issues and concerns and provide a forum for opinions, but not to provide answers.
  5. 5/17/95. Handout. ARWC has applied for funding on Thompson Creek Irrigation Improvements. The project objective is to “improve fish passage to improve fish migration and decrease direct fish mortality” from fish passage problems on three ditches.
• Watershed Approach
1. 2/17/93. Four components of Applegate Watershed: aquatic, terrestrial, edaphic, atmospheric. “Aquatic component is most sensitive, giving us the clearest indication of ecosystem health in the drainage.”
2. 6/2/93. Gathering stream data—temperature. –Handout of the Headwaters 5/26/93 letter: watersheds in the Partnership One area are listed as “critical watersheds” by the “Gang of Four.”
3. Report of the Agency Coordination Working Group. (Aug. 93). The vision for the future included a movement to an ecosystem focus through a shift to the ecosystem approach, the use of watershed analysis, the drawing upon local community input, the possible adjustment of boundaries, and the adoption of a more balanced approach with respect to commodity options.
4. 8/11/93. A guest speaker presented the idea of stream survey projects. The speaker, Vic Kacynski, “recommended inventorying streamland and habitats—ranking them ‘good, adequate, or poor’ and ‘if poor, why?’—and asking how to remediate and enhance.” He described two inventory methods available which characterize habitat, sunlight, gradient, whether riffle, pool, rapids, or glides, width and length, and riparian data such as the size and cover provided by vegetation. ODF&W would provide trainers and field supervisors, as well as develop computerized methods of analyzing the data. Also mentioned were insects as indicators of stream health, and watershed needs (fire, drought-tolerant native grasses...).
5. 2/2/94. ODFW presentation about the need to improve or enhance watersheds. Projects must be on the ground and not be studies or surveys. Creation of a watershed council discussed. Handout given about the Oregon Watershed Health Program.
6. 12/14/94. Watershed Aquatic Assessment—Philosophy that restoration projects should be where they can do the most good, rather than where worst problems are.
8. 8/17/94. Three month experimental aerial survey of the Applegate River by Sr. State Trooper Larry Doe, Game Division (474-3175, ext. 306) was “to pinpoint major problems affecting steelhead and salmon fisheries.” Concern over the cumulative effects of people on the Applegate is a concern. Larry “estimates that 100% of the water is diverted and then returned to the river, raising temperatures, introducing silt, and disturbing gravel beds in the process.” He wishes to identify potential corrective action. The problems have the greatest magnitude between McKee bridge to Murphy. Authority to manage the habitat does not rest with F and WL, but with agencies lacking coordination.
9. 1/10/96. Applegate Water Temperature results and issues. Temperature graphs for various creeks have been studied for 1993, 1994, 1995. “There are tremendous irrigation problems and big water use issues throughout the Rogue Basin. Systems have been severely degraded by man and nature. Water temperature standards being proposed by DEQ are not possible for many Rogue Basin rivers and streams. [The presenter] urged ARWC to take notice of these proposed standards and make the case to DEQ for exceptions where appropriate.”
APPENDIX C

REVIEW OF LITERATURE SOURCES FOR THE APPLEGATE COMMUNITY


- General Structure of Publication: contains a summary, introduction, and the following sections: Principles of Ecosystem Restoration, The Current Situation, Landscape Scale Project Planning (with multiple sub-sections), Monitoring and Research, and The Future. The main topic of the 12 page publication is the need to reduce stand densities and improve the health of forest ecosystems. Changes induced by wildfire suppression, logging, mining and livestock grazing have caused the forests to become dense with stressed, small, slow-growing trees and increasingly threatened by uncontrollable wildfires and insect outbreaks (pp. 3). The forests are developing differently than prior to Euro-American settlement, causing the habitat of many species to diminish. This trend, and increasing density of trees cause the forests to be susceptible to catastrophic fire, insect attack, and disease, which ecologists refer to ecological instability (pp. 4). The goal of the Ashland Resource Area is “to restore ecological stability, one watershed at a time” (pp. 4). The resource area proposes to utilize the principle of ecosystem restoration to better manage the forests.


- Quotables relating to the creation of a Community Indicators Project: “In striving to achieve both social and ecological objectives, the Ashland Resource Area invites public participation throughout its planning processes. Perhaps most challenging, is seeking and incorporating public input into management strategies and still meeting ecological objectives” (pp. 3).

- ISSUES:
  - Principles of Ecosystem Restoration (pp. 4-5):
    1. Natural processes and their time scale: “It is important to recognize what natural processes are involved in maintaining healthy forests. Forest ecosystems have been evolving for thousands of years, thus the composition, structure, and ecological processes of the forests are essentially a product of their ongoing physical environment” (pp. 5). Ecological processes of lightning-caused fires, wind, insects, disease and drought shaped the forests. Native Americans also interacted with the ecosystem, using fire to promote resources important to them. In time, the species that persisted in the presence of frequent fire became both adapted to and dependent on fire (pp. 5). Fire suppression during this century have caused forests to change: “many of the ecological processes that sustained their productivity and resiliency are being dismantled” (pp. 5).
    2. Ecosystem restoration: “The basic principle of ecosystem restoration is to identify the natural processes that sustain healthy forests and then manage the existing resources utilizing these natural processes. When used appropriately, active management practices, such as harvesting, thinning, and prescribed fire, can often be utilized to mimic important natural disturbances” (pp. 5).
The Current Situation (that results from fire suppression) (pp. 5-6):

1. The role of fire: low intensity fires served as a thinning mechanism and regulated the density of the forest. At low densities, trees tend to be more resilient, vigorous, large and tall, which enhances the vertical, structural and species diversity of the forest (pp. 5).

2. Ponderosa pine: These trees thrive in fire prone environments. They are also a valuable species for harvest. However, without fire, the shade tolerant fir species outcompetes ponderosa pine (pp. 6).

3. Douglas-fir: Densely grown, 100 year old Douglas-fir is accumulating ground fuel, which increases the potential for extremely intense fires. Such fires damage soils, completely consume the forests, and cause stand replacement, which diminishes diversity (pp. 6).

4. Riparian areas: Historically, low-intensity wildfire spared riparian areas. Now, intense fires consume stream side vegetation, increasing soil erosion and affecting wildlife and aquatic habitat (pp. 6).

5. Oak woodlands: Fire suppression causes conifers and brush species to crowd out the hardwoods (pp. 7).

Landscape Scale Project Planning (pp. 7-10): The Ashland Resource Area identifies four treatment objectives for their project plans: forest health, wildlife enhancement, aquatic habitat, and fire hazard reduction. These objectives are interwoven in the following topics:

1. Watershed Restoration: restore watershed health and aquatic and riparian-dependent organisms; identify areas of the highest benefit-to-cost relationships for restoration and for likelihood of success; “the most important components of a watershed restoration program are control and prevention of road-related runoff and sediment production, restoration of the conditions of riparian vegetation, and restoration of in-stream complexity” (pp. 7).

2. Young Forest Restoration: Young tree stands in the Applegate are not developing into healthy forests in the absence of natural fire or silvicultural treatment. Instead, they “are becoming homogeneous stands of overly dense, fire prone Douglas-fir which curtails the development of species and habitat diversity” (pp. 8). Current restoration techniques attempt to prevent the spread of fire into the tree tops by reducing fuels in the understory.

3. Fire Hazard Reduction: Slash and woody material from thinning and logging create a short-term fire hazard. The resource area is seeking new ways to reduce fire hazard from slash (pp. 8).

4. Species Restoration: Several programs exist for encouraging ponderosa pine germination, growth, vigor, and resiliency (pp. 8).

5. Shaded Fuel Breaks: These improve the ability to confine and control wildfire by interrupting the continuity of the fuel. Along ridge tops, small trees and ground fuel is removed and large trees are left (pp. 9).

6. Oak Woodland and Shrub Community Restoration: removal of encroaching conifer and brush species; reducing density among competing oaks; promoting stability and longevity of other plant communities, such as native grasses (pp. 9).

7. Commercial Forest Harvesting: “thinning from below,” leaving the biggest and healthiest trees and removing the smaller ones; commercial thinning sales are
expensive to operate; the need to minimize building roads requires a variety of harvesting methods; small volume sales allow smaller, local industries and/or operators to get contracts within the Applegate valley (pp. 9).

8. Outreach and Public Involvement: a diverse public outreach program with neighborhood meetings, field tours, and attending meetings of local groups; coordination between the FS, the ARWC, and the Rogue Institute for Ecology and Economy; utilizing the local workforce with ecosystem restoration service contracts (pp. 10).


- General Structure of Publication: The executive summary presents the findings of the assessment. The findings are general trends in the ecosystem where “ecosystem health” may be declining. The rest of the report is organized into chapters of ecosystem health, provincial perspective, historic, current and future trends, research and monitoring, and recommendations. The issues listed below come from both the executive summary and the chapter on historic, current and future trends.

- Financial Support: From the agencies listed above.

- Quotables relating to the creation of a Community Indicators Project: “The assessment is based on current information and addresses primarily the terrestrial components of the ecosystem. The focus of this assessment is on long-term health. Clearly, humans are part of the ecosystem, and therefore strategies for maintaining a healthy society within the context of overall system health are also discussed” (pp. 1). The chapter on research and monitoring not only lists the need for ecological indicators but lists twenty indicators that “relate to social and economic health” (pp. 51-53). It also links adaptive management to ongoing monitoring: “Adaptive management is the incorporation of newly learned information, predominately acquired as the result of research and monitoring, into future projects on an ongoing basis. It provides a process to include information relative to slowly evolving social objectives, into our understanding of the desired future landscape. For this reason, it is imperative that all on-the-ground projects within the AMA have clearly defined objectives and be monitored through space and time (pp. 51).

- ISSUES:

  - Edaphic (Soils) (pp. 1, 16-17):
    1. “Soils have been compacted and disturbed by mining, grazing, logging, and other activities. The granitic substrates are naturally prone to erosion” (pp. 1).
    2. Soil is the most critical ecosystem component because its interaction with climate determines the productivity of the site (pp. 16); “Because the soil is an ecosystem in itself, there are a number of possible health indicators. In the future it may be possible to diagnose soil health by the soil flora composition. Currently, condition is expressed as the amount of bare ground exposed and the percent of compacted area” (pp. 16); description of healthy soils (pp. 17).
**Aquatic and Riparian** (pp. 1, 2, and 17-19):
1. The “health of aquatic and riparian ecosystems is dependent on the interactions of climate, soils, vegetation,” humans, other animals, and disturbances (fire and erosion) (pp. 17). Therefore, there are many issues and indicators related to aquatic and riparian ecosystem health.
2. **Physical attributes of in-stream and bank conditions** are the easily inventoried indicators (pp. 17); “Declines in fish populations; Increased sedimentation from road building and other upslope activities; loss of large wood (structure); reduced and/or interrupted stream flows; loss of riparian vegetation; more pronounced negative trends on private lands (pp. 1); Very dense riparian vegetation due to fire suppression cause decreased stream flows and fewer large conifers (pp. 18).

**Terrestrial Vegetation** (pp. 2, 20-26):
1. **Fire suppression** has resulted in very dense riparian and upland vegetation. “Stand basal areas are two to five times greater than would be expected to maintain healthy stands of trees” (pp. 2).
2. **Density management** is therefore an issue (pp. 2).
3. **Seral stage**, which relates to structure, composition, and processes is a component of ecosystem assessments. Furthermore, “a diversity of seral stages over time and space, and in the proper proportions, is necessary to assure the viability of all species” (pp. 26).
4. The absolute amount of **old-growth** has been used as an indicator of spotted owl habitat, but old-growth is not the same as owl habitat, which varies with latitude and plant species.
5. **Distribution of age class**: “the relationship between old-growth character and age is weak. Stands over 200 years old may not have old-growth character and stands as young as 100 may have old-growth structure” (pp. 24).

**Atmospheric** (pp. 26-27):
1. **Ecosystem burning for ecosystem health vs. the desire for clean air** (pp. 27). One solution is using prescribed burning to reduce the total smoke from forest fires.

**Insects and Disease** (pp. 2, 27-30)
1. “The AMA has **high insect populations**, with at least nine species of bark beetles and woodborers present, resulting in significant tree mortality” (pp. 2). The primary **tree diseases** are White pine blister rust (an introduced disease), dwarf mistletoes, and root diseases.
2. Scientists do not agree on how diseases or pathogens affect the health of the forests. However, insects and diseases are natural components of forest ecosystems; at certain levels, they can enhance the health of the forest, create special kinds of wildlife habitat and provide diversity (pp. 27, 28). Perhaps diseases play the role of fire when fire is excluded. Most agree, however, that introduced insects or disease have only
negative impacts, and native pathogens at high levels pose a threat to long term health.

**-Fisheries (pp. 30-32)**

1. **Coho salmon** proliferates in low-to-middle elevation tributary streams (p. 30)
2. **Fall Chinook Salmon** spawn and rear in larger streams or in the mainstem Applegate, in pool or glide habitat, for a few months before migrating to the ocean. The Applegate Dam may favor fall chinook by releasing water in the early fall, which attracts fish higher in the river to spawn (p. 31).
3. **Winter Steelhead** prefer headwater streams and “is the ‘survivor’ among the three anadromous species because of its tolerance to simplified stream channel conditions and preference for faster-moving water rather than pools that the salmon prefer” (pp. 31).
4. **Resident Cutthroat and Rainbow Trout**: Few large trout (>12 inches) are present in the watershed due to fishing pressure and habitat alterations. Some are found in remote stream segments. Either cutthroat or steelhead dominate in coastal basins, making resident rainbow populations unusual. Inventory of either species is not complete (pp. 31).
5. “Applegate Dam cut off two large sub-watersheds from steelhead and coho salmon migration. Below the dam, the three principal anadromous fish sub-watersheds are Little Applegate, Williams Creek and Slate Creek; these have populations of steelhead, coho and chinook salmon. They are no longer big producers because of agricultural development, water diversion and removal, timber removal and roads. These impacts have affected riparian zones, flow regimes, sediment inputs, water temperatures and upstream habitats (p. 31, 32).
6. “Federally managed lands generally contain the remaining viable salmonid habitat due to water temperature, flow alterations, and in-channel habitat changes downstream on private lands…. If the downstream and privately-owned areas are to be continually managed for water, wood, and food, the biodiversity of the watershed will continue to be reduced” (pp. 32).
7. The mainstem Applegate’s wide river valleys no longer have off-channel fish and wildlife habitats because the marshes have been drained and channeled (p. 32).

**-Special Plant Habitats and Species (pp. 32-36):**

1. “The AMA supports at least 60 rare or threatened plant species and several unusual communities. Seventeen rare plants and plant communities have been identified as being at risk of disappearing due to the spread of non-native species, fire suppression, and other causes (pp. 2).
2. Many Special Areas (Botanical Areas, Research Natural Areas, etc).
3. Types of plant communities (which may have rare species or unusual communities) in the Applegate Adaptive Management Area: low-mid elevation dry grasslands (pp. 32); valley bottom late seral communities (pp. 32-33); moist mountain meadows (pp. 33); Baker’s cypress (pp. 33); Alaska yellow cedar (pp. 33); Pacific silver fir (pp. 33); quaking aspen (pp. 34); western juniper and big-leaf sagebrush (pp. 34); water birch (pp. 34); Port-Orford-cedar (pp. 34); green fescue (pp. 34)
4. Affecting the above plant communities are invasion of non-native grasses and forbs (weeds and noxious weeds) (pp. 32), conversion of native plant communities to farm, grazing, or residential landscape (pp. 32, 33); suppression of wildfire (pp. 33); high intensity wildfire (pp. 33); changes in hydrology and soil properties due to longterm grazing (pp. 34); root rot (pp. 34);

5. At high risk of extirpation in the Applegate watershed (pp. 35-36): Rhamnus ilicifolia (a California chaparral shrub species); Mimulus bolanderi (large annual monkey flower); Tauschia howellii (member of the carrot family, which is close to extinction globally); Saussurea americana (tall wetland composite); Calochortus nudus (wetland mariposa lily); Palagiobothrys figuratus sp. Corrallicarpus (popcorn flower).

-Wildlife Habitat (pp. 2, 36-40):

1. “Several threatened, endangered, or protected animal species occur in the AMA. These include the peregrine falcon and spotted owl. Other species, such as the Siskiyou salamander and Townsend’s big-eared bat, occur in the AMA at least partially because of the presence of unique habitats. The AMA supports many unique habitats important for wildlife (pp. 2).

2. Habitats on private lands have been modified; river valleys have been developed and the streams have been channelled (pp. 36).

3. Definitive data are not available for many wildlife species. Furthermore, species viability is a complicated subject, but it does depend on maintaining a diversity of wildlife habitats (pp. 36).

4. Late successional reserves (LSR) were meant to maintain some mature and old-growth habitat for the northern spotted owl. “The key is to minimize fragmentation of mature and old growth stands,” including riparian areas, which provide habitat continuity and concentrated food, water and shelter (pp. 36).

5. Unique habitats that need to be maintained are “meadows (including alpine), rock sites (cliff, cave, talus), lakes/ponds, swamps/springs, special plant areas, band-tailed pigeon areas, and other unique sites” (pp. 37). These unique habitats are described in detail on pages 37-39).

6. Proposed, endangered, threatened and sensitive species (PETS) have high priority within the Applegate AMA. At the time of this publication, one endangered species (peregrine falcon), and two threatened species (bald eagle, spotted owl) nested within the watershed (pp. 39).

7. Neotropical Migratory Birds (NTMB) are monitored at several sites in the Applegate AMA (pp. 40).

8. Game animals, especially deer, are present. Fire enhances early seral vegetation and provides forage for deer. However, management for other species includes retaining and developing more late seral vegetation, reducing deer forage.

-Humans (pp. 2, 40-45): “Forest planning and management activities have not adequately addressed community issues and effective dialog has not been maintained between the public and the Federal agencies” (pp. 2). Therefore, the Forest Service and Bureau of Land Management want to improve the public participation process and incorporate community concerns in ecosystem management. On pages 40 to 45, the Ecosystem Health assessment
lists the social and economic trends that have affected the Applegate valley in the last 30 years. It extracted from the community assessment (Preister 1994a). Seven issues relate directly to ecosystem management, and are mentioned below.

1. **“Balanced” forestry practice:** “we need management;” “no clearcuts;” “select cut, by default, was the preferred logging method of valley residents, including loggers;” “harvest the dead and dying;” “helicopter log, but innovate on the ground too;” “keep canopy intact;” “adequate riparian protection;” “avoid south and west slopes;” “plant sooner and link success to future sales;” promote drought-tolerant or native species; “protect and enhance species diversity;” “desire for accountability;” “create value-added economic activity” (pp. 41-43).

2. **Water:** “shortage, declining water table; maintenance of irrigation ditches with new population; newcomers, too many people, increased demand; loss of rights; Savage Rapids Dam; decline of fish” (pp. 43).

3. **Private land logging** (pp. 43-44).

4. **Firewood demand** (pp. 44).

5. **Interface concerns:** “the checkerboard pattern of BLM lands in southern Oregon exacerbates interface issues;” interface forests are transitioning from being remote places where timber extraction is easy to places where residents and visitors value recreation, aesthetics and wildlife over cutting; “fire risks; a perception of increased predators, a perception that some wildlife species have declined; increased poaching; being contiguous with public lands experiencing insect related tree mortality; human impacts on farming and ranching operations; declining access to public lands and ‘traditional’ private lands” (pp. 44-45).

6. **Local economic benefits and diversity:** economic development consistent with the rural lifestyle; ecosystem management that strengthens traditional economic sectors (farming, ranching, logging, and milling); jobs close to home; outlet for youth in the community; maintain young families while retirement in-migration increases the cost of living.

7. **Local participation and involvement** (pp. 45).

- **Fire** (pp. 2, 26, 45-50):

  1. **Fire suppression** has resulted in very dense riparian and upland vegetation. “Stand basal areas are two to five times greater than would be expected to maintain healthy stands of trees” (pp. 2).

  2. **Productive and resilient forests,** two characteristics of healthy ecosystems, would have resulted if fire had been allowed to play its “natural role” (pp. 26).

  3. **Historic fire environment:** fires in low elevation ponderosa pine communities were low-intensity, small, short-lived and frequent, resulting in open, park-like stands of large trees. Wildfires were ground/surface fires that burned less biomass, producing less smoke and particulates (pp. 46-47).

  4. **Current fire environment:** Fires are now infrequent, but of long duration. They result in stand replacement (pp. 47).

  5. **Fire hazard and risk:** “Fire hazard is the assessment of vegetation by the kind, arrangement, volume, condition, and location that forms a special threat of ignition, spread and difficulty of control” (pp. 48). The calculation of developing a fire hazard rating is to pick an appropriate fire behavior fuel model (pp. 48-49). Fire hazard
maps reflect the ratings over the entire watershed. Fire risk is the change of an ignition source causing a fire, threatening life, property, and/or valuable resources (pp. 48). Risk assessment is based on life, property and resources: human values. It should be done for various important species habitat as well (pp. 50).

-Social (pp. 71-72): The Ecological Assessment lists three social issues and seven opportunities for monitoring those issues. The agencies want to track primary community issues and address them while changing forest planning and management. They want to make efforts to maintain dialogue with the community about programs that have resulted from the Assessment. Lastly, they desire to evaluate the economic benefits of public land projects and distribute those benefits throughout the community. The monitoring opportunities are:

1. “Land use patterns: Monitor changes in the residential/forest interface,” which will be related to fire hazard, riparian protection, and insect-related tree mortality (pp. 71).
2. “Balance of timber-harvesting methods: A range of timber harvesting methods should be monitored for economic benefits” (pp. 71).
3. “Rate of locally-awarded federal agency contracts: Monitor the percent of contracts awarded to Applegate and Rogue Valley residents, in number and dollar amount, to insure local economies benefit from forest management programs, including timber sales, reforestation, restoration, monitoring, special forest products, construction, services and others. Obstacles to locally-awarded contracts should be identified for policy change” (pp. 71).
4. “Value-added incentive to timber sales: Monitor the nature and degree of value-added incentives to timber sales because they are a key way to promote addition economic activity and local economic multipliers. The market development of small diameter pole material is especially appropriate” (pp. 72).
5. “Community interface: Develop ways to include the community in monitoring both forest and community well-being, training/learning center; employment opportunities: how to structure locally” (pp. 72).
6. “Outreach: Actively identify, through outreach, community issues related to any specific programs resulting from this report”(pp. 72).
7. “Insect treatments: One priority, from a social perspective, for insect-related treatments should be public lands contiguous with private lands” (pp. 72).


• General Structure of Publication: organized into six parts, including the vision and goals of the AMA; the setting (including a section on the current social and economic setting); interagency organization which describes ongoing projects; systems (terrestrial, aquatic, social and economic, interagency organization, and applied learning); challenges and funding assistance. The guide is a quick reference for people wanting background on the issues and resources of the area, as well as a working document outlining how the agencies expect to
manage the AMA. Specifically, “the Systems section describes the key issues, questions, and strategies for moving the Applegate Adaptive Management Area forward” (pp. 7). The Guide summarizes: “information about the biophysical, social, and economic aspects of the Applegate Adaptive Management Area; public and agency issues across multiple jurisdictions; key questions reflecting what people want to learn from this experiment; strategies and future actions which are most responsive to social and resource issues” (pp. 1).

- **Financial Support**: The BLM and the Forest Service.

- **Quotables relating to the creation of a Community Indicators Project:**
  - Adaptive management “is an action-based process of planning, implementing, monitoring, and adjusting-with the objective of improving future projects” (pp. 3).
  - “An adaptive approach to management will likely characterize the future—it will become the ‘norm.’ The difficulty in resolving complex socio-political and natural resource issues is increasing. It will be even more critical to develop ‘management frameworks that are capable of working in situations involving high levels of uncertainty’” (pp. 9)
  - Applegate Adaptive Management Area goals are to “achieve healthy, diverse and functioning ecosystems that are sustainable over time. Define terms ‘sustainable,’ ‘healthy,’ … ‘ecosystem’ … as they apply to the Applegate Adaptive Management Area. The ‘ecosystem’ refers to the interacting natural system including people and all other living organisms as well as the non-living environment. In order to foster healthy social and economic systems, we want to: understand the relationships between sustainable resources and sustainable economies (supporting sustainable communities); develop clear criteria and indicators of sustainability reflecting shared values and monitor measurable criteria over time; enhance the relationship of agencies to the communities adjacent to the Adaptive Management Area. We want to create a climate of trust and cooperation between agencies and private citizens; contribute to the economic well-being of communities where possible. (The agencies are not responsible for the communities’ overall health but recognize their influence on social and economic functions)” (pp. 16-17).

- **ISSUES:**
  - **Landscape** (in Part 3—Setting, pp. 18-19):
    1. **Federally-managed land**: Applegate AMA is 325,000 acres of federally-managed land. The Applegate River watershed (or sub-basin of the Rogue River) is approximately 500,000 acres.
    2. **Elevation ranges** from 1,000 to 7,000 feet, rainfall ranges between 20 and 100 inches per year.
    3. **Private lands** are intermixed with and adjacent to the AMA; they form a checkerboard pattern. Many lands managed by the BLM are O&C lands (Oregon-and-California Railroad grant land given back to the government in 1916).
    4. **Historically**, half of the timber receipts from O&C lands and a quarter of the FS and BLM public domain lands have returned to the counties. For years when timber harvests might be limited, Congress authorized a “safety net” in 1993 to supplement county budgets. This legislation expires in 2003. Since both counties have a high percentage of federally managed lands, they do not gain revenues from these lands to serve as a tax base.
5.

In the NW Forest Plan, seven land allocation areas were created (Adaptive Management Areas are one). The Applegate AMA also contains Riparian Reserves, Managed Late-Successional Reserves and Late-Successional Reserves (pp. 18-19).

-Geology (in Part 3—Setting, pp. 19):

1. Klamath Mountains Physiographic Province in Siskiyou Mountains; “the conditions and processes within the Applegate Adaptive Management Area directly affect the health of the province and indirectly affect the long-term health of the Pacific Northwest Region” (pp. 19)

2. Numerous rock types (limestone, marble, granite, mica schist, and serpentine)

3. Varied soils (from coarse-grain sandy to silty soils and from nutrient rich to calcium-deficient soils); soil diversity contributes to diversity of vegetation and animals

4. Geologic “bridge” for plant and animal migration in all directions (the east-west Siskiyou mountains bridge the north-south Cascades and Coastal ranges, and the Klamath River provides a “corridor” from the Great Basin west to the Pacific Ocean); one of the most biologically diverse areas in North America, and the most diverse in the western US (pp. 19).

-Vegetation and Fire (in Part 3—Setting, pp. 19-24):

1. Current absence of fire is longest fire-free period in Applegate AMA in the last 300 years; fire frequency in low elevations of the watershed is estimated to be once every 7-20 years (pp. 19)

2. Native plant species: Over 100 plant species, where 39 are considered at high risk of extinction from the watershed in the foreseeable future (pp. 19); native plant communities like the oak-woodlands are disappearing due to fire suppression, logging, spread of aggressive non-native weeds, and soil erosion/compaction; native vegetation valued for ornamental and medicinal purposes (beargrass, mushrooms, cedar boughs, St. John’s Wort, tree burls) and illegal collection is a problem.  (pp. 19-20)

3. Biological diversity is high, as evident in the types of conifers, hardwoods and unique plant habitats and species; over 21 species of trees have commercial value (pp. 20).

4. Before fire suppression: stands of widely spaced large trees (pine and Douglas-fir), with grasses or light undergrowth, were common in the lower elevations; mid to upper elevations had mature “old growth” pine and fir stands, cedar and oak openings, brushfields, and patches of young seedlings; high elevations had a mosaic of native grass and stands of true fir (pp. 20); forests before fire-suppression had a higher level of diversity from trees at multiple “seral stages (pp. 21).”

5. Current conditions of vegetation: dense stands of small trees occupy the watershed, and are less fire-tolerant than the large, widely-spaced trees of the past; “overstocked” stands occur when the number of trees in an area is greater than the site’s ability to provide water and nutrients (pp. 20); the current dense stands have 2 to 5 times the density than is optimal and considered sustainable in the long term; wildfires in dense stands are intense and often “stand-replacing” or “catastrophic” (pp. 21)” due to lack of fire, large ponderosa pine and sugar pine have suffered from increased mortality, even to the extent that 75% of ponderosa pine has been lost in the last 100 years (due
to a combination of logging, fire suppression, and more recently, insects and disease) (pp. 22).

6. Fire risk and fire hazard: an assessment of fire risk for the Applegate River done in 1996; fire risk is “the chance of various potential ignition sources causing a fire, threatening valuable resources, property, and life (pp. 22); “fire hazard is a fuel complex defined by kind, arrangement, volume, condition, and location that forms a special threat of ignition (pp. 22);

7. Late successional habitat (having mature and old-growth characteristics): such reserves on south and west aspects die due to high risk of fire; need to develop such habitat on sites with a north aspect (pp. 22)

8. Competition for water: Dense conifer stands with trees less than 11 inches in diameter cover close to 30% of the federal lands in the AMA. These trees have shallow root systems that intercept water before it can get to the older pines. Thus, the older pines are weakened (pp. 23).

9. Diseases: overstocked stands that have heavy insect populations have increased risk to insects, disease or wildfire, even if the stands are still vigorous (pp. 24). Diseases create dead trees, or trees with abnormalities, that are beneficial to wildlife. 80% of spotted owl nests are in abnormally bunchy branches of Douglas-fir infected with dwarf mistletoe (pp. 23).

-Stream Areas and Wildlife (in Part 3—Setting, pp. 25-28):

1. Alteration of streams and rivers: hydraulic mining in the last century, road and dam building, logging, fire suppression, agricultural and residential development; dense stands with low vigor and high risk of insect and fire mortality (pp. 25)

2. Current conditions of streams: devoid of large wood, which is necessary for fish habitat; lack nutrients and shade; higher water temperatures; fewer pools; reduced stream flow due to irrigation withdrawals; riparian zones are narrowing due to development (making floods more of a threat); non-native species (Himalayan blackberry) (pp. 26)

3. Fish species’ current status: coho salmon, threatened; chinook salmon, proposed for threatened status; steelhead, proposed for threatened status; cutthroat trout, status review ongoing as of September, 1998; Applegate River provides spawning habitat for about one-third of all Rogue River coho even though the Applegate sub-basin is only 12% of the total acreage of the Rogue watershed (pp. 26)

4. Wildlife: the valley floor has been changed, resulting in loss of some wildlife habitat, especially beaver and fish; increased road densities and increased poaching impact most species of wildlife; species present in the Applegate River watershed are cougar, white tail deer, lack bear, numerous birds (including migrating neotropical birds) and small mammals (pp. 27) and sensitive vertebrates and invertebrates (bald eagle. Siskiyou salamander, Del Norte salamander, northern spotted owl, Townsend’s big-eared bat, California tree vole, fisher, California wolverine, and Siskiyou caddisfly; the AMA “also has the highest density of known nests of the northern spotted owl of any Adaptive Management Area” (pp. 28).

-Native Peoples of the Applegate River Watershed (in Part 3—Setting, pp. 29-30): When Euroamericans came, the Dakubetede (Applegate Athapascans) occupied the area, as well as
the Takelma (or Latgawa). The native peoples used regular burning to keep patches of forest open and maintain meadows, prairies and oak and pine savannas. Today, their descendents are members of two Oregon Indian tribes: the Confederated Tribes of Siletz and the Confederated Tribes of Grande Ronde (pp. 30).

-EuroAmerican Settlement to Present (in Part 3—Setting, pp. 30-32): The history of the valley includes British fur trappers, explorers, miners with the discovery of gold in the early 1850s, farmers, ranchers, and lastly loggers. Miners, farmers and ranchers burned the landscape to clear vegetation. The miners cleared large tracks to locate minerals. Many of the trees in the Applegate watershed are 120 years old, and have developed after the miners’ fires. In the 1900’s, fire was excluded for 80-90 years. Fire exclusion has caused large buildups of fuel and increased the risk of stand replacement fires (pp. 31-32).

  1. Physical Setting: describes the ecological boundaries of the watershed, the rural areas within it, and the two counties that comprise it (pp. 34)
  2. Infrastructure: state highway 238 transects the valley, linking Jacksonville to the southeast and Grants Pass to the northwest; no public transportation; no sewer disposal system, so each tax lot has one or more septic systems; one county park (Cantrall-Buckley Park in Jackson county), which is co-managed with the community; recreation consists of hiking, hunting, fishing, recreational driving, swimming and camping; number of campgrounds and trails on both FS and BLM lands; Applegate Lake (pp. 34-35)
  3. Ownership: of 500,000 acres of the Applegate River Watershed, 31 % is privately owned and 69% is in federal and state management; 8% is managed as private industrial timber land (consisting of 28% of the private land) and the other private land is in small parcel holdings; privately held acreage is distributed evenly between the two counties though Jackson county owners have fewer and larger lot sizes; average lot size is 18.4 acres (26.6 acres in Jackson County and 13.8 acres in Josephine County; Josephine County’s smaller lots have higher assessed valuations due to improvements such as buildings and other structures; 3 out of 4 structures, mostly homes, are in Josephine county; 41 owners have large land holdings (tax lots >300 acres), 37% of all privately held land; 4 timber companies own 22% of the private land (pp. 36-37).
  4. Zoning: “Each county has different requirements on how a parcel of land is used” (pp. 37); For the whole watershed, 67% in private land, 20% is Farm Use, 13% residential, and 0.5 % is commercial/industrial; no Tourist commercial zoning exists; Land Conservation and Development Commission adopted the Unincorporated Communities Administrative Rule in 1994. The rule enables counties to define types of rural areas in unincorporated communities and it allows an existing service area to adopts a rural unincorporated boundary (pp. 37); Jackson County contracted Rogue Valley Council of Governments to facilitate a planning process in the core communities of Ruch, Applegate and Wilderville, while Josephine County facilitated the process for Williams (pp. 38).
  5. Demographics (most data taken from above sources): Population (pp. 39); age distribution (pp. 39); race (pp. 40); education (pp. 40); health care—residents travel
outside the valley, although a family practitioner, dentist, and a chiropractor have offices in Ruch. The valley also has numerous homeopathic practitioners, massage therapists and midwives. The Applegate Health Cooperative, an affiliation of nurses and community residents explored the idea of developing a nurse-run primary care clinic in the Valley. A survey by Oregon Health Sciences University had 38% respond that the area had a definite need for local health care services, and 37% responded that probably there was a need. However, those surveyed tended to accept the average 24-29 miles driven to a health care facility as reasonable. They could not suggest a more convenient location for all residents. 58% of those surveyed seek health care in Medford, 22% in Grants Pass and 9% in Ashland. The unmet health care needs were senior health care, well child care, ambulatory and urgent care, and low cost health care (pp. 40-41); housing (pp. 41)

6. Economic Setting (most data taken from Demographic and Economic Assessment by Reid and Young) (pp.42-44): Employment (pp. 42); Income—the poverty rate in surrounding counties is higher than the 1989 rate. The watershed has a slightly higher rate of both high-income and low income households than the two-county region, perhaps due to a higher average price of homes, higher mean household income, and higher mobile-home occupancy (pp. 43); Unemployment—Jackson County has a lower unemployment rate, perhaps indicative of higher level of self-employment (pp. 43-44); Payments in Lieu of Taxes—a drop in timber receipts from USFS and BLM from 1989 to 1996 have decreased county services provided to Applegate Residents such as sheriff patrol, rural action team station in Ruch, the District Attorney’s office and related county offices and faculties, health clinics and outreach, juvenile protection and detention programs and road maintenance (pp. 44).

7. Social Setting (pp. 45-52): Community Profile—similar to any rural resource-dependent communities in transition. The economic and demographic flux of the region results in an “identity” confusion that challenges the ability of a community to agree on a common vision for the future. “While the Applegate communities can be viewed as vulnerable to these economic, political and personal stresses, their resources and capacity have allowed them to move proactively and address these changes. Fearing a future as bedroom communities of housing developments, community members seek to maintain their agricultural and resource-based heritage while developing opportunities for participating in the growing service sector. The diversity of activities in the valley, both formal and informal, are related to the Applegate community’s leadership, social networks, social capital and community capacity” (pp. 45). Community Leadership—Persons and groups with vision and skills have caused action in a wide range of community development, environmental protection, economic, and social support arenas. The social and economic exchanges form a social infrastructure, which makes the community more resilient and adaptable to outside forces (pp. 45-46). Social networks—Networks help to mobilize individuals and groups while facilitating the flow of resources (information, mutual monetary aid) to address shared problems. “An understanding of social networks...has provided forest managers new access to a diverse array of previously overlooked publics and issues” (pp. 46). Community Capacity and Social Capital: Community Capacity, the collective ability of residents to respond to change, helps the community to capitalize on positive dimensions of changes while absorbing social
stressors. The Applegate has both community capacity and social capital, “the ability to reach to change, solve problems, and work together for a common good” (pp. 46). Newcomers and “midtimers” have helped strengthen “the links between healthy communities, stable local timber industries and healthy forests” (pp. 47); Community Conflict and Diversity of Values: sense of tolerance for different life-styles and values; groups in the community understand that conflict is ubiquitous, multi-faceted and must be addressed in a positive way; class and status differences, and differences in economic assets between those living in the valley and those moving from urban areas, result in conflict; many newcomers have education, affluence, political competence and are “advocates of change” (pp. 47). The four key cultural findings of the community assessment (see Preister, 1994) were listed as well (pp. 48). Community Organizations are listed in a table (pp. 49). The valley has over 20 community groups, many are issue based (pp. 48). The groups have projects and programs that address important issues to solve “problems in a context of natural resource protection and enhancement, economic resiliency, and community capacity” (pp. 50). Applegate Partnership: “The Applegate Partnership is a community-based group involving industry, conservation groups, natural resource agencies, schools and residents cooperating to encourage the use of natural resource principles that promote ecosystem health and diversity” (pp. 50). It formed in 1982 to resolve resource conflicts (pp. 50-52). It is known throughout the U.S. and the world as a coalition that is finding ways for communities and forests to be mutually sustainable. The Applegate Partnership has empowered community members to form groups to address social, natural resource and economic issues. One group, the Applegate River Watershed Council, started as a subset of the Partnership. Now, it is under the State Watershed Management Group umbrella; it focuses on riparian restoration on private lands. The Council has completed a Watershed assessment, state-funded riparian restoration projects, water quality monitoring, has shared informational resources with the BLM, the USFS, has funded the Applegator community newsletter, involved children in tree planting projects, and sponsors public meetings about water issues (pp. 50-52). A Vision for the Future: The strategic plan was a process where the community developed goals for the future, plans to reach them, ways the goals interconnect with social, economic and natural systems. This section in the Applegate Adaptive Management Area Guide contains a listing of natural resource goals discussed in the strategic planning process. From the Strategic Plan, local development efforts have emerged. Two examples are the creation of the “Applegate Direct,” a directory of businesses in the watershed, and the marketing of small diameter wood products. A valley-wide community and economic development organization is also emerging. “This ‘umbrella’ organization will facilitate community-based planning and implementation of neighborhood and business improvement projects that seek a healthy and dynamic balance between ecological, economic, and social concerns” (pp. 54). To assist in the practical application of an effective public involvement process, the land management agencies have published a Public Involvement Guide (Appendix E). (pp. 53-54).

-Interagency Organization (Part 4, pp. 55-65): The Northwest Forest Plan of 1994 “was the first time in history that public forest management of the northwest was evaluated as a
whole across the lands managed by both the Bureau of Land Management and the Forest Service” (pp. 55). Since the plan, which created the Applegate Adaptive Management Area, watershed analyses, plant and animal species surveys and management, interagency cooperation, and consideration of humans to be part of the ecosystems have been part of forest planning. This section describes how the Applegate AMA is structured and how the agencies cooperate (pp. 56-57), participation and community interaction (pp. 57-59), and ongoing projects in the area:

1. **Landscape projects** “have been driven by forest health concerns, primarily watershed restoration, reduction of fuel hazard, increasing resistance of remaining trees to insects and fire” and have involved timber sales that used “thinning from below” instead of clearcutting (pp. 59).

2. **Watershed restoration projects** involve replacing culverts, improving roads to reduce sediment and erosion, planting native vegetation and enhancing riparian areas through in-stream work (pp. 60).

3. **Carberry project**: Intended to develop new approaches for addressing fire hazard and forest health issues (pp. 61).

4. **Landscape design** in the Little Applegate used a locally-based volunteer task force to answer the question “What is the balance between short-term use of forest resources to sustain jobs, quality of life, etc. versus long-term moral and ethical stewardship for future generations?” (pp. 62).

5. **Other innovative projects**: link short-term objectives to long-term plans that outline social and ecological goals; experiment with a variety of innovative contracts, such as trading products for services, have multi-year renewal; using revenues from commercial enterprises that benefit from the project for the creation of “trust funds” to manage small diameter material; test new harvest systems and how a log sort yard operates; and test the “greenwood-certification” process to find if it will result in higher market values for wood products and drive better ecosystem management (pp. 63).

6. **The Small Diameter Materials Program**, initiated in 1995, addresses problems related to density management activities. The community and agencies recognize that forest stand overstocking has resulted in decreased forest health, increased fire hazard, and small diameter trees, which are not marketable. Therefore, the program intends to “maximize the economic impact of available forest resources by capturing as many opportunities as possible to add value to the resource before it leaves the region, and satisfy ecosystem management objectives” (pp. 63-64).

7. **The International Model Forest Project**: “The Applegate Adaptive Management Area was one of three areas in the United States invited to join an international system of forests and communities focusing on learning about sustainability” (pp. 64).


**Systems** (Part 5, pp. 66-131): “This section of the Adaptive Management Area guide describes various ‘systems’ (e.g., Terrestrial, Aquatic, Social and Economic, Organizational, and Applied Learning)—recognize that all these systems are essential elements to the whole
and each affects all others. *Ecosystems are totally integrated and any separation is artificial.* The reason these systems are broken out in this Guide is purely administrative to increase the ease of tracking issues and actions for the many components” (pp. 66). This section of the Guide sets the stage, describes each system, and lists the issues pertinent to each system. It also includes strategies for implementing specific actions to address these issues.

1. **The process of landscape analysis and design:** Applying the process at the entire watershed scale, which includes both public and private lands, will be a challenging endeavor. Therefore, the guide asks questions: “how can a strategic plan be designed across the entire Adaptive Management Area to address the big picture over time and space” (pp. 66)? “How can we ensure that there is integration between watershed analyses, protected areas, and fire hazard reduction projects? What can we do to plan good projects for purposes such as reducing fire hazard, improving fish and wildlife habitat, and ensuring biological diversity and functioning ecosystems over such a large area and over time? How can we work effectively together in this landscape design and insure we are incorporating information into on-going projects” (pp. 67)?

2. **Environmental History:** Information about past patterns in climate and resulting vegetative patterns, both in long-term changes (thousands of years) to short-term fluctuations (hundreds of years) will aid in understanding what the area looked like in the past and what it might be like in the future (pp. 69-70).

3. **Terrestrial Systems** (pp. 70-82): separated, but closely entwined with aquatic systems, which are often defined by the presence of moisture-loving plants; “based on a number of criteria, the forests in the Applegate Adaptive Management Area, and in the watershed as a whole, are not considered ‘healthy’ or fully functioning” (pp. 70); LANDSAT Imagery (through remote sensing) show the extent of alteration to the ecosystem, including loss of old-growth habitat and increased growth of dense trees (pp. 70). A listing of the questions relating to terrestrial systems that the agencies want to address follow:

   • **#1:** “How can we learn about improving forest health and test the validity of what we have learned? Specifically, how can we increase vigor of trees across the landscape to increase their vitality and resistance to wildfire, insects and disease? How can we increase the entire ecosystem’s ability to ‘respond to a variety of stressors, natural and man-made’ (Lackey, 1996)” (pp. 72)? (Strategies/Actions, pp. 72-73)

   • **#2:** “What can we do to decrease the risk of large-scale high-intensity fires that would threaten life, property and special habitats” (pp. 74)? (Strategies/Actions, pp. 74-75)

   • **#3:** “How can we maintain and restore late-successional habitat and the connectivity between those habitats over long periods of time and over the landscape? (By ‘restoration,’ we mean to ‘move’ or return the system toward what it was before Euroamerican settlement or some appropriate variation. Many believe returning the system to previous conditions is no longer possible due to the increase in and effects of population. However, movement towards those conditions is, in many cases, desirable)” (pp. 75). (Strategies/Actions, pp. 75)

   • **#4:** “How can we test, and learn about, low-impact transportation and harvest systems in the Adaptive Management Area that will: (1) provide effective means
of removing low volume-per-acre material, (2) integrate transportation needs with other resource objectives (e.g., wildlife, fire suppression), and (3) reduce the number of roads where appropriate” (pp. 75)? (Strategies/Actions, pp.75-76)

- #5: “What can we do to learn more about prescribed burning to meet objectives such as reintroducing fire’s role into the ecosystem, encourage late-successional habitat, increase wildlife habitat associated with oak-woodlands, and other fire-dependent systems? How can we gain understanding and support from communities in prescribed burning” (pp. 76)? (Strategies/Actions, pp.76)

- #6: “What monitoring measures can we use to evaluate retention of structural and species diversity in thinned stands” (pp. 76)? (Strategies/Actions, pp. 76)

- #7: “How can we increase understanding about sensitive species in the Applegate, focus on filling information gaps, and improve management of sensitive species. How can we better understand fragmentation of wildlife habitat across the Applegate River watershed” (pp. 76)? (Strategies/Actions, pp.76-77)

- #8: “What tests and monitoring can we initiate to refine the coarse woody material standards and guidelines for the Applegate Adaptive Management Area? (Coarse woody material refers to the portion of the tree that has fallen or been cut and left in the woods. Usually refers to pieces at least 20 inches in diameter)” (pp. 77). (Strategies/Actions, pp. 77)

- #9: “What special efforts are needed to protect uninfected Port Orford cedar in the Adaptive Management Area from the root disease caused by Phytophthora lateralis” (pp. 77)? (Strategies/Actions, pp. 77-78)

- #10: “What inventory should be used for snags? (Snags are dead or decaying trees with characteristics which make them suitable for bird, bat, and other wildlife habitat)” (pp. 78). (Strategies/Actions, pp. 78).

- #11: “What can be done to encourage optimal long-term site productivity” (pp. 79)? (Strategies/Actions, pp. 79)

- #12: “What can we do to maintain and increase native plant communities? What can we do to slow the spread of non-native species? For instance, what can we do to restore the oak woodlands, grasslands, and pine plant series to more natural conditions (conditions more similar to what existed 1750-1850, before Euroamerican settlement)” (pp. 79)? (Strategies/Actions, pp. 79-80)

- #13: “What can we do to ensure diverse tree species are maintained after any harvesting” (pp. 80)? (Strategies/Actions, pp. 80)

- #14: “How can we promote the vigor and increase the number of large trees? Large, older trees are needed throughout the watershed to increase habitat connectivity” (pp. 81). (Strategies/Actions, pp. 81)

- #15: “How can we learn about harvesting, utilizing, and marketing of small materials? What can we do to develop a “value-added” component to timber sales, in which that factor could be used in awarding sales” (pp. 81)? (Strategies/Actions, pp. 81-82)

- #16: “How can we fund the landscape treatments needed” (pp. 82)?

(Strategies/Actions, pp. 82)

4. Aquatic Systems (pp. 82-91): Riparian areas are places associated with water, especially where plants are rooted in the water table. The Applegate has native and non-native fish species. Of importance are anadromous and resident salmonid fish.
These are fall chinook, coho salmon, winter and summer steelhead trout, rainbow and cutthroat trout. Coho salmon is listed as “threatened” and the steelhead trout is proposed for listing under the Endangered Species Act. Environmental changes, fishing, introduction of warm water fish, loss of riparian vegetation, hatchery programs and habitat conditions in the Pacific Ocean result in diminishing numbers of salmonids. Native non-salmonids are Pacific brook lamprey, Pacific lamprey, Klamath small scale sucker and reticulate sculpin. Non-native fish are populated in the lakes and reservoirs and provide recreation. Besides fish, other animals (mammals such as beavers, amphibians such as frogs and salamanders, and otters and birds such as herons, egrets, and winter wrens) and humans depend on water and floodplains. Agricultural and rangelands use large amounts of water in the mainstem and smaller tributaries (pp. 82-83). In drought months, the available wetted habitat diminishes. Many riparian areas are on private lands, but agencies address the care of riparian reserves through restoration efforts on public lands (pp. 84-85). The following questions approach steps in improving the aquatic systems. The Guide reminds people to ask, in a decade, how successful people have been in protecting and/or improving riparian areas and improving the quality of life in the Applegate River watershed (pp. 85).

1. “How do we develop a strategy for rehabilitating and protecting riparian and stream habitats” (pp. 85)? (Strategies/Actions, pp. 85-86)
2. “Which restoration projects will get highest priority” (pp. 86)? (Strategies/Actions, pp. 86-87)
3. “What criteria should be used in considering selective thinning or prescribed burn treatments in riparian areas” (pp. 87)? (Strategies/Actions, pp. 87)
4. “How can agencies work with private landowners (both corporate and individual) and other agencies to achieve common goals” (pp. 88)? (Strategies/Actions, pp. 88-89)
5. “What short-term and long-term monitoring should be done to track success of restoration projects and natural recovery” (pp. 89)? (Strategies/Actions, pp. 89)
6. “What can we do to continue to learn about health and restoration of riparian and aquatic habitat in the Applegate River watershed? For example, how are intermittent streams functioning? Are the riparian reserves (or buffers) currently being retained in projects functioning as expected” (pp. 90)? (Strategies/Actions, pp. 90-91)

Social and Economic Systems (pp. 91-93) “Like ecosystems, social systems are networks of interdependent parts that affect one another so that change in various parts affects all the other parts as well.” and eventually the system as a whole (pp. 91). In this way, social systems are interconnected with the natural resources and public land agencies, as well as the economic activities in the Applegate valley (pp. 91). The shift in forest products from large to small diameter timber has impacted the local and regional economic systems (pp. 92). Density management through brush clearing or burning has affected social systems; the former draws from a migrant labor force and the latter produces smoke. Despite these impacts, most residents support a “balanced” approach to forest management, oppose clearcuts but desire selective cutting, but do not agree with how to decrease fire hazard and risk or deal
with “interface” or water issues. A small minority of residents opposes any management on federal lands (pp. 92).

- #1: “What can we do to create more local employment opportunities” (pp. 93) (Strategies/Actions, pp. 93)
- #2: “How can we increase the effective interaction between citizens interested in the Applegate Adaptive Management Area and agency personnel? How can we better engage the communities in local problem-solving? How can we better include local knowledge in our projects? How can we make collaboration an integral part of our approach to managing in the Applegate” (pp. 93)? (Strategies/Actions, pp. 93)
- #3: “What can we do to increase opportunities for pre-commercial thinning, harvesting small diameter poles, and firewood cutting” (pp. 93)? (Strategies/Actions, pp. 93)
- #4: “What future timber sales are anticipated in the Applegate Adaptive Management Area that might affect the economy of the area” (pp. 93)?

6. Interagency Organization (pp. 94-115): This section identifies barriers and approaches for creating change and improvement in the agencies and organizations responsible for managing the AMA. The questions and strategies/actions include: “focusing on desired outcomes, work to overcome barriers in non-threatening ways, add value in every effort towards attaining desired outcomes, attain successes as quickly as possible, reward success well, model desired behavior” (pp. 95). The common purpose of adaptive management for citizens, managers and scientists is learning to achieve sustainable ecosystems (pp. 96). Several subsections address questions and provide guidance for agencies and the public: guidelines for project design (pp. 100-102), community interaction (pp. 102-107), timber sale issues (pp. 107-110), small diameter material (pp. 111-114), and the International Model Forest Program (pp. 114).

7. Applied Learning (Research and Monitoring) (pp. 115-131): This term “includes both research and monitoring programs and is an overall approach to learning by practitioners. The Applegate Adaptive Management Area approach to research and monitoring is community-based; it is a collaborative model involving citizens, scientists, and managers. The essence of this approach is use of adaptive management principles, or ‘Do it, learn, and do it better’” (pp. 115). This section describes the agency scientists and working groups, as well as workshops for the community, that review research and monitoring projects, provide expertise, and help design and implement on the ground projects. It offers questions and strategies/actions for research and monitoring which would be useful to someone finding and managing data for indicators. It also summarizes four research projects that relate to the goals and objectives of the Applegate Adaptive Management Area (pp. 122-131). The areas of highest priority for research and monitoring in the Applegate AMA follow:

- “Creating and maintaining late successional forest and riparian habitat conditions
- Reducing fire hazards (effectiveness and integrating with maintenance of desired habitats)
- Increasing the vigor of conifer forests and reducing susceptibility to insect and disease mortality
• Developing effective community participation
• Integrating timber production with wildlife and fishery habitats (including the maintenance of water quality)
• Maintaining soil productivity as indicated by physical and biological soil characteristics
• Inventorying, harvesting, and using small diameter material
• Restoring native grassland, shrubland, and hardwood plant communities
• Developing low-impact logging and transportation systems
• Developing inventories and assessment of a wide variety of forest resources
• Exploring more effective institutional approaches to managing the Adaptive Management Area beyond the traditional agency structures” (pp. 118).


• General Structure of Publication: broken into six chapters. The introduction clarifies the setting, methodology, objectives of the assessment, and the organization of the report. Chapter two, a social and economic overview of the Applegate Valley, identifies social and economic trends and valley-wide issues related to forest management and examines census data. Chapter 3 describes the key publics that reside in the valley as well as their important issues. Chapter four describes the five neighborhoods of the valley and their issues, while chapter five focuses on recreation issues for people who make use of the valley. The last chapter makes recommendations for improving the effectiveness of public participation in forest management and in the Applegate Partnership. Since residents related the issues to RIEE, I assume that they are important to the community and not just to the Applegate Partnership.


• Quotables relating to the creation of a Community Indicators Project: The subtitle, listed on the cover, is “Sustainable Forests, Sustainable Jobs and Sustainable Communities.” A definition of an issue: “For the purposes of this report, an issue is a statement which can be acted upon and reflects a desire for change on the part of the issue holder” (pp. 42). Preister also discusses indicators when showing how a common history develops: “As this common history takes shape, it can point to the important themes which come up repeatedly, for example changing patterns of land ownership, different uses of the valley’s water. These themes can provide a starting point for building a set of indicators which can help the community start monitoring its own health, just as we are trying to develop indicators which help us watch the health of the Applegate ecosystem. As these indicators take shape, the community can begin thinking together about what it wants the community to look like in the future. As the saying goes, ‘If you don’t know where you’re headed, you’ll never know whether you get there.’ The Applegate area, a leader in the region in so many ways, again has the opportunity to blaze a new path by taking this sort of proactive approach to thinking about its future. The level of commitment and tenacity which so many of you have
demonstrated in working for the protection and continuity of this community, can be your most powerful asset in building a future which affirms the commonly held desire for a healthy, abundant and peaceful future” (pp. 121).

- **ISSUES:**

- **Chapter Two: Social and Economic Overview of the Applegate Valley**
  1. **Social and Economic Trends Identified by Residents:** Decline of local employment base—local residents must commute, causing traffic to be the number one community complaint; farms and ranches not self-sufficient, requiring outside income for viability; “fewer ties to the land for economic livelihood; in-migration and rising population, often stereotyping Californians as the in-migrants; increased demand and cost of land/housing caused from in-migration, making low-income people consider out-migration; high property values; increasing crime (at a faster rate than the population); higher population density, causing more homes in remote areas. (pp. 6-7)
  2. **Statistical Overview:** Statistics presented on land ownership, population, demography (Table Two in the publication compares sixteen key demographic characteristics of the Applegate Valley with Jackson and Josephine counties combined), employment and personal income, and in-migration. These data will be useful in determining and measuring indicators. (pp. 7-17)
  3. **Key Cultural Findings:** These represent findings that are shared by the valley as a whole: “the land caretaking ethic is strong and pervasive” across a range of publics; “oldtimer/newcomer themes characterize local discussions;” “the rural culture still works;” “the present caretaking system is stretched to its limit” (pp. 18-26).
  4. **Valley-Wide Issues Related to Forest Management:** “a common vision of ‘balanced’ forestry practice” (pp. 26-28); water issues (including a shortage of water/declining water table, ditch maintenance, newcomers and farmers’ use of water, loss of water rights, savage rapids dam, fish, the regulatory context) (pp. 28-34); “private land logging” (pp. 34-38); “firewood demand” (pp. 38-39); “interface concerns” such as predators and wildlife, fire, trails and access (the interface is the increased and dispersed population in rural areas that change the urban/forest interface) (pp. 39-42).

- **Chapter Three: Key Publics and their Issues:**
  1. **The Timber Sector**, as represented by millworkers, loggers, large timberland owners, and firewood cutters. The decline of timber production on public lands in the Applegate Valley since 1990 is prevalent in facts, listed issues, and quotes from the timber sector. (pp. 42-46).
  2. **The Agricultural Sector**, as represented by ranchers, farmers, dairy farming, and specialty operations. (pp. 46-50)
  3. **The Mining Sector**, Two kinds of mining exists in the Applegate Valley: recreation panning and dredging, and mining as it pertains to the Mining Law of 1872 (pp. 51).
  4. **The Alternative Community**, also called the “counter culture.” RIEE identified its three issues: local work to avoid commuting, forestry issues (like biodiversity for its own sake, no clearcutting or old growth entry), and interest in forestry-related employment (like special or new forest products and stewardship contracts). (pp. 52-54)
5. **Wildcrafters** “are people who make a part or full-time living gathering special forest products for sale including medicinals, herbals, decorative plants, and edibles. (pp. 54-55).

6. **Environmentalists**, the “middle-class commuters and the alternative community,” but “environmentalist values are found within the full range of publics, including agriculturists, middle-class commuters, the alternative community, and business people” (pp. 55-56).

7. **The Middle Class**, which captures “a large number of valley residents engaged in trade and services occupations” (pp. 56). RIEE categorizes the middle class into three sub-groups: commuters, locally-based businesses, and “lone eagles,” entrepreneurs who could live nearly anywhere and still do their jobs (pp. 56-57).

8. **The Retirement Community** (pp. 57-58).

9. **Other Publics**, such as women, adolescents, Christian groups, and Hispanics. (pp. 58).

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**Chapter Four: The Five Neighborhoods of the Applegate Valley and Their Issues** (pp. 59-77) “These units were determined by asking people to define what their ‘area’ or ‘neighborhood’ was, and from interview data related to social networks, work routines, recreation patterns, and geographic boundaries” (pp. 59).

1. **The Upper Applegate Neighborhood** (pp. 59-64): community center (pp. 62-63); Applegate Christian Fellowship, which has a regional, not local, congregation (pp. 63); interface issues such as fire, cougars, and road density (pp. 63); affordability (pp. 63-64); the Barter Fair, which is divisive because the alternative community supports it, but others oppose it due to traffic, trash, noise, and perceived drug use (pp. 64).

2. **The Applegate Neighborhood** (pp. 64-65): land use and zoning, concern over how zoning laws are re-written to develop 5 acre parcels (pp. 65).

3. **The Williams Neighborhood** (pp. 66-71): schools, lack of funding (pp. 69); forest management, especially distrust toward the BLM, extremists on both sides, and roads (pp. 70); community life, like contention from county roadside spraying, keeping the community active, appreciating its diversity, and being a “culdesac community” (pp. 67, 70-71); and land use, such as rezoning (pp. 71).

4. **The Murphy Neighborhood** (pp. 71-73): development plans of Copeland Paving, Sand and Gravel (pp. 73); the Applegate River and its fish (pp. 73); property values (pp. 73).

5. **The Wilderville Neighborhood**, listed as one of 12 census tracts in Oregon that was “severely distressed.” To get this ranking, it met four of five criteria based on the 1990 census: a poverty rate above 27.5%, the percentage of families headed by women above 39.6%, a high school drop out rate greater than 23.3%, a male unemployment rate above 46.5%, and families on public assistance at 17% or greater (pp. 74). Despite these figures, Wilderville has many upper or middle class commuting residents who can afford the high real estate prices. The listed issues are the recent proposal to resurrect Marble Mountain Mine (pp. 75-76), land use and zoning issues (pp. 76), whether forest service lands should be opened to recreation (pp. 76), and private land logging (pp. 76).
“Methods for determining recreation use in the Applegate Watershed consists of employee observations, trail cards, registration cards at regulated campgrounds and road counters. Historical data are influenced by factors such as collection method, weather, water levels, and management activity. Tracking use within the dispersed areas is difficult and time-consuming” (pp. 84). The report does present data, such as for visitor use at Cantrall Buckley Park from 1989 to 1993. When developing indicators, one must consider which data are available as well as how the data are gathered. The chapter identified user group populations and their issues. Then it discussed resident issues and agency concerns.

1. **Hikers, Backpackers**: “livestock in backcountry” (pp. 88); motorcycles (pp. 88); desire for more trails and loop trials, or maintenance of existing trails (pp. 88).

2. **Nordic Skiing**, which occurs on the crest of the Watershed. The Nordic Club is considering a hut-to hut program where skiers and other backcountry users could camp using the huts along their route. Vandalism is therefore an issue (pp. 88).

3. **Equestrian, Llama**: poison oak intrudes on the Sterling Mine Ditch Trail (pp. 89); “access to existing trails is complicated by land ownership and steepness of terrain” as well as the lack of shoulders on most roads (pp. 90); lack of facilities for overnight camping (pp. 90); changing regulations and designations of trails and roads (pp.90); “differences in user needs” (pp. 90).

4. **Hunters** (pp. 90-93): access, such as when public domain exists above private lands or private roads, or when agencies close a road for a particular reason (pp. 91); hunting revenues are not always used for the cost of wildlife management, and many hunters feel these costs should be shared with other recreationists (pp. 91); residential/forest interface conflict, which may cause diminished habitat and could force predators to go to populated areas (pp. 91-92); the increase in the number of hunters (pp. 92); hunters want to be involved in decision-making processes (pp. 92); the impact of the hunting season on does during mating times (pp. 92); hunter harassment (pp. 92-93); the introduction of llamas may introduce new diseases to wildlife (pp. 93); other issues (illegal guides, vandalism, hunting from vehicles, and littering) (pp. 93).

5. **Fishers** (pp. 93-95): access is difficult since the bottomland is in private ownership (pp. 93-94); water flows, including the perception that private landowners have oversubscribed water rights and do not protect riparian areas (pp. 94); dams (pp. 94); cattle in the creeks may impact spawning beds (pp. 95); regulations about not keeping fish (pp. 95); confusion and a lack of communication about grand requests for watershed projects (pp. 95).

6. **Off-road Vehicle Users** (pp. 95-96): access (pp. 95-96); rights of way, which would make trail used designated in certain areas after purchasing a right of way (pp. 96); loop trails are preferred by ORV users (pp. 96); road closures, ORV users oppose closures (pp. 96); ambiguity over whether ORV use is allowed in certain areas (pp. 96).

7. **Snowmobilers** (pp. 96-97): access within the snowline which would allow for vehicles with trailers to park and turn around (pp. 96); sharing trails with skiers (pp. 96-97).

8. **Motorized Vehicle** (pp. 97). Road 20, the Mt. Ashland Loop Road gets heavy travel from sightseers.
9. **Bicyclists** (pp. 97-98): poison oak near the lake and the Sterling Mine Ditch Trail (pp. 98); access to logging roads and loop trails and a shortage of beginner and intermediate trails (pp. 98); trail quality diminishes when horses use them in wet conditions (pp. 98).

10. **Hang gliders** (pp. 98-99): the Woodrat landing site that hang gliders use is on the market (pp. 98); development of the site by the BLM, which would include restrooms (pp. 99); vandalism and trash in the area (pp. 98, 99).

11. **Rafters** (pp. 99): The river was more popular with rafters before the construction of the dam.

12. **Multi-Use Trails Coalition** (pp. 99-100): boundaries may inadvertently exclude certain recreational uses (pp. 99); are access decisions made by those who live in an area or those who use the area (pp. 99); multiple use management should permit users to access a variety of elevations (pp. 99); agency maps do not reflect use patterns (pp. 99); members of the group are not satisfied with how agencies involve the public in decisions (pp. 100); signs on trails, should be posted, visible, include information on regulations (which differ across agency boundaries), mileage, difficulty and orientations (pp. 100).

13. **Resident Issues** (pp. 100-101): a petition against off-road vehicle use in the late 1980s (pp. 100); the use of dogs in hunting, or the use of electronic equipment on hunting dogs (pp. 100); changes in wildlife patterns, either from deer eating gardens or from decreased wildlife siting (pp. 101)

14. **Agency Concerns** (pp. 101-105): impact of recreation on habitat (pp. 101); poaching (a study showed that 20% of elk monitored with radio collars were poached) (pp. 101-102); funding issues due to changing forest management and the fact that many users, like hikers, don’t have the money for trail maintenance (pp. 102); interagency coordination (pp. 102); agency/public interaction (pp. 102-104).

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- **General Structure of Publication:** broken into an introduction, surveys of Applegate watershed residents and businesses, Applegate Watershed Resident profiles (which discusses the 1990 census data and compares the data to the 1980 census), perspectives on land use and ownership of private lands (which analyzes Jackson and Josephine Counties’ Assessor data), timber harvests in the watershed and two-county region, and overall conclusions. The report is an economic assessment and is a companion report to *Words into Action: A Community Assessment of the Applegate Valley*, prepared in 1994 by Kevin Preister of the Rogue Institute for Ecology and Economy. It is an economic baseline report. Four major questions motivated this study:
What do Applegate Watershed residents and businesses perceive as local economic issues that affect their lives and livelihoods?

What are the characteristics of the Watershed residents, and how do these compare to those of Jackson and Josephine County residents in general?

In what ways is the Watershed economy related to a larger regional or national economy in terms of linkages based on Watershed business sales, employment and timber resources? In particular, what role does the Watershed play in regional timber harvest and processing?

What are the land use and ownership patterns in the Watershed, and how might these affect future economic opportunities? (pp. 7)?

**Financial Support:** U.S. Forest Service and Southern Oregon State College.

**Quotables relating to the creation of a Community Indicators Project:** “Since the economic character of the Watershed is in transition, the main objective of this study is to document the characteristics of Watershed residents, particularly economic characteristics, and profile the economic activity of area business” (Reid, Young, and Russell, 1996). The entire report is a useful resource for determining both issues and indicators of the economic sector of the Applegate community.

**ISSUES:**

*Findings of the Resident Survey* (pp. 14-19). Those surveyed responded to the question, “Could you take a few moments to talk about two or three major economic issues facing your community” (pp. 16-17). The issues, listed in order of frequency from highest to lowest:

1. **Timber harvests and the logging industry:** concern about unemployed industry workers; the need to continue harvesting, but in a managed way that satisfies both industry and environmentalists; timber harvests shifting to private land; the effect of reduced logging on other industries and on funding public services, such as schools; environmental concerns of the logging industry (pp. 17).

2. **Agriculture and ranching:** the development of farm land and diminished lifestyle of farmers; increased environmental constraints on farmers (such as with herbicides and water); declining price of cattle and declining income of ranchers (pp. 17).

3. **Water problems:** lack of diverted water rights with more water left for fish; increasing population in a dry valley with a lack of water (pp. 17).

4. **Unemployment/Income:** “lack of employment in the Applegate Watershed;” concern that young people entering the work force have few local job opportunities and may have to leave the area; concern that displaced farmers and loggers have no other marketable skills; service sector jobs with low income (pp. 18).

5. **Population change and retirees:** concern that the watershed is becoming a retirement community, and that the goals of retirees conflict with the rest of the community; concern with how the retiree population changes the economic base from a production to a service economy (pp. 18).

6. **Economic development:** wish to have more small business and home-based business in the area to reduce the number of commuters and provide local employment; “desire for more tourism in the Watershed” (pp. 18).

7. **Subdivision of land:** concern over the scarcity of undeveloped land as economic pressures from rising property values cause people to subdivide property; economic, lifestyle and environmental changes result from this subdivision; concern that property rights are violated by zoning restrictions (pp. 18).
8. Government intervention: some are “bothered by governmental constraints on business, with too many regulations that impede the ability to run a successful business,” or are annoyed with regulations, particularly environmental constraints, imposed on private property owners (pp. 19).
9. Commuter problems: congested traffic on the Applegate’s rural and limited roadway system, particularly from those commuting outside the valley to work (pp. 19).
10. Lost economic ties to the land: “several residents were upset to see the loss of economic ties to the land. Concern that fewer people are oriented toward resource-based and local economic activities” (pp. 19).

-Findings of the Business Survey (pp. 27-28). The businesses surveyed answered “open-ended questions asking what economic issues Applegate business owners feel affect their ability to conduct a successful business” (pp. 27). The issues, listed in order of frequency from highest to lowest:

1. Forestry: Businesses that mentioned the timber issue are either concerned about the lack of timber cutting, or the effect of lower timber harvests on the overall economy, or the effect of timber industry unemployment on their client base and sales. Other businesses mentioned that logging should not continue because it is economically cyclical and that the Applegate industries should diversify away from timber cutting (pp. 27).
2. Economic development: a majority of businesses mentioned that high technology industry needs to be a part of the Applegate watershed. Others thought that tourism should be developed. “In all cases, respondents felt industries which can withstand economic downturns and create jobs for locals need to enter the area (pp. 27).
3. Population change and retirees: Business respondents were in favor of retirees, unlike in the resident survey; they are appreciative of the money that retirees bring to the economy during the current time of unemployment and turbulent local economic conditions. However, some considered the increased population would hinder, rather than help, their business (pp. 27).
4. Unemployment: Workers’ and residents’ disposable income is reduced, which affects the sales of many businesses (pp. 27-28).
5. Government Intervention: Some businesses wanted a decrease in a variety of taxes, regulations, and restrictions, because they thought the regulations hindered their business.

-A Discussion of the 1990 Census Data (pp. 41-56). This section, and the raw census data, are sources for information on indicators. The Analysis of Demographic and Economic Aspects of the Applegate Watershed describes—in detail—the census data for the following topics:

1. Population and Residences: the total population of the Applegate valley, and how that population is distributed across Josephine and Jackson counties, and the small section in California; comparisons of the demographics of the Applegate region to each of the two counties; patterns of movement and the timing when people moved; construction of new housing units and type of housing (pp. 41-43).
2. Income: two summary measures of income—per capita income and mean household income—for the Applegate area and for the two counties. However, “these summary
measures of income likely mask important differences in income distribution that may exist in rural areas” (pp. 43). Average home values, Labor Force Participation Rate (LFPR), female LFPR, unemployment (UE) rates, self-employment rates, mean household income, location of work, and structure of employment by industry and occupation within the Applegate region are compared to the two counties and occasionally to the national figures (pp. 43-47).

3. **Educational Attainment**: percentages of residents in the valley who have had college experience of any kind, or who have received a Bachelor’s, graduate, or professional degree, or who have dropped out before receiving a high school degree are compared to the two-county region and to each county individually (pp. 48).

4. **Summary of trends which may support or contradict issues based on surveys**: The Applegate does not have a higher retirement-age population than the surrounding area; in-migration is larger in the surrounding area than in the Applegate; More houses have been constructed in the adjoining area, not in the Applegate, though a larger percentage of recreational housing does exist; the Applegate has a larger percentage of mobile homes, but home values are higher on average; the watershed has lower labor force participation rates and lower unemployment rates than the two counties; compared to the surrounding area, fewer people work in their county of residence. Likewise the differences between these figures in Jackson Applegate are compared to Josephine Applegate (pp. 48).

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**Comparison of the 1980 and 1990 Census Data** (pp. 57-71): “There is great interest on the part of community groups and agencies to better understand how the demographics and development patterns of the Applegate Watershed region have changed over time, particularly over the past decade” (pp. 57). These patterns are compared for shifts in population (pp. 57), employment (pp. 58), and income (pp. 58-59). They either uphold or refute concerns identified in the resident surveys.

**Perspectives on Land Use and Ownership of Private Lands: An Analysis of Jackson and Josephine Counties’ Assessors’ Data** (pp. 62-71). Both counties provided taxlot information, which includes assessed valuations (both land and improvements), zoning, legal owner, acreage, and classifications of building types. However, the methodologies of land assessment and definitions of land or improvement classifications differ between the two counties. Regardless of any disparity, the data indicate trends on development, population, private land use, and settlement patterns for the last few decades.

1. **Findings of the County Assessor Databases**: Compared for Josephine Applegate and Jackson Applegate: distribution of privately held land; average lot size; assessed valuation (the sum of property and improvement values); differences in improvement values (which reflect the concentration of suburban lots); average land values; average land value per acre; assessed buildings (residential, commercial, industrial, outbuildings) (pp. 62-63).

2. **Zoning**: The zoning of each taxlot describes and limits current and potential land use of the privately-held Applegate Watershed. Each county differs in zoning classifications. Therefore, Reid et al, aggregated zoning codes into four major groups: Farm Use [Exclusive Farm Use (Jackson), Exclusive Farm and Farm Resource (Josephine)]; Forest Use [Forest Resource, Open Space Reserve, Woodlot
Resource (Jackson), and Forest Commercial and Woodlot Resource (Josephine)]; Residential [Rural Residential-5, Farm Residential-5 and Suburban Residential-5 (Jackson), and Rural Residential-1, -2.5 and –5 (Josephine)]; Commercial/Industrial/Other [Rural Service Commercial (Jackson) and Rural Commercial, Rural Commercial Center, Rural Industrial, Tourist Commercial, and Aggregate Resource (Josephine)] (pp. 63-64).

3. **Ownership**: ownership in small parcel holdings as opposed to large land holdings (taxlots larger than 300 acres); ownership by private timber companies. In fact, “over one fifth (22%) of all Applegate Watershed private lands is owned by four companies: Boise Cascade (10,948 acres), Medford Corporation/Medite (6,903 acres), Spalding and Son/Spalding and Son Trust (4,333 acres) and Superior Lumber Company (2,808 acres)” (pp. 64).

4. **Single County Data**: “Additional insights into land use patterns and development are possible by looking at more detailed characteristics provided by one county, but not available for the other” (pp. 65).

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Timber Harvests in the Two County Area (pp. 73-81): “To assess the role of timber in the economy of the Applegate Watershed and surrounding region, we collected two sets of information. One set of data is simply the total timber harvested in the Applegate Watershed, available for all public and private lands for years 1989 to 1994. A second set of information provides a picture of one of the economic linkages between the Applegate Watershed and the surrounding region by tracing where logs from Applegate Watershed public lands have been processed” (pp. 73). Both data sets could be presented as indicators in a Community Indicators Project. Furthermore, this report provides sources of information, findings, and a summary. It then presents the data in a series of graphs.

1. **Economic links between the Applegate valley and the two county area**: “While harvest levels have declined absolutely for both counties and the Applegate Watershed since 1989, those of Jackson and Josephine counties have decreased proportionately more than that of the Applegate Watershed” (pp. 75). Likewise, the timber harvested in the Applegate has been processed almost entirely by mills in cities and towns near the watershed.

2. **Timber harvest data since 1989** does not present a dramatic decline in the amount of timber harvested each year, which fluctuates yearly; Watershed residents often mention such a decline. However, a noticeable shift of harvests has occurred, from public to private land.

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- **General Structure of Publication**: broken into strategic plans for four of the five Applegate Communities: Ruch/Upper Applegate, Applegate, Williams, and Murphy. The residents of the Wilderville community area did not want to engage in the formal planning process. RIEE gives the community vision for each area and then breaks the vision into a series of goals,
strategies, and action steps. Many of the strategies suggest potential indicators. Sections also exist for an agricultural goal and a water goal.

- **Financial Support**: US FS, A Territory Resource of Seattle, WA, and Hillman Foundation of Pittsburgh, Pennsylvania. The latter two groups are committed to promoting sustainable communities.

- **Quotables relating to the creation of a Community Indicators Project**: “The strategic plan shows important priority areas for the community…” (RIEE, 1, 1997).

- **ISSUES**:
  
  - **Ruch/Upper Applegate Area**: Community vision, p. 5.
    1. **Economic Development Goal**: Vibrant rural economy based on small businesses and viable farms; local exchange of goods and services; residents able to find a variety of jobs in the valley. (pp. 6-8)
    2. **Growth and Land Use Goal**: Limited growth but many different people can afford to live in the community; a known carrying capacity of the watershed in terms of resources and water; people live within the limits of the CC. (pp. 8-9)
    3. **Forests and Rivers Goal**: Healthy forests managed for many resources including wildlife, birds and wood products; old growth forests protected; fire reintroduced; cathedral forests near homes to prevent risk of destructive fire; healthy, productive rivers, containing abundant fish and free from development. (pp. 9-11)
    4. **Community Goals**: Adequate self-governance and communication that affects the social and economic development of the community; children attend schools within the valley; children have ample things to do, including participation in the activities and jobs of adults; children do not have to move away when they reach adulthood; Ruch is a meeting place for all ages, and an information and small commercial center that provides services for community needs; Ruch is an attractive and inviting place to meet other community members; improved public transportation in and out of the valley, including bike paths; adequate health care, especially for less mobile, elderly residents; no vandalism. (pp. 11-14)

  - **Applegate Community Area**: Community vision, p. 15.
    1. **Political Voice Goal**: Develop a greater political voice for the entire Applegate Valley; find mechanisms to communicate more effectively in the valley and with the decision-making institutions of the valley. (pp. 16)
    2. **Natural Environment Goal**: Healthy and accessible forests, waterways and wildlife that provide a living for some residents; salmon in the rivers; forests are not clear-cut, where cut, they are replanted; reduced fire hazard in forests and range lands; noxious weeds are contained. (pp. 16-17)
    3. **Local Economy Goal**: Range of economic choices for children, after becoming adults, to stay if they desire; support local agriculture and forestry employment; support home-based businesses and cottage industries; develop an internal economy that “fosters intra-valley activity, reduces leakage of dollars from the local economy, and reduces the need for more traffic or population” (pp. 18).
    4. **Transportation Goal**: Safe highways that are accessible to bikes and pedestrians; not too much traffic; some form of public transportation. (pp. 18-19).
5. **Land Use** Goal: Long-term maintenance of the land in a way that does not over-exploit it and is consistent with rural values and low population density. Land use decision-making reflects local community standards. (pp. 19-20).

1. **Agricultural** Goal: “Preserve and enhance diverse forms of agriculture” (pp. 22-23).
2. **Natural Environment** Goal: “Preserve the natural environment, providing clean air, clean water and healthy forests” (pp. 23-24).
3. **Community Building** Goal: “Foster greater sense of community through activities and a center” (pp. 25-26).
4. **Local Economy** Goal: Development that fosters a self-sufficient, localized economy “that fits the character of Williams” (pp. 26-28).

*Murphy Community Area*: Community vision, page 30. Murphy’s goals are very vague; I clarified them based on statements in the community vision and the listed strategies.
1. **Community** Goal: Develop more organizational capacity to further the goal of being both a town and a community; improve communication with government and decision making units; develop activities that support youth; develop greater police presence; support local parks; improve fire department services. (pp. 31-33)
2. **Land Use** Goal: Development responds to community interest, not growth for its own sake. (pp. 34).
3. **Transportation** Goal: A safe transportation system that continues to maintain the rural character of the valley and that does not encourage more growth, more speeding, and more traffic. (pp. 34-36).
4. **Agriculture** Goal: Preserve agriculture throughout the entire valley, especially the good bottomlands, as to maintain the rural character of the area. (pp. 36)

*Agricultural Goal for the Entire Applegate Valley*: “Preserve agriculture in the Applegate Valley” (pp. 38). RIEE lists seven strategies:
1. “Protect farming through zoning” (pp. 38-39).
2. “Promote a regional agricultural economy through steps to increase regional awareness and purchase of local commodities” (pp. 39).
3. “Develop training projects in innovative farming methods and products, especially alternative and sustainable agriculture” (pp. 39-40).
4. “Create a production cooperative for marketing farm products. Address the problems of consistency of stock. Consider doing this on a small scale first” (pp. 40).
5. “Create a certified kitchen that many people can use. It is now a permitted use in Jackson County on EFU lands” (pp. 40).
6. “Have the Forest Service sustain allotments in a manner that does not create environmental damage and even enhances ecosystem management” (pp. 41).
7. “Recruit younger people into farmers and ranching” (pp. 41).

*Water Goal for the Entire Applegate Valley*: Understand the limits and opportunities of the water supply; strive for efficient use, high quality, healthy riparian areas; create a balance between agricultural and residential use; limit growth to the carrying capacity of the water supply. (pp. 42) RIEE listed six strategies:
1. “Develop a better understanding of groundwater resources to determine carrying capacity” (pp. 42-43).
2. “Link carrying capacity of water table to land use” (pp. 43).
3. “Explore with the Corps of Engineers the use of dam flooding as a management tool while being sensitive to potential impacts, such as on low water bridges” (pp. 43).
4. “Educate valley residents, especially newcomers, about the land, water and economy, especially the effects of their water use and watershed management” (pp. 43-44)
APPENDIX D

REFERENCE SOURCES FOR APPLEGATE COMMUNITY ISSUES

Issues are listed in the same order as in Table 2. The sources below are listed not alphabetically, but according to year of publication.

1. Economic Ties to the Land
   - Reid and Young, 1996. *Analysis of Demographic and Economic Aspects of the Applegate Watershed.* pp. 19

2. Agriculture
   - Reid and Young, 1996. *Analysis of Demographic and Economic Aspects of the Applegate Watershed.* pp. 17
   - RIEE. July 1997. *Applegate Valley Strategic Plan.* pp. 22-23, 36, 38-41,
   - Applegate Partnership Meeting Minutes. 4/14/93, 8/18/93, 5/24/95, 7/26/95, 8/2/95, 1/17/96, 8/28/96

3. Timber
   - Reid and Young, 1996. *Analysis of Demographic and Economic Aspects of the Applegate Watershed.* pp. 17, 27, 73-81

4. Special Forest Products and Firewood
   - Applegate Partnership Meeting Minutes. 4/21/93, October 93: *Project Proposals to Northwes Economic Adjustment Initiative, 6/12/96*

5. Mining
- Applegate Partnership Meeting Minutes. 5/10/95, 11/1/95

**Tourism**
- Reid and Young, 1996. *Analysis of Demographic and Economic Aspects of the Applegate Watershed*. pp.18, 27
- Applegate Partnership Meeting Minutes. 8/21/96

2. Fire
- BLM. Spring 1998. *Ecosystem Restoration in the Ashland Resource Area*. pp. 5-6, 8, 9
- RIEE. July 1997. *Applegate Valley Strategic Plan*, pp. 9-11, 16-17
- Applegate Partnership Meeting Minutes. 2/24/93, 3/3/93, 4/21/93, 7/7/93, 8/25/93, 2/16/94, 10/26/94, 12/14/94, 5/10/95, 8/2/95, 11/1/95, 2/21/96, 6/15/99, 9/7/99, 9/14/99

3. Water Issues
- Reid and Young, 1996. *Analysis of Demographic and Economic Aspects of the Applegate Watershed*. pp. 17

4. Wildlife
- RIEE. July 1997. *Applegate Valley Strategic Plan*, pp. 9-11, 16-17

5. Fish
- BLM and USFS. September 1994. *Applegate Adaptive Management Area Ecosystem Health Assessment.* pp. 18, 30-32, 43
- Reid and Young, 1996. *Analysis of Demographic and Economic Aspects of the Applegate Watershed.* pp. 17,
- Applegate Partnership Meeting Minutes. 2/24/93, 4/21/93, 6/2/93, 8/18/93, 9/22/93, 4/6/94, 8/17/94, 1/4/95, 3/22/95, 8/23/95, 5/17/95, 11/1/95, 11/15/95, 1/17/96, 11/27/96

6. Aquatic and Riparian
- BLM. Spring 1998. *Ecosystem Restoration in the Ashland Resource Area.* pp. 6, 7-10
- RIEE. July 1997. *Applegate Valley Strategic Plan,* pp. 9-11, 42

7. Land Use and Development, Zoning, and Subdivision
- Reid and Young, 1996. *Analysis of Demographic and Economic Aspects of the Applegate Watershed.* pp. 7, 17, 18, 62-71

8. Density Management (Forest Health Issues)
- BLM and USFS. September 1994. *Applegate Adaptive Management Area Ecosystem Health Assessment.* pp. 2
9. Recreation
- Reid and Young, 1996. *Analysis of Demographic and Economic Aspects of the Applegate Watershed*. pp. 48

10. Agency/public Interaction
- Applegate Partnership Meeting Minutes. 3/3/93, 3/10/93, 3/17/93, 4/14/93, 4/21/93, 5/5/93, 5/19/93, 7/13/93, 8/18/93, 9/1/93, 9/8/93, 2/8/95, 8/2/95, 4/7/99

11. Roads

12. Community Building, Involvement and/or Outreach
- RIEE. July 1997. *Applegate Valley Strategic Plan*. pp. 11-14, 31-33
- Applegate Partnership Meeting Minutes. 3/3/93, 3/10/93, 3/11/93, 4/14/93, 4/21/93, 6/9/93, 6/22/93, 7/14/93, 9/15/93, 12/8/93, 11/16/94, 11/1/95, 6/19/96, 10/9/96
13. Balanced Forestry Practice

14. Terrestrial Vegetation
   - Special Plant Habitats and Species
   - Native Plant Species
   - Threatened and Endangered Plants
   - Noxious Weeds
   - Introduced Species
   - Invasive Species
- RIEE. July 1997. *Applegate Valley Strategic Plan*, pp. 11, 16-17

15. Biodiversity, Biological Diversity, Ecological Diversity, Species Diversity
- Applegate Partnership Meeting Minutes. 2/17/93, 2/24/93, 3/17/93, 4/7/93, 4/21/93, 6/9/93, 9/15/93, 12/7/94, 12/14/94, 7/5/99

16. New Market Development for Small Diameter Trees and Value Added Manufacturing
- BLM and USFS. September 1998. *Applegate Adaptive Management Area Guide*. pp. 54, 63-64, 81-82, 92, 93, 111-114, 118

17. Local Employment
- RIEE. July 1997. Applegate Valley Strategic Plan. pp. 18
- Reid and Young, 1996. *Analysis of Demographic and Economic Aspects of the Applegate Watershed*. pp. 18, 27

18. Data Availability, Data Bases
- Reid and Young, 1996. *Analysis of Demographic and Economic Aspects of the Applegate Watershed*. pp. 41, 57, 62
- Applegate Partnership Meeting Minutes. 3/10/93, 5/19/93, 6/2/93, 8/11/93, 4/20/94, 9/22/95, 12/6/95, 2/7/96

19. Insects and Disease

20. Late Successional Habitat, Old Growth
- Applegate Partnership Meeting Minutes. 1/27/93, 4/21/93, 11/15/95, 1/17/96

21. Transportation and Traffic
- Reid and Young, 1996. *Analysis of Demographic and Economic Aspects of the Applegate Watershed.* pp. 19
- Applegate Partnership Meeting Minutes. 12/11/96, 7/3/96

**22. Economic Diversity and Development**
- Reid and Young, 1996. *Analysis of Demographic and Economic Aspects of the Applegate Watershed.* pp. 18, 27
- Applegate Partnership Meeting Minutes. 1/27/93, 3/17/93, 11/1/95, 1/21/96, 8/28/96

**23. Interface Issues (Rural-forest Interface)**
- Applegate Partnership Meeting Minutes. 12/14/94, 8/2/95, 1/21/96

**24. Atmospheric**
- RIEE. July 1997. Applegate Valley Strategic Plan, pp. 23

**25. Education**
- Schools
  - Educational Attainment
    - Reid and Young, 1996. *Analysis of Demographic and Economic Aspects of the Applegate Watershed.* pp. 48
    - Applegate Partnership Meeting Minutes. 5/11/94, 3/15/95, 7/12/95

**26. Herbicides and Pesticides**
- Reid and Young, 1996. *Analysis of Demographic and Economic Aspects of the Applegate Watershed.* pp. 17
27. Edaphic (soils)
- Applegate Partnership Meeting Minutes. 4/21/93, 6/12/96

28. Native Americans
- Applegate Partnership Meeting Minutes. 3/17/93, 5/5/93, 10/20/93, 7/13/93, 1/14/96

29. Unemployment and/or Low Income

30. In-migration
- Reid and Young, 1996. *Analysis of Demographic and Economic Aspects of the Applegate Watershed*. pp. 48
- Applegate Partnership Meeting Minutes. 8/24/94

31. Cost of Land or Housing, Property Values

32. Health Care
- Applegate Partnership Meeting Minutes. 4/5/95
33. Land Ownership

34. Economic Links to the Larger Region
- Reid and Young, 1996. *Analysis of Demographic and Economic Aspects of the Applegate Watershed*. pp. 73-81

35. Age Demographics (Retirees)
- Reid and Young, 1996. *Analysis of Demographic and Economic Aspects of the Applegate Watershed*. pp. 18, 27, 48

36. Poverty