AN ABSTRACT OF THE THESIS OF

<u>Kearstin K. Edwards</u> for the degree of <u>Master of Science</u> in <u>Forest Resources</u> presented on <u>January 4, 2002</u>. Title: <u>Forestry at the Urban Fringe: Issues, Stakeholders and</u> <u>Conflict Potential in Oregon's Soap Creek Watershed.</u>

Abstract Approved: _____

<div align="center">John C. Bliss</div>

Increasing land fragmentation, environmental regulations and neighbors' concerns pose significant challenges to forest owners at the urban fringe, whose properties are physically caught between rural landscapes and continually expanding urban centers. Using Oregon's Soap Creek Watershed as a study site, we paired qualitative and quantitative methods to identify stakeholders, their opinions about contentious forest management issues and options for minimizing conflict at the urban fringe. Primary stakeholders included non-industrial private, corporate and public forest managers; residents and recreationists. The following are key findings from our research: 1) Active forest management was seen as an important factor that protected the rural character and amenities of an area experiencing residential growth. 2) Residents were the most likely to hold different categories of forest owners to different management standards, expecting more information from corporate owners than individual private owners and higher management standards on public lands. 3) Land use zoning and forest practice regulations reduce conflict by delineating acceptable land uses and activities consistent with those uses. 4) Clearly defined and consistent procedures for incorporating public knowledge and concerns into land management

decisions are essential to reducing conflict over procedural and relational issues that often accompany resource management. 5) Prior notification of management intentions in combination with frequent and consistent interactions with neighbors has the potential to build social capital and reduce active opposition of forest management practices.

Forestry at the Urban Fringe:
Issues, Stakeholders and Conflict Potential in Oregon's Soap Creek Watershed

by
Kearstin K. Edwards

A THESIS

submitted to

Oregon State University

in partial fulfillment of
the requirements for the
degree of

Master of Science

Presented January 4, 2001
Commencement June 2002

Master of Science thesis of <u>Kearstin K. Edwards</u> presented on <u>January 4, 2002</u>.

Approved:

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I understand that my thesis will become part of the permanent collection of Oregon State University libraries. My signature below authorizes release of my thesis to any reader upon request.

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Kearstin K. Edwards, Author

Acknowledgements

An essential element in any expedition is the presence of skilled and optimistic companions. One of my first jobs in the woods was working on a maintenance trail crew in Montana's Great Bear Wilderness. Although I love mountain top views, the climb up a steep trail with a heavy backpack was a tremendous mental obstacle for me. Luckily, I had a great friend to encourage me on those hikes. Occasionally she would look back at the grimace on my face and say cheerily, "we're almost there!" Usually this meant we had another mile or two to go, but her words kept me moving until I reached the summit and was rewarded with a spectacular view.

For me, completing this research was akin to climbing mountains and I am tremendously thankful to have been accompanied by a number of talented, intellectual and optimistic individuals on this adventure. Foremost among those is John Bliss, my major advisor, who encouraged me to set challenging goals, helped me to find my way through difficult sections and reminded me to look up and enjoy my surroundings. I count myself lucky to have found such a sincere advisor, mentor and friend.

Mike Bondi, an extension agent from Clackamas County, OR was the individual responsible for guiding me to Oregon State University. From our first meeting in Michigan, his dedication to the extension program and private woodland owners was immediately apparent. His insight into practical aspects of forestry at the urban fringe kept my work grounded. Gregg Walker, my minor advisor from the Speech Communication Department, also provided valuable guidance. Under his tutelage I

Thank you all for helping me reach another of life's spectacular summits!

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Dedication

For Carole, my mother.
Thank you for supporting each of my endeavors, no matter how unfamiliar or risky,
with your love and creative hands.

For Tom, my father.
Thank you for seeing the glass as half full, despite the obstacles in your path.

As parents, your actions taught me more about the meaning of social capital
then I will ever learn from a book.

Forestry at the Urban Fringe:
Issues, Stakeholders and Conflict Potential in Oregon's Soap Creek Watershed

1   INTRODUCTION

1.1   Forestry at the Urban Fringe

Framed on either side by rich, green, Douglas-fir forest, the Soap Creek
Watershed opens on the north to reveal the carved face of Coffin Butte Landfill,
surrounded by golden hayfields. The fields extend east where waters from the drainage
eventually merge with the flow of the Willamette River. From a high vantage point at
the south edge of the Watershed, the area looks like a quiet rural community. Although
farming and forestry account for a large percentage of the land base, a drive through the
Watershed reveals a proliferation of mailboxes, which attest to the area's residential
growth. Most of the residents in this watershed commute to work, driving 15 minutes
south to Corvallis; a city of 50,000 nestled at the eastern edge of Oregon's coast range.
Like many areas across the United States, the Soap Creek Watershed is a rural
landscape experiencing increased pressure from those seeking rural residential and
recreational opportunities beyond city limits; it is a watershed at the urban fringe.

Despite its tranquil appearance, the Soap Creek Watershed has experienced its
share of conflicts. New homes, a landfill, a firing range, equestrian facilities and
existing forestry and agriculture activities have all contributed to discord in the
Watershed. In particular, two harvests conducted by Oregon State University during the
1990's generated considerable opposition from residents. The ensuing conflicts

resulted in heated public meetings, scathing editorials in the local papers, letters of complaint to the Governor, distrust and hard feelings that still linger.

1.2 Rationale

Although conflicts surrounding forest management are certainly not new, the frequency and intensity of conflicts regarding land use and forest management at the urban fringe have increased throughout the United States. As more individuals converge in these transition zones, they bring different expectations and values with them. Many citizens' expectations for recreational opportunities or residence at the urban fringe do not include active forest management. Forest owners are faced with the challenge of meeting their own objectives in an environment with more neighbors and more regulations. Land conversion, fragmentation and parcelization all contribute to discord, both by increasing the number stakeholders in any given issue and by reducing the economic viability of forest management. The Soap Creek Watershed offers a prime example of a landscape where all of these factors coincide, providing an ideal location for research on conflict and communication at the urban fringe.

1.3 Research Objectives

To gain an in-depth understanding of forest resource-related conflict at the urban fringe, our research sought to identify and describe key factors affecting stakeholder

interactions. Using Oregon's Soap Creek Watershed as a study site, we organized our research around the following three objectives and related research questions:

1. Identify contentious issues relevant to forest management at the urban fringe.

    a. What are the current and historical issues relevant to forest management in the Watershed?

    b. How are forestry practices impacting urban development?

    c. How is urban development affecting the practice of forestry?

2. Identify stakeholder opinions with regard to forest-related issues at the urban fringe.

    a. Who are the stakeholders in the Watershed?

    b. What beliefs and values do they express regarding forestry?

    c. What differences or similarities in opinion exist among stakeholders?

3. Identify opportunities to minimize conflict and encourage communication and understanding among stakeholders.

    a. How do stakeholders currently interact with one another?

    b. What communication strategies have been successful or failed in the past?

1.4 Urban Fringe Definition

The urban fringe is referenced with a variety of terms including urban/forest interface, urban/rural interface, wildland/urban interface and residential/wildland interface (Bradley 1984; Wardell and Brown 1980; Ewert 1993; Lee 1984). These terms all refer to a common phenomenon, although authors may emphasize one aspect

of an environment over another. Our reference to the urban fringe corresponds most closely with Bradley's (1984) interpretation, which describes the urban/forest interface as a continuum of zones that exist between urban centers and forest zones. The benefit of drawing from this conceptual continuum is that it addresses a broad range of property owners and land uses, with emphasis being placed on forested lands as opposed to agricultural or non-forested wildlands. Vaux (1982) makes the case that the urban fringe is defined by social and political factors more so than by geography, as the interaction of different politics and social values determine the existence of mixed land uses. The combination of these concepts reflects the interdisciplinary nature of our research.

1.5   Relevant Research

The following review is intended to offer a brief account of literature that we found most relevant to our research objectives.   Because our topic combined the realms of social science, physical and political sciences, investigation into a breadth of topics was given preference over an exhaustive review of each field. The literature is organized under the following five categories: 1) migration trends, 2) land use and conversion, 3) private property rights and regulation 4) natural resource conflicts and collaboration and 5) social capital.

1.5.1 Migration Trends

Since 1960 the number of people in the US has grown by approximately one hundred million individuals. Over the same time frame Oregon's population has grown by 1.5 million (US Census Bureau 2000). In addition to an increasing population, during the early 1970's population migration patterns shifted from metropolitan to non-metropolitan areas, particularly in the South and West (Johnson and Beale 1994; Wardell and Brown 1980; Beale 1981). This migration reversal, which contributes to urban sprawl and expansion of the urban fringe, was first termed counter-urbanization by Beale (1981) and has more recently been referred to as ex-urbanization (Egan and Luloff 2000).

National surveys have also indicated that citizens have a preference for living in rural or small town environments, particularly when employment and metropolitan amenities are within commuting distance (Zuiches and Carpenter 1978; Zelinsky 1977; Fuguitte and Zuiches 1975). The migration shift to rural areas has largely been attributed to people's search for a better quality of life via access to public goods, such as clean air, clean water and safety (Shannon 1991; Swanson 1984; Stevens 1980).

1.5.2 Land Use and Conversion

Given a finite land base and an expanding, mobile population, conversion of land from one use to another is becoming more and more common on privately held

property across the US. Data compiled by the National Resources Conservation Service (1999) indicate that over 11 million acres of forestland were converted to housing and other uses in the five-year period between 1992 and 1997. Work done by Azuma et al. (1999) indicted similar conversion trends in Western Oregon between 1973 and 1994, identifying the highest rates of conversion near residential and urban land uses. Work by Barlow et al. (1998) in Mississippi and Alabama further attests to urbanization's negative effect on the potential for timber harvesting. From a forestry perspective, conversion to residential and urban uses results in both "a loss of land and a loss of the ability to manage forestland", in areas experiencing growth (Sampson and DeCoster 2000, p. 5).

Parcelization and fragmentation are two results often associated with land conversion. Parcelization is the division of land into smaller size parcels, which typically implies a change in land use and may result in a change of vegetation cover. Fragmentation is the breaking up, or fragmenting of vegetation cover. Studies by DeCoster (1998) and Birch (1996) indicate that privately owned forest parcels between 100-500 acres are the most prone to rapid parcelization; often the result of an owner's death, where property is distributed among heirs or divided and sold to pay inheritance taxes. Subdivision may also be viewed as a more certain means of economic return from land than the long-term and uncertain prospect of investing in timber production (DeCoster 1998; Mehmood and Zhang 2001), especially in light of migration trends and an increased demand for small acreages. DeCoster (1998) suggests that as parcel size

decreases, owners will be less likely to consider forest management for timber

production a relevant management objective.

1.5.3   <u>Private Property Rights and Regulation</u>

The search for balance between regulations meant to protect public goods and

private property rights is one that engenders considerable debate and will undoubtedly

do so as long as private property exists. Forest owners and managers are particularly

concerned about the number and extent of regulations that affect their ability to practice

forestry at the urban fringe. Although the Fifth Amendment to the U.S. Constitution

states that, "private property rights shall not be taken for public use without just

compensation", rights are secure only so long as they are supported by societal norms

and legislation (Argow 1994). Potential impacts of the Endangered Species Act, the

Clean Water Act and a growing tendency for local and state regulations regarding land

use and forest practices have property owners worried about how regulations will affect

their ability to use their lands (Flick 1994).

Haines and Cleaves (1995) have documented an increase in litigation arguing

that forestry activities constitute a nuisance. Subsequently, there has been an increased

interest in "right to practice forestry" laws throughout the US that attempt to defend

forestry practices, similar to the "Right to Farm" legislation that emerged in the late

1970's (Malmsheimer and Floyd 1998). However, the amount of protection offered

varies widely across the country. Legislation in some states prohibits the

implementation of local forestry ordinances, other laws address compensation for takings and a limited number of states specifically link protective legislation with forest practice regulations (Malmsheimer and Floyd 1998; Zhang 1996).

Oregon has implemented forest practice regulations and restricted local governments from imposing additional forestry regulations beyond the urban growth boundary (Oregon Legislature 1999). Despite these regulations, a group of citizens submitted the Oregon Forest Conservation Initiative (Ballot Measure 64), for a state-wide vote in 1998. The initiative emphasized further restrictions on clearcutting, herbicide and pesticide applications. It was rejected by Oregonians by a margin of 4 to 1 (Kline and Armstrong 2001) however, the measure's sponsors intend to present a similar initiative to Oregonians in 2002. This legislative sparing illustrates Oregonians' interest in and divergent views regarding forest management.

In 1994, only 10 states had comprehensive forest practice laws, although 12 more were considering similar laws (Ellefson and Cheng 1994). Work by Martus et al. (1995) indicates that many states in the northeast have also passed state forest practices laws to create a uniform alternative to a haphazard collection of restrictive, local forestry ordinances. The South and Rocky Mountain states, which are areas experiencing the bulk of regional in-migration (Johnson and Beale 1994; Wardell and Brown 1980; Beale 1975), have enacted more laws related to forestry than other regions across America (Zhang 1996). While regulations offer an option to protect both public goods and private rights, forest managers have expressed a desire for regulations that

are both reasonable and understandable, so that private owners can afford to meet their legal obligations (Rose and Coate 2000; Louisiana SAF 1996).

1.5.4 Natural Resource Conflicts and Collaboration

Literature from the fields of communication and conflict offers insight into how conflict surrounding natural resource issues can be managed. Defined as, "a struggle between at least two interdependent parties who perceive incompatible goals, scarce resources and interference from others in achieving their goals," (Wilmot and Hocker 2001, p. 41) the term "conflict" represents a range of interactions from mild disagreement to hostile, physical interactions (Keltner 1994; Rubin et al. 1994). Although conflict tends to be viewed as negative, it can produce positive outcomes. When well managed, conflict can initiate desired change, strengthen group cohesion, and air pent up resentments, reducing the potential for destructive conflict (Wilmot and Hocker 2001; Walker and Daniels 1997; Keltner 1994; Rubin et al. 1994).

In situations where win/win outcomes are preferable to win/lose or lose/lose outcomes, collaborative or mutual gain strategies are useful for addressing resource conflict (Susskind and Field 1996; Walker and Daniels 1997). These strategies seek to distinguish a party's underlying interests and concerns from their position statements in order to assess a range of potentially acceptable outcomes (Fisher 1991; Druckman et al. 1988). Mutual gains strategies provide the opportunity to replace negative conflict escalation with constructive interaction by focusing on shared interests. They

encourage dialogue and long-term relationships, joint fact finding, and shared power rather than short-term interactions over opposing values (Susskind et al. 2000; Tarnow et al. 1996).

Much of the conflict over resource issues arises from different interpretations of the term "resource" and the range of values placed on varying resources (Brunson 1993; Rees 1990). Some work suggests that values may be tied to a person's tenure or association with urban and rural environments (Shands 1991; Tichenor 1971). However, work by van Es and Brown (1974) suggests that individuals' values are better represented by various socioeconomic traits. Attempts to describe individuals' values as a function of demographic and interest group affiliations, has provided mixed results. A variety of studies have focused on demographic variables associated with property owners' intent to harvest. However, this body of work only offers inferential insight into the difference in values held among non-industrial forest (NIPF) owners who do and do not intend to harvest (Alig et al. 1990; Romm et al. 1987; Young and Reichenbach 1987). Work by Bliss (1994), Brunson (1992) and Dunlap (1991) suggests that a large percentage of individuals across different stakeholder categories including non-industrial private forest owners, environmentalists and the general public actually share a strong interest in environmental health, which offers a starting point for mutual gains conflict management.

Most collaborative decision-making efforts regarding natural resource management have been initiated on federal lands. National environmental laws, such as the National Environmental Policy Act of 1969, require that planning for public lands

incorporate opportunities for public participation (Burge and Robertson 1990).

Emphasis on public participation has since evolved with the concept of sustainable

ecosystem management (Salwasser 1990; Brunson 1993). Although collaborative

work is time consuming and prone to setbacks due to public distrust, anger and conflict

among different stakeholder groups, there are a number of success stories indicating

that a variety of collaborative forums offer viable alternatives to gridlock over federal

land management decisions (Wondelleck and Yaffee 2000; Smith et al. 1999; Richards

1998; Diemer and Alvarez 1995).

While public participation may not be required at state and local levels, there is

a growing expectation among citizens that it should be provided (Lawrence and Deagen

2001). Geisler (2000) identifies a blurring of the distinction between public and private

lands and suggests that citizens' expectations for participation in private land

management decisions may also be materializing. However, private property owners

are less likely to welcome shared decision-making if it means forfeiting private property

rights. Private corporations are also somewhat restricted from participating in

cooperative planning by anti-trust regulations.

1.5.5   Social Capital

Literature on social capital was useful for our research because it offered a

means to address trust, personal interactions and social networks as factors that can

influence conflict surrounding resource management decisions. Porte (1998) suggests

that social capital is merely a new term for classical social theories that date back to 1800's. As defined by Putnam (1993, p.1) social capital refers to, "features of social organization, such as networks, norms and trust, that facilitate coordination and cooperation for mutual benefit." The kind of social capital most relevant to conflict at the urban fringe is the concept of community social capital. This form of capital may result from interactions among members of communities defined by interests, such as a community of professional foresters or communities defined by geographic boundaries.

The underlying concepts behind social capital suggest that involvement, investment and interaction with others benefit a community by producing outcomes greater than the sum of investments. Social scientists offer two primary motivations for investment in social capital. The first is directly linked to the concept of reciprocal return. For example, Tom might help Mary haul dirt for her garden because he knows he will need to borrow Mary's trailer when it is time to haul hay. Relying on the idea of reciprocity, Tom expects that Mary will feel obligated and return his favor. The second motivation for investment may occur for purely altruistic reasons (Hofferth et al. 1999). In this case Tom would help Mary haul dirt just for the pleasure of helping Mary, with no thought of benefits he might receive from his actions. The embedded perspective combines these motives and implies that altruistic and economic motivations cannot be usefully distinguished (Flora 1998). Putnam (1993) describes this phenomenon by explaining that social capital is not a result of a wealthy community, but rather the foundation for one.

Although Coleman (1988, p. 118) suggests that "most forms of social capital are created or destroyed as a byproduct of other activities", in the context of natural resource conflict, purposive investment in social capital may go a long way towards providing desired outcomes. Building relationships means establishing a certain level of trust with the expectation of trust in return. Investment in social capital and collaborative processes may reduce opposition to resource management decisions as well as reduce costs that are associated with gridlock, conflict and litigation (Weber 1998). Norms established through relationships may prevent neighbors from engaging in undesirable land management practices and offer the basis for organized representation in negotiations.

Coleman (1988) offers a broader definition of social capital that incorporates the possibility of hierarchical interactions and thus, power differentials among parties. This interpretation is particularly useful when assessing factors that may inhibit creation of community social capital. Grootaert (1998) suggests that attempts to build social capital are more successful when there is equitable power sharing among community members.

2   METHODS

This chapter describes the research design and methodology used to identify: 1) stakeholders at the urban fringe, 2) the issues they consider important with regard to forest management, and 3) how those issues might be addressed in a productive manner.

We combined both inductive and deductive strategies in the research design; beginning with qualitative methodology and following with a quantitative approach to determine if results from qualitative data were representative of the target population. The blend of both methodologies helped to counter the weaknesses inherent in each and provided the opportunity for both methodological and data triangulation (Frey et al. 2000). Data collection methods used in this research included a combination of exploratory interviews, secondary data review and participant observation to provide researchers with sufficient background about the local area. Primary data was obtained through a series of personal interviews and a mail survey.

2.1   Background Exploration

Efforts to gain an understanding of the geographic location, history, issues and individuals active in the Watershed began during the fall of 1999 and continued into the fall of 2001. Exploratory interviews with watershed residents, members of the local Small Woodland Owner Association, and OSU personnel illuminated historical controversies in the watershed as well as local politics relevant to timber harvesting.

Review of secondary data including letters to the editor from the Gazette Times and Register Guard newspapers regarding Oregon State University's harvest activities during 1994-1995, and internal documentation between forest managers at OSU offered insight into specific instances of conflict surrounding forest management in the Watershed. In addition to these materials, historical documentation compiled by Jackson (1980) and Zybach (1999) provided a longer time frame to reference the tradition of timber harvesting and settlement patterns in the Watershed.

Finally, participant observation at a variety of local community meetings including the North Benton Citizen's Advisory Council, Soap Creek Watershed Council, Oregon Small Woodland Association, Forest Deputy Advisory Board and the Cameron Tract Advisory Board, provided context to the research. These opportunities to interact with watershed residents and woodland owners promoted our research interests and intent with watershed stakeholders and facilitated access to key informants, some of whom were later selected as interviewees.

2.2   Interviews

A total of 28 personal interviews were conducted during the summer of 2000. Initially, 6 interviewees were purposively selected because of their different associations and involvement in watershed issues. Subsequent interviewees were identified by those 6 individuals using a snowball sampling approach (Robson 1993). We stopped interviewing once we felt we had sufficiently been exposed to views from

Table 1. Interviewees and their association with the Soap Creek Watershed

Pseudonym(s) used to maintain anonymity		
Property Ownership/Affiliation	**Resident**	**Nonresident**
Federal land manager		*Ron
State land managers	Larry Vince	*Adam Sheri
Individual Private Forest Owners	*Nancy Rhonda Rick Sean Tammi Tom Charlie & Loraine Ed & Ginny Mel & Anne	Owen Rebecca
Landowners	*Kevin Dennis Mary & Hank	
Private Timber Company Representatives		Howard Nicole Roy
Recreationists		*Chris Ilene Mark
Municipal employees		*Burton Carl Peter

* Indicates interviewees initially contacted for snowball sampling

the range of stakeholder groups (Table 1) and interviewees' stories became repetitive, signaling that we had reached the "saturation point" (Rubin and Rubin 1995).

Interviews were semi structured, which allowed researchers the flexibility to follow up on interesting responses and emergent themes. Each interview lasted approximately two hours and was audio tape-recorded with the permission of the interviewee. Following each interview researchers briefly recorded their reactions to the session and transcribed the tapes. Interviewees were given pseudonyms to retain anonymity. Once interview transcriptions were complete, the transcripts were coded using qualitative analysis software (ATLAS.ti ^{TM}) to evaluate interview content for emergent themes. We used a grounded theory approach to data analysis, which consisted of three stages of coding. This process was similar to Strauss and Corbin's (1990) description of open, axial, and selective coding, where open coding is the first means of breaking out key concepts, axial coding regroups the data into meaningful contexts or categories and selective coding identifies recurring and relevant themes.

2.3 Mail Survey

Key themes that emerged from personal interviews were used to inform the design of a mail survey. The purpose of the survey was to determine to what extent issues and opinions identified by interviewees were representative of stakeholders across the Watershed. The survey consisted of 24 questions. Three were open ended, 3 asked a series of yes or no questions, 11 used a Likert scale and contained multiple questions for a particular topic, 1 offered multiple answers and the remaining 6 asked

for demographic information. Open-ended survey questions were transcribed and

coded using Atlas.ti ™ software. Numeric responses were input into a spreadsheet

format and analyzed using the Statistical Package for the Social Sciences (SPSS)

software.

Property owners within the Watershed were identified from geographic

information system, county tax lot data. To assure that the tax lot data were complete,

researchers used reverse address searches on the internet to identify watershed residents.

Names were then cross-checked with the tax lot data for duplication. Corporate

ownerships were telephoned to verify ownership in the watershed and to determine to

whom the survey should be addressed.   In all, surveys were sent to 614 property

owners and an additional convenience sample of 115 individuals, who indicated they

recreated in the watershed. Because of the relatively low population density, we

determined it was feasible to send surveys to all property owners within the Watershed

in hopes of achieving a high response rate.

We did not have the means to accurately identify and contact a complete

population of recreationists who visited the Soap Creek Watershed. We did however,

contact a convenience sample of recreationists including hunters, bicyclists, equestrians

and runners to identify the diversity of concerns held by recreationists who visited, but

did not own property in the Watershed.

The first wave of surveys was mailed in June of 2001. The initial mailing

contained a letter explaining our research and a copy of the survey instrument. Follow

up post cards were sent two weeks later and a third wave of surveys was sent out in mid

July, five weeks after the initial mailing. Multiple mailings were used in an effort to increase the response rate (Salant and Dillman 1994).

Eighty-four individuals from our initial survey list indicated that they did not own property, live, or recreate in the watershed. Not meeting the criteria for either the target population or convenience sample, these individuals were removed from the list leaving a total of 645 individuals in our population. Three hundred and fifty-two individuals returned completed surveys; resulting in a 54% response rate. To determine if non-respondents were significantly different from respondents we randomly selected and then telephoned 30 non-respondents (10%). Of the individuals contacted, 17 indicated that they had no association with the Watershed. Further investigation revealed that 14 of these individuals did live within the Watershed, but that they lived in a remote corner nearer to the town of Albany. Because of their proximity to Albany, these individuals associated their residence with Albany rather than with the Soap Creek Watershed. Our follow-up suggests that a larger proportion of non-respondents may not have answered for the same reason. Four of the individuals contacted declined to respond and responses from the remaining 9 individuals did not suggest any differences in education, gender, residence or acreage owned that would lead us to believe non-respondents were demographically different from respondents. Thus, we assume that results taken from the data adequately represent property owners within the Watershed.

Although respondents were given an opportunity to identify themselves in multiple ways, we identified survey respondents in mutually exclusive stakeholder categories. For example, a respondent identifying herself as a landowner, forest owner

and recreationist would have been categorized as a forest owner. Individuals indicating that they owned forestland, regardless of acreage size, were classified as forest owners. Landowners were identified as those who indicated they owned land, but not forestland. Recreationists were identified as individuals who indicated that they recreated but did not own property in the watershed. Property owners were also identified according to residency in the Watershed and residence during childhood.

Because our intent was to describe the make up and opinions of different Watershed stakeholders, rather than predict the future responses of these same individuals, statistical procedures used for this research focused on simple frequencies and chi-square comparisons. Frequencies were calculated for overall responses and further broken out by subgroup categories. Likert scales, once assessed on an individual basis, were combined to indicate overall positive, negative or no opinion responses.

2.4   Triangulation

Triangulation is the process of examining a phenomenon from multiple angles in an effort to check the validity of findings (Leedy 1997; Denzin 1994). This research employed both methodological triangulation as well as data triangulation. By verifying our inductive, qualitative inquiry with quantitative survey data we reduced the bias of reporting issues of concern voiced by only a few individuals and were able to provide a perspective on forestry at the urban fringe that was reflective of a larger percentage of the target population.

Data source triangulation offered an additional series of litmus tests that helped reveal recurring themes and patterns as this research progressed. Archived material, discussions with watershed residents, interview transcripts, survey data, dialogue among researchers, literature review, and insights gleaned from reflexive writing all offered additional data to evaluate the validity and accuracy of research findings. The final check of these results may best be reflected however, in the responses of Watershed stakeholders upon presentation of this research.

2.5   Caveats

The primary strength of the study lays in the combination of methodological tools used to collect and analyze our data. Personal interviews provided descriptive depth into controversial issues and survey responses determined the extent to which interviewees' opinions were representative of Watershed stakeholders.

Had we chosen a random sample from our watershed population we would have been able to make direct inferences from our survey results to all property owners within the watershed. However, we chose to send surveys to all property owners in the watershed, which offered the potential for a larger number of responses and a greater likelihood of identifying stakeholder characteristics that we had not anticipated.

From an operational perspective, assigning survey respondents to mutually exclusive groups was a convenient way to examine opinions across different stakeholder categories. However, including non-industrial private forest owners, corporate and public managers into one "forest owner" category masked differences

among these owners that were clearly expressed by interviewees from these different groups.

Although chi-squared comparisons between our mutually exclusive categorization of recreationists and those who identified as both a property owner and recreationist indicated very few differences in response patterns, this could be one interesting area to further explore. Our survey did not ask if recreationists owned property outside of the watershed so we were unable to compare opinions between non-property owning and property owning recreationists. Further, the convenience sample of recreationists clearly limits our comments regarding recreationists, to those who participated in the survey.

While our research provides an in-depth look at a particular setting, the views and opinions offered represent only a snapshot in time. Just as long term monitoring is an essential tool to evaluate changes in water quality, each event and string of interactions within the Watershed may change the social context of the study site. Our findings offer humble recommendations for the area, which may be useful as baseline data for future social assessments or evaluations of social capital, should they be conducted.

3 RESEARCH SETTING: THE SOAP CREEK WATERSHED

The research setting for this study is located north of Corvallis, Oregon on the eastern edge of the Coast Range. The Soap Creek Watershed was selected as the study site for our research because of its physical location near a metropolitan area, and its current and historical land uses patterns.

3.1 Geographic Setting

The Soap Creek Watershed boundary was defined in 1999 by local residents participating in the Soap Creek Watershed Council (Figure 1). Waters drain east from high points along the southern and western watershed boundaries into Soap Creek and Berry Creek, which eventually meet with the Lukiamute and then flow east into the Willamette River.

The Watershed encompasses approximately 39,000 acres. The 18,000 acres managed for agriculture are predominantly planted for grass and hayseed. Forestlands comprise approximately 17,000 acres, covering the southwestern portion of the Watershed. These forests are primarily dominated by second-growth, Douglas-fir (*Psuedotsuga menziesii*) intermixed with remnant patches of Oregon White Oak (*Quercus garryanna*) in the lowlands. A mixture of hardwoods including Red Alder (*Alnus rubra*) and BigLeaf Maple (*Acer macrophyllum*) are common along stream channels that penetrate into the hillsides.

Figure 1. The Soap Creek Watershed Boundary

Monmouth

Airlie Rd

Polk County

Benton County

Willamette River

F.E. Wilson Wildlife Refuge

Dunn Forest

McDonald Forest

Sulphur Springs

Adair Village

Albany

Hwy 99W

Highland Dr.

Corvallis

OREGON
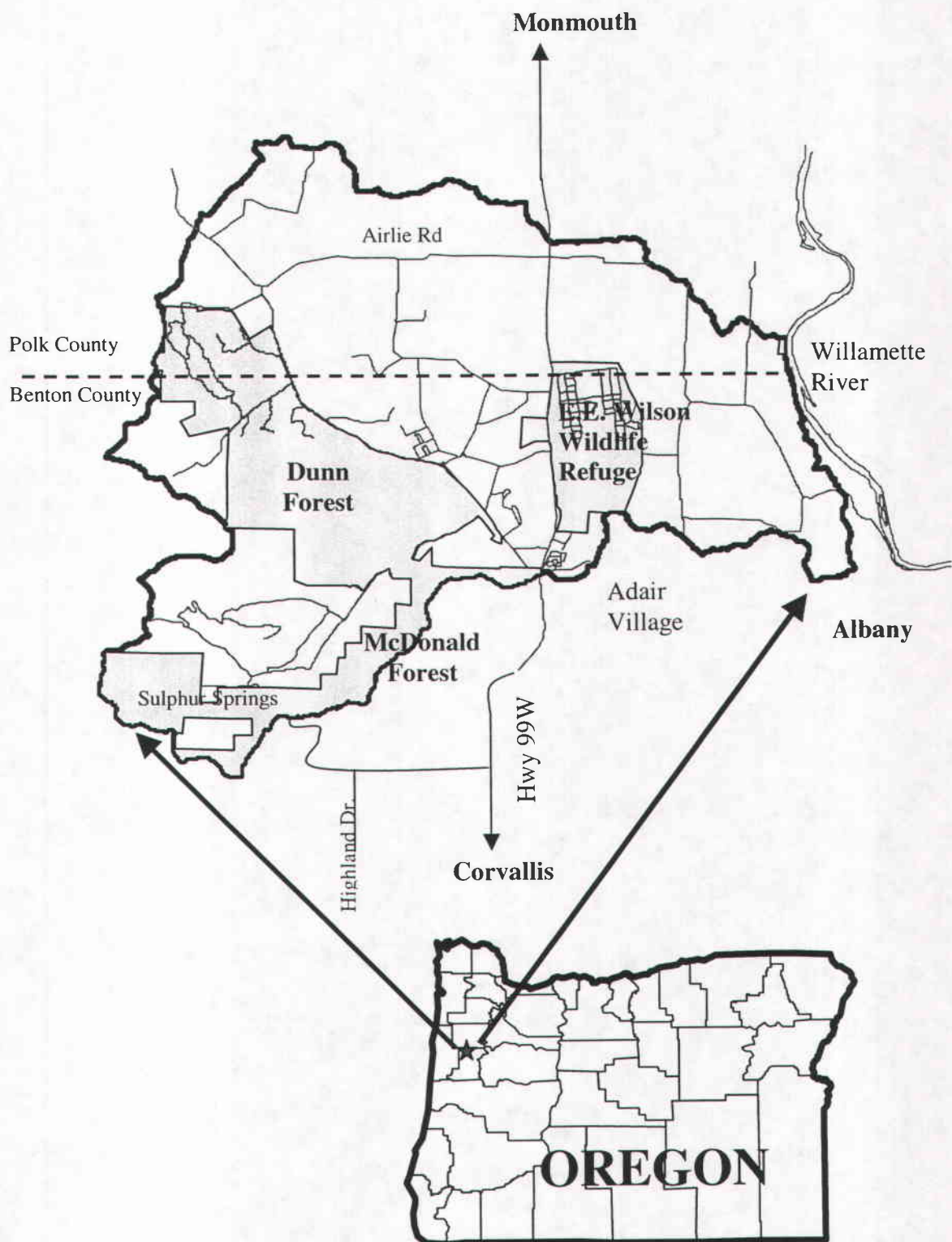
The Soap Creek Watershed lies just beyond Corvallis' urban growth boundary and is primarily comprised of three land use zones: Forest/Timber Conservation (FC/TC), Exclusive Farm Use (EFU) and Rural Residential (RR). Forest Conservation accounts for roughly 44% of the total acres in the watershed and is designed primarily to conserve forestland and promote the management, growth and harvest of trees while protecting air, water and wildlife resources within the zone (Benton County, 1999). Exclusive Farm Use represents 48% of the acreage in the Watershed; its purpose is to protect lands for continued agricultural production, while providing open space, wildlife habitat and other benefits associated with agriculture (Benton County, 1999). Five percent of the acreage in the Watershed is designated as rural residential. Rural residential zones may incorporate farm and forest management and are intended to provide for "a rural residential lifestyle outside recognized urban areas without conflicting with agriculture and forestry uses" (Benton County 1999). The remaining 3% of the acreage reflects a mix of Industrial and Open Space zoning (*percentages based on tax lot data from Benton and Polk Counties).

3.2   Social Setting

In the last 50 years, the Watershed has experienced a significant increase in the number of property owners and a corresponding decrease in ownership acreage (Zybach 1999). Private property accounts for 68% percent of the total acreage in the Watershed, which is distributed among approximately 600 owners. Survey results indicate that a large percentage of these owners are watershed residents.

Residents in the Soap Creek Watershed have exceptionally high income and education levels. Sixty-four percent of respondents indicated they held a bachelors or higher degree and over 73% of respondents indicated that their total household income was greater than $50,000 per year. This exceeds both the median household income for Benton County ($43,632), and the median household income reported for the State of Oregon ($37,284) (U.S. Census Bureau, 2000). Residents' income levels are most likely associated with employment either at Oregon State University or with Hewlett Packard, which are both located in Corvallis.

Although residents seemed to feel that the Watershed was more than just a bedroom community to Corvallis, the area lacks a cohesive community spirit. Residents along private roads know one another, but there are few community events within the Watershed initiated for the purpose of social interaction. The Watershed does not have a church, active school or even a corner store to serve as a focal point for social interaction. Instead, residents commute to Corvallis for these activities and the majority of meetings that take place in the watershed are focused on practical or controversial issues, such as road maintenance, or land use issues. The highway dissecting the Watershed also seems to act as a barrier to interaction among residents who live on either side.

The Watershed is also heavily used by a variety of recreationists. An abundance of non-motorized recreational opportunities, including trail systems on the McDonald Dunn Forest and road networks throughout the area, offer access for equestrians,

mountain bikers, hikers and hunters. While many residents indicated that they recreate near their homes, a majority of the recreation pressure in the area is from individuals who live in Corvallis.

3.3   The Nature of Conflict

Conflict in the Soap Creek Watershed has surfaced over a variety of different land uses however, there has been a fairly consistent pattern of conflict within the watershed.   Historically, conflicts have arisen when a property owner or manager engages in an activity that changes the existing physical environment in the Watershed. The change, be it an increase in noise, traffic, or a visual change is perceived as negative by a group of individuals. In the Soap Creek Watershed this group is typically composed of residents, many whom have lived in the watershed for 10-15 years. Concerned residents then attempt to stop the activity, often citing potential impacts to water quality as a primary reason to stop the activity. The contentious issue simmers in the Watershed until it finally emerges at a public forum where it may produce either positive or negative outcomes depending on how the conflict is managed.

One example of a contentious issue in the Watershed that quickly escalated into a destructive form of conflict revolved around the harvests conducted by OSU on the Cameron Tract, a forested tract donated to the College in the mid-1990s. In this particular instance, conflict surfaced over College of Forestry plans to clearcut a portion of the tract in order to comply with terms of the property's donation.

Just as all conflict has the potential to produce positive outcomes, this conflict united residents with common concerns and offered individuals the opportunity to share their different views regarding forest management. However, despite a community meeting, which offered the opportunity for a positive interaction, conflict over the clearcuts escalated. Both residents and OSU described the meeting as hostile. The negative development of this conflict heightened distrust between a number of residents and College of Forestry personnel. It also discouraged other residents from participating in the conflict because there seemed little hope of producing a positive outcome. Although the College of Forestry proceeded with the clearcuts on the Cameron Tract, incorporating some of the residents' specific concerns, defensive and combative communication employed by both residents and OSU personnel incited distrust and hard feelings. Six years later, resentment and distrust fueled by this conflict still exist between public managers and residents inhibiting the creation of social capital and productive communication in the Watershed.

This example of conflict in the Watershed illustrates the tenuous relationships among stakeholders, the differing values that stakeholders have with regard to land use and points to the tremendous conflict potential in the area. It also illustrates how contentious issues can erupt into destructive conflicts if actions are not taken to address and manage conflict in its early stages.

4   RECURRING THEMES

When taken together, data analysis from both qualitative and quantitative research methods revealed four overarching themes: 1) land use and policy, 2) water quality and quantity, 3) forestry and 4) quality of life.   These themes emerged from the repetition of key issues identified by both interviewees and survey respondents (Table 2).   The following section provides results and discussion for each theme.

4.1   Land Use and Policy

Social views toward land use are central to conflict at the urban fringe. Just as implementation of land use planning and regulations vary dramatically across the United States, citizen's opinions vary about what constitutes appropriate land use and management on both public and private lands.   The following sections on development, land use zoning and private property rights address the aspects of land use and policy that arose most consistently from this research.

4.1.1   <u>Development</u>

"Development happens. Un-development does not happen. That's just the way things are. Corvallis has grown by almost 30,000 people since my family first moved out here [in 1980]." ~*Tom, forest owner and watershed resident*

Table 2. Key issues identified by interviewees and survey respondents, categorized into recurring themes.

Key issues		Recurring Themes
Interviewees	Survey Respondents	
Land Conversion **Road maintenance**	**Development** -Sprawl -Overpopulation -Protecting farm/forest lands -Preserving land/ habitat	
Private property rights **& Regulations**	**Regulations** -Property rights -Inadequate enforcement -Concern about more -Land use planning -Input into decision making	**Land Use & Policy** -Development -Land use zoning -Private property rights & regulations
Recreation **Hunting**	**Recreation** -Maintaining or improving -Negative impacts -Hunting	

Harvest/Clearcuts
 Fire
 Spraying
 Management
   communication
	Forestry
	 -Harvest practices
	 -Fire
		Forestry
		 -Forest Practices
		   Clearcuts
		   Herbicides
		 -Expectations of
		   Forest Management

Water Quality	**Water Quality** -Cattle/horses/manure -Spraying: fertilizer/herbicides -Water quality/quantity concerns	**Water Quality &** **Quantity**
Quiet / Privacy	**Quality of Life** -Communication -Community -Safety -Scenery -Litter/Vandalism -Noise -Privacy -Traffic	**Quality of Life** -Physical setting -Social Capital

Development and its subsequent impacts were identified as primary concerns by both interviewees and survey respondents. The type of development that stakeholders spoke of is commonly referred to as urban sprawl. Since the 1960's both Polk and Benton Counties, the dividing line of which falls in the Soap Creek Watershed, have doubled in population (Forstall 1995; Hough 2001). The resulting expansion to accommodate this growth is visible within the city limits, as are new houses that continue to emerge in surrounding rural areas, such as the Soap Creek Watershed.

Forest owners, landowners and recreationists consistently identified issues associated with development in their top three concerns in an open-ended survey question (Figure 2). Most comments from respondents associated development with negative impacts, although the types of impacts perceived varied among different stakeholders.

Figure 2. Summary of the top three issues identified by survey respondents

	DVLPMT	REC	WATER QUALITY	REGS	FORESTRY	QUALITY OF LIFE	OTHER
% Overall	27%	21%	19%	12%	10%	10%	2%
% Forest Owner	24%	10%	26%	16%	11%	11%	2%
% Landowner	32%	14%	19%	12%	10%	10%	2%
% Recreationist	25%	44%	7%	6%	9%	8%	1%
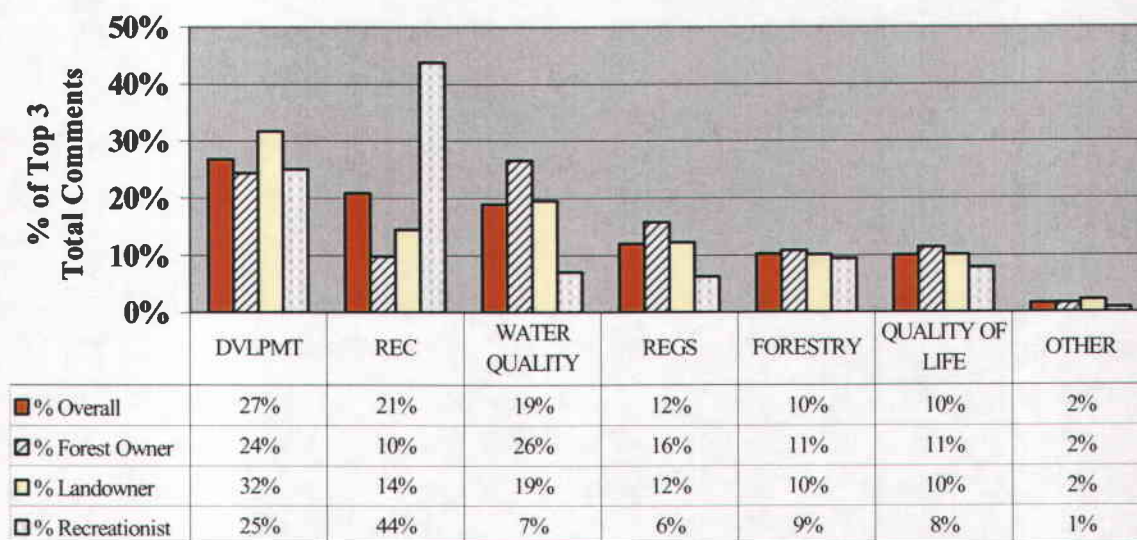
When residents spoke of development, their comments were typically associated
with their tenure in the Watershed. Residents with longer associations reflected on both
the social and physical changes they had witnessed in the Watershed. Mel, a long-time
watershed resident commented that neighbors seemed to have had closer relationships
and were more willing to help one another with haying and other property chores when
he and his wife moved to the area 30 years ago: "…because when we first moved out
here, everybody knew everybody…we had picnics and stuff." Newer residents with
fewer community changes to reference, spoke about maintaining the current character
of the area by limiting future development. Implicit in these comments were residents'
concerns about the negative impacts of development on the environment and how those
impacts would affect their quality of life (Sidebar 1).

**Sidebar 1. Residents' comments regarding development in the Soap Creek
            Watershed**

"Development, housing development out there, nobody wants to see more houses,
to be honest with you." ~*Tom, forest owner and watershed resident*

"…urban growth is out there in the future. Since we've been there, there's been
only one new house that's been built on our end of the road. There's been a couple
more built at the other end of the road…. I'm not all that familiar with the zoning
ordinances, but I'm more worried about the density of housing increasing in the
valley than I am in most land use issues."
~*Sean, forest owner and watershed resident*

"I don't want to see this become an urban fringe…I don't want to be here when it's
housing developments, when the neighbor sells off… his land and they put in
houses. I don't want to see developments like that out here… I don't want to see
the road straightened. This is a unique area …all the history that is up and down
this valley; they'd lose that if they changed it."
~*Hank, landowner and watershed resident*

A number of residential property owners in the watershed indicated that one of the things that attracted them to the watershed was the large percentage of property owned by the state; assuming it had little chance of ever being developed for housing:

> "…the proximity of McDonald Forest to [our property]…was a huge factor in [deciding to buy] it as well. We knew that Mac Forest would never be developed, at least we hope the University would never sell Mac Forest and develop it…That was a huge factor for us."
> *~Tom, forest owner and watershed resident.*

Forest managers were the most explicit in defining impacts from development. They saw residential development as a source of the increasing number of challenges that face forest managers in urban fringe areas. Nicole, a private timber company representative, described how expanding development into rural environments can affect forest management:

> Whenever you move the line of what used to be [zoned] forest or agriculture and start changing it into a residential zone that affects our forest management activities. It increases our risk of fire, it increases the risk of those neighbors coming onto our property. When you have more public on your property, you happen to have a tendency for an increase in vandalism and littering. So the more people, the closer you move the line, the harder it gets. I mean, that's just the way it is.
> *~Nicole, private timber company representative*

As land is developed and forest managers encounter not only an increase in adjacent neighbors, but neighbors who may have different backgrounds and different motivations for owning land, the potential for conflict increases. Dennis, a watershed resident, expounded on this concept:

> …where land is being managed for timber, it does make it harder because people complain. You know, if everyone just sort of acknowledged [harvesting] and accepted it, it wouldn't be any big deal, but when people whine about it, then it does make it harder…they [residential neighbors] think for example that OSU should buffer them

> from [harvests] and I think they should buffer themselves from
> OSU…it's just a hundred years ago people lived out here worked in
> those resource industries so you know, they weren't opposed to logging
> because they were loggers, and now…they work for Hewlett Packard or
> something and they don't know anything about logging practices or
> forest management….that's one of the challenges in…an interface with
> residential… it affects how they manage their land.
> ~*Dennis, landowner and watershed resident*

From forest managers' perspectives, expanding residential development has increased the perceived risk of damage to their properties from vandalism and fires as well as the amount of time and effort they expend to address neighbor concerns. While timber company representatives considered the increased contact with neighbors a necessary part of doing business, they also suggested that if the costs of these efforts consistently exceeded income on specific properties they would seriously consider divesting in favor of acreage with higher returns and fewer constraints. Depending on the type of land use zoning requirements in place this could result in a shift away from corporate ownership and potentially change land use patterns.

Recreationists' concerns about development were the most general. They referred to development in relation to Corvallis' overall growth as well as the increased recreation use and impacts in McDonald Dunn Forest. A recreation inventory of McDonald Forest indicated the Forest experienced approximately 75,000 visits in 1993 (Wing 1996) a number that has grown to nearly 100,000 visits in 2001(Oregon State University 2001). Some recreationists commented that new developments have limited access to McDonald Forest in certain locations however others acknowledged an increase in new, unauthorized trails leading from housing developments into the forest.

Among recreationists, hunters expressed the greatest concern about development. A rural tradition, hunting opportunities have declined in the Soap Creek Watershed over the last 50 years as the number of hunting permits let out on McDonald Forest have dropped from over 2,000 in 1970 to 200 during the 2000 and 2001 deer season (Sturgis 1977; Oregon State University 2001). While development is not the only factor influencing the number of permits allowed, citizens' concerns about safety in and near the Research Forests contributed to forest managers' decision to eliminate rifle permits during the 2000 deer season on McDonald Forest (Starnes 1999). Interview and survey results corroborated stakeholders' concerns about personal safety during hunting season (Table 3).

Table 3.   Survey Respondents perceptions of safety during hunting season.

I am concerned for my safety in the watershed during hunting season

% Response	Overall	Landowner	Forest owner	Recreationist	Resident	Non-resident
Somewhat or Strongly agree	49	44	55	50	52	37
Somewhat or Strongly disagree	39	40	34	43	36	39
No Opinion	12	16	11	7	12	24
			n=349		n=257	

Although interviewees suggested that hunters seemed generally unaware of private property boundaries and disrespectful of property owners' safety concerns, survey respondents who identified themselves as hunters acknowledged increasing hazards associated with hunting near growing residential areas. These hunters also expressed hopes that hunting opportunities on State-owned lands would not be entirely

eliminated in the future due to the inconsiderate actions of a few. One survey

respondent shared his perspective on hunting in the Watershed, as well as his desire to

see hunting opportunities persist in the future: "Hunting and fishing are my recreational

joys. I have taken deer and elk in Dunn forest when it was legal to keep five...I think

too many people with guns call themselves hunters; as the stupidity quotient in these

hunters rise, my options diminish. I hope judicial hunting is a future option." *~Survey*

respondent

When individuals consider adding one more house to the neighborhood, the

impacts from their actions rarely seem significant enough to consider. Yet perspectives

shared by a variety of different stakeholders indicates that impacts from development

are cumulative and are far-reaching. Development at the urban fringe changes the

physical landscape by adding buildings and changing land uses; it can also change the

type of social interactions and traditions in an area as more and new owners project

their values onto the land.

4.1.2   Land Use Zoning

One of the restraints limiting urban sprawl within the Soap Creek Watershed and

across Oregon is land use zoning. Instituted in 1973, Oregon's Land Use Act created

the Land Conservation and Development Commission (LCDC) which sets guidelines

requiring cities and counties to incorporate urban growth boundaries and protective

zoning for forest and agricultural management within their districts (American Planning

Association, 1996).

Although 92% of the Soap Creek Watershed is zoned for forestry and agricultural use, relatively few owners indicated that income from resource management was an important reason for their ownership. Forty percent of property owners indicated that income from agriculture was important, while only 22% indicated that income from timber was an important reason for their ownership. Of that 22%, nonresident owners were more likely than residents to manage for timber income. Overshadowing income, 80% or more of respondents indicated that aesthetics, privacy, wildlife or open space were primary reasons for their ownership (Table 4).

Considering that a majority of property owners were not inclined to manage their lands for natural resource income, respondents' overall support for active forest and farm management was high (Figure 3). While it is intuitive that property owners who earn income from natural resource extraction would back agriculture and forest management, positive support from landowners, forest owners, and recreationists alike suggested that these stakeholders see intrinsic, as well as economic values in these forms of management.

One possible explanation for property owners' support of active farm and forest management may be driven by opportunism. Although owners may not currently consider income from farm or forest management important, by supporting it they retain the option of engaging in these activities in the future, should their interests or financial needs change. A second explanation, which better accounts for support from

Table 4. Important reasons for owning property in the Soap Creek Watershed

As a landowner, how important to you are each of the following reasons for owning land in the SCW?

	% Reporting Somewhat or Very Important				
	Overall	**Landowner**	**Forest owner**	**Resident**	**Nonresident**
1. Scenic beauty or aesthetic values	96	96	96	97	91
2. Privacy associated with rural lifestyle	93	95	91	98	72
3. Provide for wildlife habitat	91	89	94	93	81
4. Maintain undeveloped green space	80	83	78	85	61**
5. A legacy for my heirs	71	62	80**	70	78
6. Non-motorized recreational use	69	70	70	77	39**
7. Investment opportunity/ resale of land	65	69	61	63	73
8. Personal use of forest products	46	29	65**	47	46
9. Income from timber production	22	6	38**	17`	47**
10. Income from agriculture	40	41	40	37	54
11. Keep horses	29	33	25	33	13*
12. Eventual subdivision or development	17	14	20	14	28
13. Motorized recreation	16	20	11	17	6

** Difference between landowners and forest owners statistically significant at p ≤ 0.01

* Difference between resident and non-resident landowners statistically significant at p ≤ 0.05
** Difference between resident and non-resident property owners statistically significant at p ≤ 0.01

Figure 3. Survey respondents' support of active forest and agricultural management in the Soap Creek Watershed

Actively managed forests are important to sustaining the character of the Soap Creek Watershed

Actively managed agricultural lands are important to sustaining the character of the Soap Creek Watershed
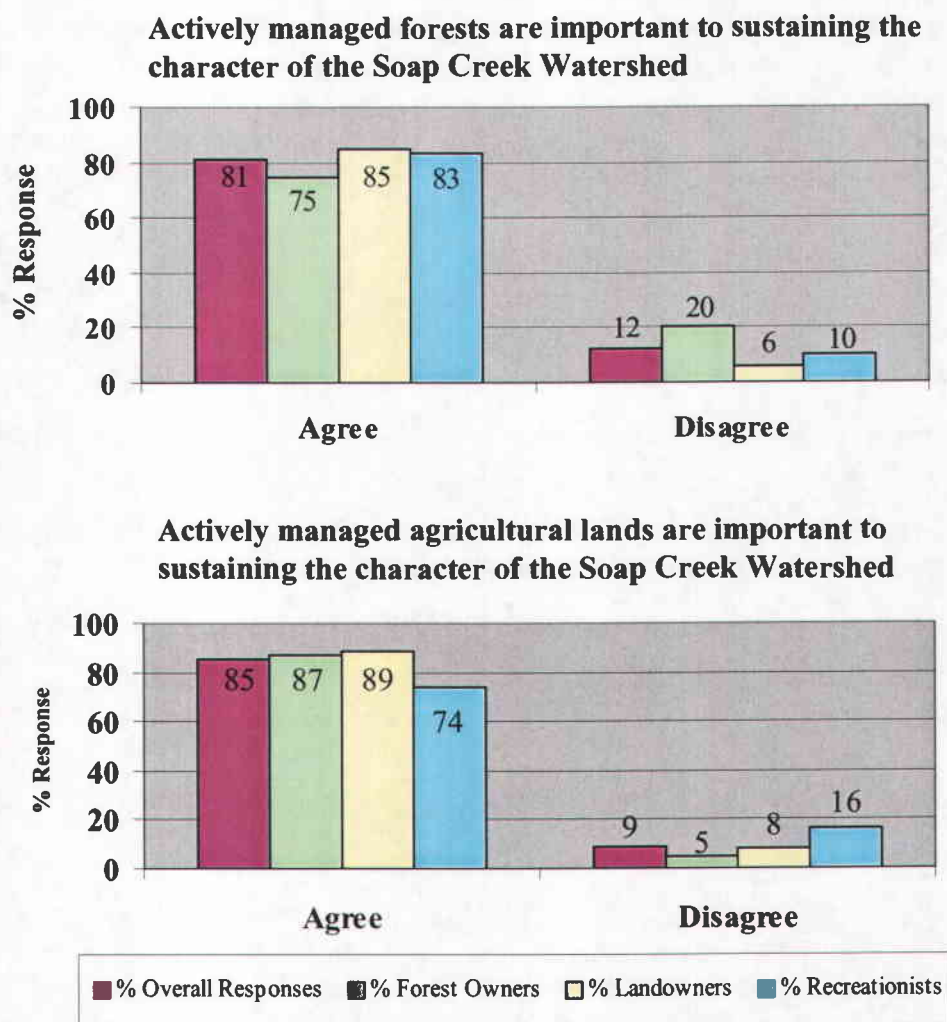
recreationists, is that production-oriented management, while it may employ some

undesirable practices, protects the landscape from development and can retain the rural

visual appeal of an area (Sidebar 2).   Survey respondents corroborated this strong

support for protecting farm and forestlands. Over 80% of forest owners, landowners

and recreationists disapproved of farm and forest zoned lands being converted to

residential zoning, although residents were more likely to disapprove of conversion than

non-residents (Table 5).

Sidebar 2.   Stakeholders' preference for land management over development

"I can tolerate the temporary changes of clearcutting but not the permanent
changes of development and construction." *~Survey respondent*

"[there is a] need for economically and environmentally sustainable forest and
agriculture to preserve the wild and rural character of the area against
development." *~Survey respondent*

"Maintain farm and forest use, at least this requires new residents to respect the
traditional environment of the valley." *~Survey Respondent*

When asked about land use regulations, interviewees and survey respondents

both expressed appreciation for Oregon's land use planning efforts (Table 5). Nancy, a

watershed resident, shared her perspective on how land use zoning has influenced

Oregon's development patterns:

It [zoning] does make a difference... The zoning restrictions that make it
difficult for other people to get this [indicating her property], is that fair?
But on the other hand, you've got to stop somewhere. When I go to

> Washington state...there's a real difference in the way things look up
> there and the way things look down here. Housing developments out in
> the middle of farmland that are just sort of dropped in here and there. It
> [zoning] has made a difference in Oregon.
> ~Nancy, forest owner and watershed resident

As Nancy suggested, zoning does limit development by restricting minimum lot

size. Within the Soap Creek Watershed, typical rural residential lots range from one to

twenty acres, although lands subdivided prior to 1973 resulted in some smaller lots.

Lands zoned for forestry and agriculture cannot be subdivided into less than 80 acres.

Lot size restrictions, in addition to the preference that zoning provides forest and

agricultural lands, seemed to offer residential owners a measure of assurance that the

physical character, and thus the rural lifestyle of the Watershed would be slow to

change.

Forest owners were least likely to indicate that they had no opinion about land

use zoning. Sixty one percent of forest owners agreed that Oregon's zoning laws

protect their rights to manage their land consistent with its zoning (Table 5). This

response was consistent with comments provided by interviewees. A forest manager

for OSU indicated that when neighbors next to OSU's forest intend to sell or subdivide

their land, he asks them to include a passage referencing the kinds of activities that

happen in Forest Conservation zones, so that new property owners will know what to

expect:

> I do this every time that there's a development, large or small that goes
> next to the forest...I get two little paragraphs put in their covenants and
> codes and restrictions that say...the people doing this development
> recognize that the Forest is an actively managed forest for teaching,
> demonstration and research and we do all of the standard forestry
> practices typically associated with forest land including: timber

Table 5. Survey respondents' perceptions of land use zoning in the Soap Creek Watershed

% Response	Overall	Landowner	Forest owner	Recreationist	Resident	Non-resident	Urban	Suburb	Small Town	Rural
1. More land should be converted from farm or forest zoning to residential zoning in the Watershed										
Somewhat or Strongly agree	8	7	12	6	7	17	8	3	9	12
Somewhat or Strongly disagree	84	81	85	86	87	67**	84	93	78	81
No Opinion	7	12	2	8	6	15	8	3	13	7
		n=351			n=259		n=244			
2. Land use zoning protects the character of the Watershed										
Somewhat or Strongly agree	67	66	70	63	68	65	76	72	62	69
Somewhat or Strongly disagree	16	20	19	6	21	13	8	10	24	22
No Opinion	17	14	10	31	10	22	16	17	14	9
		n=344			n=255		n=240			
3. Current land zoning regulations are good for the Watershed										
Somewhat or Strongly agree	55	56	63	42	61	56	26	20	25	31
Somewhat or Strongly disagree	14	15	17	8	17	9	42	50	36	31*
No Opinion	31	29	19	50	22	35	32	30	38	38
		n=348			n=256		n=241			
4. Oregon's land use regulations do a good job of protecting landowner's rights to manage their land consistent with the way it is zoned.										
Somewhat or Strongly agree	53	44	61	53	49	62	51	65	654	50
Somewhat or Strongly disagree	27	30	28	20	30	23	29	14	31	32
No Opinion	20	26	11	27	20	15	20	21	14	18
		n=345			n=255		n=240			

* Difference between property owners with urban and rural backgrounds statistically significant at p ≤ 0.05 level.

** Difference between resident and nonresident property owners statistically significant at p ≤ 0.01 level

harvesting, slash piling, burning, use of herbicides…go ahead with your development but understand in your CCR's and in deed language that this is part of what you will allow me to do… I think that's fair for … neighbors here to buy a house next to the [OSU] Forest and understand that it's forest land." ~*State forest manager*

Because Forest Conservation and Exclusive Farm Use purpose statements clearly support active extraction of resources and the Rural Residential purpose statement prioritizes forest and agricultural uses over residential uses (Benton County 1999), zoning regulations serve to legitimize forest management as an appropriate land use in developing areas. In a time when forest practices are the focus of considerable attention and subject to increasing constraints, forest owners in the Watershed appreciated that land use regulations tended to protect rather than restrict their land management options.

The one prominent criticism of land use planning, voiced by both interviewees and survey respondents, was that zoning regulations are not adequately enforced by county planning boards. These comments were directed primarily at the number of exceptions granted, which allowed additional residential development and commercial facilities in the Watershed (Sidebar 3).

Recreationists interviewed did not acknowledge the existence of different land use zones. When asked if zoning was good for the Watershed, 50% of recreationists responding to the survey indicated they had no opinion. However, 63% of recreationists felt that land use zoning protected the character of the Watershed (Table 5). These responses suggest that while recreationists considered land use regulations beneficial, many may be unfamiliar with the particulars of zoning requirements.

**Sidebar 3. Survey respondents' opinions regarding enforcement of land use
zoning regulations**

"The county's permitting process relative to conditional use permits does not seem to
be effectively protecting the character of at least some parts of the watershed."
~Survey Respondent

"Inappropriate uses such as horse boarding facilities in rural residential zoning."
~Survey Respondent

"Current land use laws help protect [from] over-development. [Planners] should not
be allowed to override, [the] overall impact must be viewed." *~Survey Respondent*

"Too many new houses on agricultural land [in the] past 30 years…Supposed to be
farming and rural areas, not urban! What happened to the minimum acreage?..Too
many exemptions and exceptions allowed!" *~Survey Respondent*

4.1.3   <u>Private Property Rights and Regulations</u>

I strongly believe that owners alone are responsible for the land management.
LUBA (Land Use Board of Appeals) is way too powerful. My experience is
that farmers, landowners, and foresters are more ecologically minded than all
the tree huggers and owl fanatics out there who have never tried to replenish
the land; the fewer restrictions, the better. *~Survey respondent*

For many property owners, the issue of private property rights and regulations

elicited highly charged sentiment.   As state and federal legislation continue to increase

the strength of environmental legislation the struggle between public benefits and

private property rights has become more evident. Although stronger regulations are

meant to benefit the environment, more and constantly changing regulations translate

into uncertainty and can threaten property owners' deeply held beliefs about private property rights.

In the context of this research, "private property rights" refers to interviewees' and survey respondents' personal interpretations of the bundle of rights they believed accompany property (land) ownership. The term "regulations" encompasses any regulations that interviewees and survey respondents thought affected property ownership and management, although we primarily referred to land use zoning and forest practice regulations in the survey instrument.

Regardless of residency, land and forest owners expressed similar concerns about maintaining private property rights in the face of changing regulations (Table 6). Tom, a forest owner and watershed resident shared his family's concerns about regulation:

> …we're primarily concerned about being regulated to death…We don't want to be limited as to what we choose to do out there on our own property, within reason of course… we're becoming very concerned about outside impacts. People coming in, being disrespectful of the people that live there…they come in with their own preconceived ideas of what good forestry is, of what good ecology is, of how people should be doing things and then try to apply them to somebody who already does these things or tries to…If I really had to boil it down, I'd say we're very concerned about being regulated right out of what we want to do. *~Tom, forest owner and watershed resident*

Tom's comment refers to the idea of a social contract. When he suggested that his family should be free to manage their own property "within reason", he acknowledged both a need to protect society from impacts caused by a group or individual as well as the need to provide individual owners with reasonable protection from society. Regulations are one way to standardize the reasonable expectations that

result from society's expressed values.   Many owners felt that if regulations suitably

protected society's interests then property owners should be able to do what they want

on their land, as long as their activities fall within the bounds of law; 70% of

landowners and 71% of forest owners supported this idea (Table 6).

Table 6. Survey respondents' opinions about private property rights

% Response	Overall	Landowner	Forest owner	Recreationist	Resident	Non-resident
1. I am concerned about private property rights being compromised by changing regulations						
Somewhat or Strongly agree	68	76	73	48	73	78
Somewhat or Strongly disagree	20	16	21	25	20	13
No Opinion	12	9	6	27	7	9
				n=351		n=259
2. Landowners should have the right to do what they want on their property as long as they do not violate the law.						
Somewhat or Strongly agree	66	70	71	55	69	79
Somewhat or Strongly disagree	33	29	28	45	31	19
No Opinion	1	1	1	0	0	2
				n=348		n=257

During interviews, recreationists acknowledged that property rights were

relatively important to resident property owners, however they did not convey the same

personal connection to property rights, as did property owners.   Rather, recreationists

had a tendency to exempt recreation as a possible violation of private property rights.

Although recreationists never specifically said they trespassed, they did not seem to

consider crossing someone's property without express permission a violation of the

owner's private property rights, unless they were confronted by the owner. Chris, a

recreationist, described this phenomenon as something akin to historic open range

policies that required property owners to fence out unwelcome use, rather than keeping

livestock fenced on their own property:

> Most responsible people [recreationists] out there will obey the
> regulations. They prefer not to go through private property. They
> definitely won't go through private property where you know the owner
> doesn't like it; cause why bother with the hassle? The Timberhill guy
> [owner of Timberhill Properties adjacent to McDonald Forest] has no
> problem with it…whoever he is, he's never put up big sign there saying,
> no more running through this land, you know, or walking or hiking. So
> he hasn't done that and so everybody assumes that he has really no
> problem with it. ~ *Chris, recreationist*

Recreationists responding to the survey commented more frequently about the

need to respect private property rights than recreationists interviewed. However, they

were less likely than either forest or landowners to express concern about private

property rights being compromised by regulations (Table 6). Twenty-five percent were

unconcerned about the impact of changing regulation on private property rights and

27% percent indicated that they had no opinion on the topic, hinting that nearly half of

the recreationists responding may not own property. While 55% of recreationists

agreed that property owners should have the right to do what they want on their land

within the constraints of the law, the remaining 45% disagreed.

Although recreationists' responses were significantly different from responses

provided by either land or forest owners it is important to recall that the recreationists

represented in this study were chosen from a convenience sample. The limitations of

the sample and lack of knowledge about recreationists' property ownership associations

outside the Watershed make inferences to the population of Soap Creek Watershed

recreationists impossible. Acknowledging these limitations, our results do suggest an

interesting hypothesis for future research, investigating possible differences in opinion regarding private property rights between property and non-property owners as well as recreationists and property owners.

Despite stakeholders seemingly different views regarding private property rights, survey respondents held fairly similar opinions regarding the effectiveness and amount of regulations guiding forest management on private lands. Fifty-one percent of all respondents felt that Oregon's laws adequately regulate forest management, a response that varied only slightly across subgroups. The existence of Oregon's Forest Practice Act, passed in 1971, in conjunction with the almost yearly additions to Forest Practice Rules (Oregon Department of Forestry 2001) are likely explanations for this response. A majority of respondents from each subgroup also indicated that more regulations to guide forest management activities on private lands were unnecessary (Table 7). Combined with previously reported results supporting active forest management, these findings suggest that most property owners in the Soap Creek Watershed are amenable to forest management, as allowed by current regulations. It also suggests that conflicts over resource management may stem more from poorly defined relationship and procedural components of stakeholders' interactions (Walker and Daniels 1997) than from disputes about whether or not harvesting should occur. The following section provides more insight into stakeholders' opinions of specific forest practices.

Table 7. Survey respondents' opinions regarding regulation of forest practices

% Response	Overall	Landowner	Forest owner	Recreationist	Resident	Non-resident
1. Oregon's laws adequately regulate forest management activities on private lands						
Somewhat or Strongly agree	51	47	55	51	48	65
Somewhat or Strongly disagree	30	27	30	35	30	21
No Opinion	19	27	15	14	22	15
			n=345		n=256	
2. There need to be more regulations to guide forest management activities on private lands						
Somewhat or Strongly agree	34	32	30	41	33	19
Somewhat or Strongly disagree	57	55	62	53	54	74
No Opinion	9	13	8	6	12	6
			n=347		n=256	

4.2   Forestry

One objective of this research was to gain a better understanding of the range of

opinions and conflicts related to forestry that arise at the urban fringe.   To put the

discussion of forestry-related issues in perspective, we wanted to understand where

forest practices fell in relation to other issues that stakeholders in the Soap Creek

Watershed identified as important. Although both interviewees and survey respondents

were quite willing to share their opinions about forest practices, forestry was not the

single most significant issue in people's minds.   Comments specific to forest harvest

practices accounted for only 10% of the top three responses from survey respondents

about the issues that most concerned them. Roughly one third of the responses came

from forest owners, landowners and recreationists, respectively (Figure 2).

Although interviewees and survey respondents did not identify forestry as the

most pressing issue on their list of concerns, certain facets of forestry did receive

considerable attention. Those aspects identified most frequently by interviewees and survey respondents are incorporated into the subsequent sections on forest practices and expectations of forest management standards.

4.2.1 <u>Forest Practices</u>

Review of secondary documents in conjunction with exploratory interviews indicated that clearcutting and herbicide application were two of the most controversial forest practices conducted in the Watershed. Previous research on opinions about clearcutting validates citizens' opposition to the practice (Davis and Hibbits 1999; Bliss et al. 1997; Bourke and Luloff 1994; Shindler et al. 1993). Research also indicates that citizens perceive herbicide application, especially aerial application, as a high risk activity, less favorable than ground application or non-chemical means to control vegetation (Wagner et al. 1998; Wagner et al. 1998; Buse et al. 1995). Because it is generally acknowledged in the forestry sector that clearcutting and herbicide application are controversial, we expanded the scope of the survey instrument to better understand stakeholders' overall opinions about timber harvesting as well as their opinions about specific qualities of forest practices, such as scale and proximity. In order to explore the issue of harvesting, we differentiated harvest methods into two generic categories, clearcutting and methods other than clearcutting.

4.2.1.1 Harvesting and Clearcutting

Despite a logging history in the Watershed that goes back to the early 1900's (Jackson 1980), some resident interviewees lamented both the amount and type of harvesting that occurred in the area during their inhabitance (Sidebar 4). Records of harvest activity on the McDonald Dunn Forest indicate that the average volume harvested over the last 10 years was 4.1 MMBF (Hundred thousand board feet), down from an average of 6.3MMBF harvested per year between 1982-1992 (Oregon State University 2001).

Sidebar 4. Resident interviewees' concerns about the amount and type of harvesting that has occurred in the Watershed

"there was a huge uproar when the research forest cut the [Lewisburg] saddle. This is going back 8 or 9 years. The saddle used to have a heavy fog that hung over it so much that you usually couldn't see the top of the hill. Then they did a couple different cuts a clearcut, some small patch cuts but I noticed the fog lightened and disappeared at the top of the hill after the clearcut. It was a physical change, a change in a micro-climate, but still a physical change."
~ *Rick, forest owner and watershed resident*

"that one [harvest] I got really mad about and I was mad mostly because it was kind of the final straw. There had been a tremendous amount of logging out here over the immediately preceding 6,7,8 years. Um it was in that period where basically OSU forest was liquidating all their old growth and um, so there had been a huge amount of cutting over in here... And there's been, there had been some change in ownership in some of the forestland back up behind us...All of a sudden there was a huge amount of clearcutting." *~Nancy, forest owner and watershed resident*

While a third of resident respondents agreed that there was too much harvesting in the Watershed, 47% of respondents found harvest levels acceptable and 21% indicated no opinion (Table 8). Although the amount of harvesting in the watershed seemed highly contentious to a third of residents, it was quite apparent that residents and nonresidents had very different opinions about the type and scale of harvesting that were acceptable.

Residents were considerably less likely to support clearcutting than non-residents and were more amenable to harvesting if forest managers used methods other than clearcutting. Residents indicated a higher level of concern than non-residents if harvests covered large areas, occurred frequently or if they significantly changed existing habitat or scenery. Residents were also more likely than nonresidents to be concerned if the harvest was near their property (Table 9). In reference to all of the factors above, nonresidents were less likely than residents to indicate that each factor increased their concern and were more likely to indicate that each factor did not affect their level of concern about harvest activities.

Visual aesthetics may partially explain the differences that emerged between resident and nonresident property owners. Clearcuts, particularly large ones, are visible on the hillsides in the Watershed and are considered by many to be less appealing than are maturing forests (Ribe 1999; Ribe 1989). Property owners who moved to an area to enjoy aesthetic values and privacy might find clearcuts offensive because as they look at the clearcut they are reminded each day of how the area has changed:

Table 8. Survey respondents' opinions regarding timber harvesting in the Soap Creek Watershed.

% Response	Overall	Landowner	Forest owner	Recreationist	Resident	Nonresident	Urban	Suburban	Small Town	Rural
1. There is too much timber harvesting (all harvest methods) in the watershed										
Somewhat or Strongly agree	34	24	36	46	32	17	39	39	38	17
Somewhat or Strongly disagree	46	47	50	37	47	54	29**	39*	40**	62
No Opinion	20	29	14	17	21	28	32	23	22	20
				n=350		n=259			n=244	
2. Timber harvesting is appropriate on timber company forestland										
Somewhat or Strongly agree	95	95	96	92	95	98	94	93	94	97
Somewhat or Strongly disagree	4	3	4	7	4	2	6	7	4	2
No Opinion	1	1	0	1	1	0	0	0	2	1
				n=343		n=254			n=239	
3. Timber harvesting is appropriate on individual private forestland										
Somewhat or Strongly agree	95	96	96	92	96	98	94	93	94	97
Somewhat or Strongly disagree	4	3	4	7	4	2	6	7	4	2
No Opinion	1	1	0	1	0	0	0	0	2	0
				n=343		n=254			n=239	
4.Timber harvesting is appropriate on public forestlands										
Somewhat or Strongly agree	89	91	87	88	89	89	86	80	91	92
Somewhat or Strongly disagree	10	7	12	12	9	11	14	17	7	7
No Opinion	1	2	1	0	2	0	0	3	2	1
				n=343		n=254			n=239	

*   Difference between property owners with suburban and rural backgrounds statistically significant at $p \leq 0.05$ level.

** Difference between property owners with urban and rural backgrounds statistically significant at $p \leq 0.01$ level.

** Difference between property owners with small town and rural backgrounds statistically significant at $p \leq 0.01$ level.

> …as I drive through the forest up here, that clearcut that happened off to
> the right [of Lewisburg Saddle], I'm so aware of the fact of what used to
> be there. And what's there now is an industrial forest and it's never
> going to be anything else. Basically that's my reaction to most of the
> clearcutting… is that it's a real sense of loss.
> ~*Nancy forest owner and watershed resident*

Clearcuts in close proximity to a residents' property may also affect their real or

perceived level of privacy by removing vegetation that screened them from neighbors or

from roadways.

Nonresidents had a slightly more utilitarian view of their property than residents.

They indicated they were more likely to manage their property for timber income

(Table 4) and were consistently more likely than residents to agree that clearcutting and

aerial herbicide application were appropriate on all ownership types (Table 9;

Table 10).

In light of nonresidents' greater interest and acceptance of harvest activities,

they may have different perspectives on the visual appeal of clearcuts; choosing to

focus on the growth of a new forest, rather than the loss of a maturing forest. Similar to

residents, nonresidents expressed a great appreciation for their properties' aesthetic

values. However, they were less likely than residents to express concern about privacy

(Table 11).

Forest managers had little to say about the amount of harvesting in the

watershed. Although a few timber company representatives did comment that they

would wait for clearcuts on neighboring properties to re-establish before beginning an

adjacent clearcut, they did not suggest that the rate of harvest should be slowed or

stopped.

Table 9. **Statistically significant responses between resident and nonresident property owners regarding factors affecting their opinions about timber harvesting (Pearson's chi-square test).**

Statement	Resident			Nonresident				
Level of Agreement % Response	Agree	Disagree	No Opinion	Agree	Disagree	No Opinion	Chi-square	2-Tailed p-value
1. Clearcutting is an appropriate way to harvest trees in the watershed	41	50	8	56	24	20	12.6	0.002
2. Clearcutting is appropriate on private timber company forestland	50	47	3	80	20	0	14.1	0.001
3. Clearcutting is appropriate on individual private forestland	52	46	2	79	21	0	11.6	0.003
4. Clearcutting is appropriate on public (state/federal) forestlands	47	52	1	72	28	0	9.5	0.008
Level of Concern % Response	Increases	Decreases	No Affect	Increases	Decreases	No Affect	Chi-square	2-Tailed p-value
5. If the harvest is not a clearcut	18	46	36	13	23	64	10.9	0.004
6. If the harvest covers a large acreage	77	3	20	51	2	46	12.5	0.002
7. If the harvest occurs frequently	71	3	25	46	2	51	11.2	0.004
8. If the harvest significantly changes existing habitat	82	3	15	63	2	34	8.5	0.014
9. If the harvest significantly changes the scenery	68	5	27	44	5	51	9.8	0.007
10. If the harvest is near my property	71	2	26	41	0	58	16.8	<0.001

Table 10. Survey respondents opinions' regarding herbicide application

% Response	Overall	Landowner	Forest owner	Recreationist	Resident	Nonresident	Urban	Suburban	Small Town	Rural
1. I am concerned about negative effects of herbicide spraying in the watershed										
Somewhat or Strongly agree	35	54	54	64	59	36**	68	63	60	44
Somewhat or Strongly disagree	56	36	41	26	35	49	18	30	33	49**
			n=348			n=256			n=241	
2. Aerial herbicide spraying is appropriate on private timber company forestlands										
Somewhat or Strongly agree	39	60	59	48	54	80	53	50	48	70
Somewhat or Strongly disagree	56	33	39	51	41	15**	42	47	46	25
			n=340			n=253			n=240	
3. Aerial herbicide spraying is appropriate on individual private forestlands										
Somewhat or Strongly agree	41	58	58	47	52	80	54	50	46	69
Somewhat or Strongly disagree	56	35	39	52	43	15**	40	47	48	26
			n=339			n=252			n=239	
4. Aerial herbicide spraying is appropriate on public forestlands										
Somewhat or Strongly agree	41	58	57	45	52	78	51	50	46	69
Somewhat or Strongly disagree	54	34	41	54	43	17**	43	47	48	26
			n=339			n=252			n=239	
5. Ground herbicide spraying is appropriate on private timber company forestlands										
Somewhat or Strongly agree	18	84	79	67	80	85	74	87	73	87
Somewhat or Strongly disagree	78	9	18	32	15	6	21	13	22	7*
			n=342			n=256			n=242	
6. Ground herbicide spraying is appropriate on individual private forestlands										
Somewhat or Strongly agree	18	85	80	68	81	87	74	87	73	89
Somewhat or Strongly disagree	79	10	18	30	16	6	21	13	22	8
			n=342			n=256			n=242	
7. Ground herbicide spraying is appropriate on public forestlands										
Somewhat or Strongly agree	21	83	76	61	78	85	68	83	69	88
Somewhat or Strongly disagree	75	11	21*	38	18	6	26	17	25	7**
			n=341			n=255			n=241	

* Difference between: property owners with urban /rural backgrounds and between forest /landowners, statistically significant at $p \leq 0.05$ level.

** Difference between: property owners with urban/ rural backgrounds and between resident/ nonresidents, statistically significant at $p \leq 0.01$ level.

Table 11. Survey respondents' opinions about property owners' interest in privacy.

% Response	Overall	Land owner	Forest owner	Recreationist	Resident	Non-resident
1. Privacy associated with rural lifestyle is an important reason for my ownership in the Watershed						
Somewhat / Very Important	93	95	91	NA	98	72
Not at all Important	5	3	8	NA	1	24
No Opinion	1	2	1	NA	1	4
			n=259		n=257	
2. Privacy is very important to the people who live in the Soap Creek Watershed						
Somewhat or Strongly agree	81	86	89	59	93	61
Somewhat or Strongly disagree	1	1	2	1	.9	4
No Opinion	18	13	9	39	6	35
			n=349		n=258	

Fifty four percent of forest owners and 47% of landowners did not think harvesting in the watershed was excessive (Table 8). It is likely that these property owners were also interested in protecting their options to harvest in the future. Further analysis revealed that property owners with rural backgrounds were significantly more likely to accept the level of harvesting in the watershed than were property owners who grew up in urban, suburban or small towns (Table 8).

Property owners held mixed opinions about clearcutting. Forty three percent of forest owners and 45% of landowners approved while 50% of forest owners and 42% of landowners felt clearcutting was not an appropriate harvest method (Table 12). Rural property owners were also more likely to support clearcutting than property owners with urban or small town backgrounds (Table 12).

The split in forest owners' opinions about clearcutting is likely a reflection of the range of respondents who self-identified as forest owners. These included

residential woodland owners with small acreages who are less likely to consider

clearcutting (DeCoster 1998) and private or corporate forest owners with larger

acreages who had previously harvested or expressed the intent to harvest. When asked

how scale and proximity affected their concern about harvest activities, both forest and

landowners expressed levels of concern similar to that expressed by residents. Over

61% of both forest and landowners indicated that large harvests, harvests near their

property, harvests that affected their property values or harvests that affected the

scenery or wildlife increased their concerns (Table 13). While roughly a third of forest

and landowners indicated that methods other than clearcutting decreased their concerns

about harvesting, a third subgroup also indicated that their level of concern did not

change if forest managers used harvest methods other than clearcutting (Table 13).

Recreationists' interviewed did not specifically comment on the amount of

harvesting that has taken place in the watershed, but did indicate that recreation and

harvesting were generally compatible as long as recreationists were well informed about

the location of active logging and management efforts. However, 46% of recreationists

responding to the survey felt there was too much harvesting in the watershed (Table 8)

and 66% indicated that their level of concern about harvesting activities increased if the

harvest occurred near where they recreated (Table 13). One possible explanation for

this discrepancy is that recreationists interviewed had a better understanding of who

owned the forests in which they recreated and what the owners' management intentions

were. Survey respondents may have been less well informed, thinking that the

recreation opportunities they enjoyed were provided because the area was a park rather

than a research forest or commercially managed forest. Mark, a mountain biker, indicated that he thought recreationists with a longer commitment to the community were more aware of property ownership and management objectives, but that a high percentage of recreationists, especially University students, didn't understand the management objectives for the land they recreated on:

> A lot of them don't, a lot of them don't [understand]. I mean the only ones that do are the ones who have either gotten into a debate with someone like me and they understand that it [recreation] is not OSU's focus or they've read the sign boards. I mean they've really read and comprehended…They think it's a recreation area. Oh, there's research going on out there? Yeah, they didn't just put all that ribbon up for fun, you know. It's a research forest, that's why it's called the Research Forest…just because you can't see it doesn't mean that it [research] isn't going on…You're not even paying attention anyway, blasting down the trail or something… So I don't think most people understand. I really don't. *~Mark, recreationist*

Throughout the survey, recreationists maintained a critical opinion regarding most aspects of forestry. Fifty-two percent of recreationists were unsupportive of clearcutting; the same percentage indicated that their concerns about harvesting decreased if forest managers employed methods other than clearcutting (Table 12). Similar to residents, most recreationists indicated that large harvests and harvests that changed the scenery or changed exiting wildlife habitat greatly increased their concern about timber harvesting (Table 13).

Table 12. Survey respondents opinions about clearcutting in the Soap Creek Watershed

	% Response	Disagree	Agree	No Opinion	
1. Clearcutting is an appropriate way to harvest trees in the watershed	Overall	48	44	8	
	Land owner	42	45	13	
	Forest owner	50	43	7	
	Recreationist	52	45	2	n=346
	Urban	58*	32	10	
	Suburban	55	34	10	
	Small town	54*	33	13	
	Rural	36	55	8	n=241
2. Clearcutting appropriate on private timber company forestland	Overall	44	54	2	
	Land owner	41	56	3	
	Forest owner	42	56	2	
	Recreationist	51	48	1	n=339
	Urban	58**	42	0	
	Suburban	43	57	0	
	Small town	56**	43	2	
	Rural	30	67	3	n=239
3. Clearcutting appropriate on Individual private forestland	Overall	43	55	2	
	Land owner	42	55	3	
	Forest owner	40	59	1	
	Recreationist	50	49	1	n=340
	Urban	55*	45	0	
	Suburban	43	57	0	
	Small town	54*	44	2	
	Rural	30	67	2	n=240
4. Clearcutting appropriate on public forestlands	Overall	49	50	1	
	Land owner	47	51	1	
	Forest owner	47	52	1	
	Recreationist	56	44	0	n=339
	Urban	60*	39	0	
	Suburban	57	43	0	
	Small town	57*	41	2	
	Rural	36	63	1	n=239

*   Difference between property owners with urban and rural backgrounds statistically significant at $p \leq 0.05$ level.

**   Difference between property owners with urban and rural backgrounds statistically significant at $p \leq 0.01$ level.

*   Difference between property owners with small town and rural backgrounds statistically significant at $p \leq 0.05$ level.

** Difference between property owners with small town and rural backgrounds statistically significant at $p \leq 0.01$ level.

Table 13. Survey respondents opinions about influential harvest factors

% Response	Overall	Landowner	Forest owner	Recreationist
1. If the harvest covers a large acreage				
(S+S) Decreases Concern	3	.8	5	3
Doesn't affect Concern	22	26	25	12
(S+S) Increases Concern	75	73	71	85
			n=338	
2. If the harvest is near my property				
(S+S) Decreases Concern	2	.8	3	1
Doesn't affect Concern	36	31	33	49
(S+S) Increases Concern	62	68	64	48
			n=323	
3. If the harvest affects my property value				
(S+S) Decreases Concern	2	0	4	1
Doesn't affect Concern	25	20	18	45
(S+S) Increases Concern	73	80	77	54
			n=316	
4. If the harvest significantly changes the scenery				
(S+S) Decreases Concern	5	3	6	6
Doesn't affect Concern	29	29	33	24
(S+S) Increases Concern	65	67	61	68
			n=333	
5. If the harvest significantly changes existing habitat				
(S+S) Decreases Concern	3	2	4	3
Doesn't affect Concern	17	15	23	13
(S+S) Increases Concern	79	82	73	82
			n=337	
6. If the harvest is not a clearcut				
(S+S) Decreases Concern	45	38	45	52
Doesn't affect Concern	38	44	37	31
(S+S) Increases Concern	17	17	18	17
			n=330	
7. If the harvest is near where I recreate				
(S+S) Decreases Concern	4	3	3	5
Doesn't affect Concern	41	43	48	28
(S+S) Increases Concern	55	54	49	66
			n=334	
8. If new trees are planted after harvest				
(S+S) Decreases Concern	67	65	65	73
Doesn't affect Concern	25	25	28	20
(S+S) Increases Concern	8	10	7	7
			n=336	

4.2.1.2 **Herbicide Application**

Oregon law requires that reforestation begin within one year of harvest completion and that "landowners shall have established a free to grow stand of trees which meets or exceeds the minimum stocking level required by OAR 629-610-0020," within six years, (Oregon Administrative Rules 2001). Requisite with these regulations forest managers have the obligation to not only reforest lands they cut, but to make sure that the trees planted are healthy and able to grow into another forest. In moist coastal climates typical west of Oregon's Cascade Range, where blackberries, thistle and vine maple can out-compete tree seedlings in their first few years of growth, most foresters consider herbicide application the fastest and most cost effective way to re-establish trees on clearcut sites. Because survey respondents indicated that regeneration of trees on harvested sites greatly reduced their concern about harvesting (Table 13), it is likely that respondents do not understand the connection between regeneration and herbicide application. Forest owners who sprayed their properties were cognizant that herbicide application raised concerns for many of their adjacent neighbors.

> I think one of the biggest concerns is that people just want to know
> [what you are doing]. Every time when we spray, we notify the
> neighbors that are out there. Most of the time if you just send them a
> letter, you'll never hear anything from anybody. But if you somehow
> miss a neighbor and you're spraying next to them, those are the ones that
> come out and they're mad and they're just mostly mad because no one
> let them know. But you may never hear from anybody else that you
> have notified. *~Howard, private timber company employee*

Residents interviewed expressed concern about chemical application regardless of who sprayed or what type of chemical they used. They commented on neighbors' use of pesticides, herbicides and fertilizers for domestic use as well as herbicide application for reforestation. Residents' apprehensions about spraying were primarily associated with the potential for health risks and broader environmental impacts. In addition to addressing herbicide use, Tammi, a forest owner and watershed resident, implied that residents and nonresidents perceived the risks associated with herbicide application differently:

> Because we live on the creek I want to know what's going on with the creek, my kids play in it…Just getting information when they were cutting over there, I wanted to know. I knew they were gonna spray herbicides. They took it [my comments] so personally and I'm like you know, I have kids. I take it personally too. You work for them [OSU], I live here!…you don't. I live here! I want to know what's going into that stream. *~Tammi, landowner and watershed resident*

Survey respondents echoed Tammi's concerns. Fifty-six percent of all respondents indicated concern about the possible affects of herbicide spraying in the Watershed. Residents were more likely than nonresidents to express concerned about herbicide application and less likely to approve of aerial herbicide application (Table 10).

Although residents identified anxieties about the broad-scale impacts of chemical applications, many revealed that they or their neighbors used chemicals to rid their yards of weeds, or bugs. These admissions suggest that chemical application is not entirely unacceptable, but rather stakeholders' ability to influence the type or amount of herbicide applied and the scale of the application affected stakeholders' risk perceptions

about herbicide application. Brunson (1993) suggests that acceptance of a practice is in part a function of perceived risk and that perceived risk tends to increase when "the consequences of error [arising from an act] fall on those who had no hand in creating the condition and no opportunity to prevent its occurrence" (p. 118).

Forest managers who used herbicides also commented on the influence of scale in relation to herbicide application. Although ground application is more time intensive and often less cost effective than aerial application, forest managers stated that they often used backpack sprayers near residential areas to mitigate neighbors' concerns about chemical drift across property lines. While this measure may not entirely alleviate residents' trepidation about herbicide application, over 75% of all survey respondents indicated that ground spraying was appropriate on all types of ownerships whereas, only 55-57% were likely to agree that aerial application was an appropriate forest practice (Table 10).

Property owners expressed concerns regarding herbicide application similar to those of residents. Fifty-four percent of both forest and landowners were worried about negative affects of spraying in the Watershed. Property owners with urban backgrounds were less likely to support herbicide application than property owners with rural backgrounds (Table 10).

During interviews, recreationists did not mention herbicide application as a key concern, but similar to residents and property owners, 64% of the recreationists surveyed expressed concern about the negative effects of herbicide application (Table 10). The least likely to be directly affected by herbicide application, recreationists

responses seemed to follow a trend of general concern for the health for the area, with few comments about specific forest practices used in the Watershed.

4.2.2   <u>Expectations of Forest Management Standards</u>

It's lopsided. You know, we're far more regulated than any of our neighbors, any agricultural neighbors or rural residences…We're somehow expected to perform at a different level, different standards. The neighbors can…mow the grass right down to the edge of the creek, have a picnic table there, do whatever there. But if we clearcut our trees down to the edge of the creek and then replant with new trees, we're bad guys. And I don't understand that either, but that's the way it is. So we are held to a different standard.
~Roy, private timber company representative

Roy's comment was illustrative of opinions held by many forest managers who felt they were expected to adhere to a disproportionate amount of environmental regulation compared with rural residential owners or agricultural landowners. Given that all forest owners in Oregon are bound by the same minimum set of standards outlined in the Forest Practices Act, we were interested in exploring whether stakeholders held certain types of forest owners accountable to higher management standards than others. Residents most frequently expressed different expectations for different forest ownerships, holding private corporate and public ownerships to higher standards than individual private owners.

Management scale and motivations seemed to be most prominent aspects influencing residents' expectations of different forest owners. Rick, a forest owner and

watershed resident, commented on the connection between management scale and

environmental and social impacts:

> No one here [in the rural residential zone] owns more than about 10-20
> acres and the average is more like 2-10. Because of the size of the
> properties, the problems that one person can create are smaller... I think
> smaller scale issues affect me less than larger scale things... Anytime
> you have a group of people you are going to have differences in opinion.
> People look at things from different angles. But if everyone had larger
> pieces of ground they might not be as concerned about a slightly larger
> scale problem. But if the scales are different and the issue is visual and
> ominous, like a clearcut, it will become an issue. It is like a mixing big
> fish and little fish in the same pond, there are bound to be some
> problems. Neighbors have to be respectful of each other. That's what
> private property rights are all about.
> ~*Rick, forest owner and watershed resident*

Individual private property owners were the least likely to hold their peers to

land management standards higher than basic requirements set by zoning or forestry

regulations. Like Rick, most residential owners felt that their good intentions and the

relatively small scale of their management actions did not cause undue environmental or

social impacts. Although some individual private forest owners indicated that their

neighbors expressed a dislike for harvesting, none experienced serious confrontations

with their neighbors. Beyond occasionally informing neighbors of their harvest

activities, individual private forest owners did not seem to alter their harvest practices to

accommodate neighbors' concerns. Residents seemed willing to overlook harvests

conducted by other individual private owners because of personal connections

established between neighbors, the small scale of management, or a desire to protect

their own future management options.

Residents expected more from private timber companies in terms of recreation access, mitigation for harvest impacts and standards of communication than they did from individual private forest owners. This difference in expectations seemed linked to the larger scale of forest management activities as well as the business nature of private timber companies. Acknowledging that timber company operations are primarily motivated by economics, residents seemed more willing to express their concerns and request mitigation for impacts from corporate owners than from individual private owners. Common requests included retention of specific trees or buffer strips, use of alternate hauling routes, ground herbicide application rather than aerial spraying, and access to slash piles for firewood collection. Residents were cognizant however, that the likelihood of requests being granted depended largely on economics.

Residents' expectations of forestry practiced on public property managed by OSU were the highest. Where economic motivations were accepted as the driving force behind corporate ownership, resident interviewees felt that OSU should be more concerned with leading the forestry profession in progressive forest practices that place emphasis on old growth, wildlife habitat, species diversity and social concerns than on timber volume and economic returns. Mary and Hank, landowners and watershed residents, lamented that OSU had been slow to show leadership when it came to clearcutting alternatives and forest research:

> The other thing about OSU, for a research forest, school of forestry, I can't figure out why they aren't doing more research. I think they, they're not learning very fast. They've got two clearcuts right now and clearcuts are a thing of the past and they're still doing them. They have two huge clearcuts right up here on the hill that they've been working on this summer...It just seems like for all the research that's going on and

they're supposed to be leaders in research forestry, we could see
different types of log harvest methods going on in Douglas-fir forests.
~Mary& Hank, landowners and watershed residents

Residents' objections to clearcutting aside, much of the contention regarding

forest management on OSU forests seemed to arise from miscommunication regarding

the overall management plan, procedures for public input into the planning process,

source of income and the invisible nature of much of the research conducted on the

Research Forest.

The Research Forests are supported by income from annual harvests of timber

rather than by tax dollars. Each year 270 acres out of 11,250 receive some

management: approximately 80 are clearcut, 80 are thinned, 90 are cut to create uneven

aged structure and 20 are cut to a seed tree prescription as part of the long-term

management plan for the McDonald Dunn Forest. (Oregon State University 1993).

While forest managers consider this harvest schedule sustainable in an ecologic and

economic sense, residents seemed unaware or unconvinced that harvest activities on the

forest are guided by a sustainable management plan.

Residents typically think of OSU as a single owner in the Watershed however,

the University operates three distinct properties in the area: the McDonald Dunn Forest,

the Cameron Tract and the OSU Ranch. Managers of each property employ different

means of communicating and interacting with neighbors. The McDonald Dunn

Research Forest staff organizes an annual information night where information about

upcoming harvest and forest activities is provided to those who attend. The McDonald

Dunn Forest Management plan also indicates that a Forest Advisory Committee

composed of OSU faculty members and community members meets twice a year in order to "interpret, evaluate and if necessary revise" the plan for the forest (Oregon State University 1993, p. 9). Additional information about activities on the forest are displayed at trailheads, on a computer website and via a recorded phone information hotline.

Managers on the Cameron Tract conduct an annual walking tour of the property to describe current management actions and post similar information on a University website. Management plans for this property have been created with the guidance of an Advisory Board, which includes two watershed residents. The Soap Creek Ranch, operated by the College of Agriculture has not established a protocol for interacting with area residents. The variations for incorporating public input and concerns into management on OSU properties leaves residents with an inconsistent message about the amount of input they can expect regarding land management decisions on public land managed by OSU.

The amount of research conducted on the forest is also ill understood by most stakeholders, except for woodland owners and forest managers who take advantage of extension programs. While the Research Forest supports research on wildlife, roads, drainage, birds, small mammals and insects as well as a variety of silvicultural practices, most of these research programs are considerably less visible than clearcuts on the Watershed's hillsides. Although OSU is doing a number of studies that stakeholders would likely applaud, research results tend to be packaged and targeted for professionals and rarely seem to find their into the hands of local stakeholders.

Neither forest managers nor recreationists specifically indicated that different types of forest owners should manage their lands to different standards. As referenced previously, different stakeholders expressed varying opinions about the appropriateness of certain forest practices, however, survey respondents consistently maintained their opinions, either approving or disapproving of specific practices, regardless of the type of forest owner conducting the activity.

4.3   Water Quality and Quantity

With its ability to cross boundaries, water turned out to be fluid link between stakeholders. Implementation of the State's 1997 Plan for Salmon and Watersheds has encouraged citizen interest in water-related issues. It has also provided a socially accepted platform for citizens to voice their concerns about real or perceived impacts to water quality that may arise from the land management activities.

Some long-time residents suggested that water quality in the Soap Creek Watershed had deteriorated during their acquaintance with the area, however there is little data beyond oral accounts to verify that changes in land use may have affected water quality in the Watershed. Despite a lack of baseline data, water quality emerged as one of the top three, most frequently mentioned issues by survey respondents (Figure 2).

Similar to interviewees, survey respondents identified a range of factors they felt were most likely influencing water quality in Soap Creek. Their responses were grouped into the following eight categories: residential development, forestry, chemical

applications, livestock, the landfill, agriculture, roads, and the remaining scatter of comments were combined into a catchall category identified as "other" (Table 14). The majority of the comments implied that water quality was negatively rather than positively affected by land management actions.

Resident interviewees seemed primarily concerned about the impacts on water quality from livestock, forestry, agriculture and the landfill. They steered clear of the potential impacts on water quality resulting from residences. Survey respondents, on the other hand, were more apt to identify septic systems and wells, resulting from development, as contributors to a decline in both water quality and quantity. One survey respondent offered the following comment:

> Poor water quality is the result of many contributing factors. I feel that the rural residential interface needs to be scrutinized more heavily than the public and private lands that were designated for timber or agriculture long before my time in this valley. These disciplines have state and federal regulations and an incentive to apply best management practices in order to make the land produce without depleting its reserves... There is no incentive for the rural residential property owner who decides that they want to live in the country. They buy a few acres, build a house, put in a septic system, get a dog or two, sheep or cows, a horse or more and cram it all on a 2-10 acre parcel right next to the creek. *~Survey respondent and watershed resident*

Changing levels in the amount of water available in the Watershed is another topic that lacks support of baseline data. Some survey respondents suggested that they had seen a drop in the water pressure from their wells, but it is impossible to ascertain if the changes they witnessed were attributable to development pressure or to the relatively dry winters in 1999 and 2000.

Forest owners were more likely to comment on the impacts to water caused by residential development. However, their concerns about impacts from forest practices, chemical application and livestock were not far behind (Table 14). Forest managers interviewed tended to consider forestry, as a land use, less damaging to water quality than development. Nicole, a timber company representative, shared her perspective on the benefits of large ownerships in relation to water quality:

> "I think that it's actually beneficial to a water district to have large blocks of land…if you had a water source and you had a bunch of residential uses around it, I think you'd have a lot more pollutants and irritants in that water source than having us forest landowners around there….plus, we're also regulated."
> ~Nicole, private timber company representative

Nicole's comment addressed both the scale and frequency of impacts. Managed forests often encompass large acreages. While these properties have the potential to contribute pollution in the form of sedimentation or chemical residues these impacts may be considered transient when compared with the constant excretion of septic effluent produced by residential housing.

Survey respondents who identified as recreationists commented most frequently on forestry, development and chemical application when referring to factors influencing water quality (Table 14). Similar to recreationists' previous critical reactions, the greatest percentage of comments from this group was directed at forest practices.

In the Soap Creek Watershed, researchers from the College of Agriculture have recently conducted a water analysis project to assess the affects of different land use actions on water quality. While this effort is a start, consistent, long-term monitoring of this sort could help identify where pollution emerges into the waterway as well as

Table 14. Survey respondents' opinions regarding factors influencing water quality in the Soap Creek Watershed.

In your opinion, what are the primary factors influencing water quality in the Soap Creek Watershed

FACTORS	91 Respondents Forest owner Count	% For Comments	67 Respondents Landowner Count	% Land Comments	45 Respondents Recreation Count	% Rec Comments	Per/Issue Total
Residential development	46	35%	34	40%	24	34%	104
Forestry/logging 2+	36	27%	24	28%	26	37%	86
Chemical/fertilizer applications	26	20%	22	26%	21	30%	69
Livestock impacts	27	20%	16	19%	5	7%	48
Landfill 1+	19	14%	12	14%	6	8%	37
Agriculture	14	11%	8	9%	8	11%	30
Roads	10	8%	4	5%	5	7%	19
Other 3+	24	18%	20	23%	10	14%	54
Total Response	132	100%	86	100%	71	100%	289

+ comments suggesting these factors improve rather than decrease water quality

Residential development: comments about water overuse, too many people and houses, septic systems and residential runoff.

Chemical/ fertilizer applications: comments about herbicide, pesticide and fertilizer application from all land use, including forestry, agriculture and residences.

Other: combination of comments suggesting that there were no factors affecting water quality or comments about natural events, recreation, wetland preservation[3+], the rifle range, and research that when grouped into initially categories yielded fewer than 11 overall comments.

* The difference between the total number of respondents and number of responses is due to the open-ended nature of the survey question. Respondents offered varying numbers of comments for the question.

record the variation in water quality through different seasons. This type of project falls in line with the interests of the Soap Creek Watershed Council and could benefit from the organization's efforts.

4.4   Quality of Life

Quality of life is not a discrete phenomenon with easily measurable components; nor did we intend specifically to measure it as part of this research project. It was, however, addressed so frequently by interviewees and survey respondents, intertwined in their words and opinions, that it deserved attention.

Literature in the social and economic sciences attempts to measure quality of life using various social, environmental and economic indicators, such as employment rates, housing availability, income, environmental quality, access to schools, health care, and opportunities for recreation (Marlin et al. 1992; Jurich et al. 1986; Carley 1981; Organization for economic co-operation and development 1976).   While many interviewees and survey respondents acknowledged that these factors played a role in their decisions to live near Corvallis, factors relevant to quality of life at the urban fringe were considerably more refined than the indicators listed above. The following sections address quality of life by differentiating it into two categories. The first discusses the natural capital or physical amenities that stakeholders identified as important and the second explores facets of social interaction and social capital.

4.4.1 <u>Natural Capital</u>

Natural capital is nature's economic and cultural assortment of goods and services, which include individual materials such as wildlife, water, wood, and food as well as products of interaction like recreation, nutrient cycling and soil formation (Pretty 2001). The Soap Creek Watershed abounds with natural physical attributes, which were highly prized by most stakeholders. Residents, nonresidents and recreationists alike, commented on the area's aesthetic, spacious, rural appeal. Dennis, a landowner and watershed resident shared his perception of how important the rural setting and access to the land, are to residents:

> I think a lot of times... people move here because they really like being close to the woods and they like the rural lifestyle...They're active, even if they don't do a lot of real rigorous hiking or mountain biking stuff, they still like the accessibility. Plus, just the view! It is such a pretty valley and we get less fog than Corvallis. That's really the nice days out here, when it's foggy in Corvallis and you come out here and it's sunny all day long. *~Dennis, landowner and watershed resident*

In addition to scenic qualities, the combination of forest and agricultural land in the Watershed offers forage and cover to a number of wildlife species including cougar, elk, deer, beaver, squirrels, gophers, nutria, turkey and a variety of smaller birds. Although wildlife have damaged gardens and tree seedlings and sightings of predators have caused some individuals anxiety, most stakeholders seemed to consider wildlife sightings a refreshing connection to nature. At least 81% of property owners felt that providing wildlife habitat was important (Table 4) and both residents and recreationists indicated that wildlife sightings served to validate their escape from the urban setting.

Nancy, a forest owner and watershed resident, described amenities that differentiated

the Watershed as a rural environment:

> Being here, being away from everything, cars, noise. Having some
> sense of not being crowded together with other people; the woods, the
> wildlife, the plants, the quiet. I don't know… the lack of streetlights,
> things that bother me when I go somewhere else. The privacy… all of
> the above. The fact that I can walk out my backdoor and go for a walk
> without having to get in the car and drive somewhere.
> ~Nancy, forest owner and watershed resident

Like Dennis, Nancy suggested that the rural environment in the Watershed

improved her quality of life. It offers access to forestland, wildlife, recreation, quiet

and privacy. With the exception of privacy, which was most important to residents

(Table 11), the personal benefits derived from experiencing this kind of rural

environment were mentioned by each group of stakeholders. Thus, stakeholders' strong

interest in maintaining a rural character and active land management that supports the

rural character in the Watershed is not surprising. A desire to protect attributes that

contribute to a better quality of life also explains stakeholders' concerns about any

activities that might threaten the amenities they value, be it wildlife habitat, recreation

access or water quality.

4.4.2   Social Capital

As more stakeholders move to the urban fringe, bringing with them different

values, we were interested in understanding how social interactions in the Soap Creek

Watershed influenced conflict and ultimately, stakeholders' quality of life. Social

capital is a concept, which suggests that investment in social networks precipitate norms

of reciprocity and facilitates coordination and communication among individuals. The

concept also hinges on trust; assuming that the more individuals interact with one

another the more likely they are to trust one another (Putnam 1993). We attempted to

identify opportunities that stakeholders had to share their different values and

management objectives with one another, either during community events or more

formally organized meetings.

The number of community events in the Watershed has fluctuated in recent

years, but interviewees suggested that gatherings are less common than in the past.

Existing events revolve around the Soap Creek School House or recreation events

hosted on the Research Forests, however relatively few survey respondents indicated

that they participated in these activities (Table 15). Despite the low number of informal

community events, interviewees identified a variety of formal meetings and committees

within the watershed where discussions about zoning issues, road maintenance, and

resource practices took place. Participation at these events was also low, with fewer

than 20% of survey respondents indicating they had attended any of these meetings

(Table 15).

Table 15. Survey respondents' participation in informal and formal Watershed events

Please indicate whether or not you have ever participated in each of the following:

Event	% of Respondents who have participated
OSU McDonald informational meeting	20
Soap Creek School House Foundation	19
Private road association meetings	18
Soap Creek School House Benefit Run	14
North Benton Citizen's Advisory Council	11
Soap Creek community 4th of July picnic	10
Soap Creek Watershed Council	9
Adair Volunteer Fire Department	8
OSU Cameron Tract Tour	8
Mudslinger mountain bike event	7

Reasons interviewees gave for not participating included; lack of knowledge about the existence of groups like the Soap Creek Watershed Council, lack of time to participate and discontent with local politics. Low participation may also be related to residents' desire for privacy (Table 11) and their relatively high socio-economic status. Research by Sampson (1991) found that high socio-economic status neighborhoods tended to have fewer networks of friends and acquaintances within the community and greater anonymity than low socio-economic neighborhoods. Although most resident interviewees indicated that they knew who their neighbors were, they did not consider neighbors part of their immediate social circle (Sidebar 5).

Sidebar 5. Property owners' neighborhood descriptions

"It's not a close neighborhood…I would say there is a neighborhood feeling about it, but I wouldn't characterize it as a close neighborhood. There are the people down here, you know as there always will be there, people who see more and less of each other. But everybody here knows each other, but as I say its not close."
~Nancy, forest owner and watershed resident

"I think it's different than in an urban area…when we lived in an urban area, I could define my neighborhood as being a close-knit, very close-knit neighborhood. This is a close neighborhood for a rural area and the definitions are different." *~Ed, forest owner and watershed resident*

"I wouldn't describe it as a close-knit community at all. People move out there, my impression is that people move out to this area because they want to get away from people. They don't move out there because they want to experience a cul-de-sac kind of [environment]"…in our particular situation and where we live out there, that can be hard to do because people that live out there basically want to be left alone, to do what they want. They feel like they've saved up enough money and earned and been able to buy out there then by gosh, they can do what they please. And a lot of times…they don't take into account that other people, what other people think." *~Tom, forest owner and watershed resident*

"The neighbors on my street are unique. It is not a neighborhood, you take a mile long [road] and people have different lives and it's just, it's not that they are different or I am different, we are just different from each other it's not a neighborhood. It's a street that is a mile long. Just to give you an example, it's not, I don't think I have anything in common with them."
~Rebecca, forest owner and nonresident

"I mean, everyone out here pretty much keeps to themselves. The people who live out here are pretty private people. I mean, we don't get together for, these are not our friends. This is not our social group."
~Mary, landowner and watershed resident

Despite arms length associations between neighbors, interactions along private drives seemed stronger and more frequent than interactions across the Watershed. Mary, a landowner and watershed resident, referred to the lack of close association across the watershed referencing a division in terms of both the community and the vegetation. "People out here are pretty self-sufficient, at least on this end. It's almost like it's two different communities, the timbered end vs. the range end [where we live]." While there is a rough physical division between the forest and open lands in the watershed, interviewees did not suggest opposition between residents in these areas. Rather, Mary's description serves to illuminate stakeholders' association with physical features in the watershed as well as verify discontinuity in social networks and information exchange across the watershed.

The Soap Creek Watershed Council offers one example of a social network that has the opportunity to both promote and benefit from social capital investments. Despite stakeholders' obvious concern about impacts to water quality, residents within the watershed have struggled on two different occasions to initiate a productive and enduring watershed council. The first attempt to create a watershed council was initiated in 1995 in response to citizens' concerns over a specific harvest on public land. The conflict focused more on the process for including citizens' concerns in public land management decisions rather than the act of harvesting. The Council disbanded upon completion of the harvest. The latter endeavor has been more of a proactive attempt to address water conditions throughout the watershed. While this second effort has drawn interest from a greater number of individuals, commitment in the form of time invested

into council activity continues to be scarce. The council has organized four events in the last two years and while watershed tours have drawn 25 to 30 participants the last business meeting was attended by fewer than 10 individuals.

Despite low participation at resource-related meetings, 42% of residents felt they did not have an adequate voice in public land management decisions and 26% had no opinion (Figure 5). Residents were especially disillusioned with the public involvement process conducted by OSU's Research Forests. Nancy, a forest owner and watershed resident, expressed her frustration with OSU as she described what she felt were insincere attempts by OSU to solicit public opinion regarding harvest operations on the McDonald and Dunn Forests:

> …this particularly angers me about the OSU Forestry dealings, you go down and they go through the motions of public input and it feels like they know damn well when you come there that they're not going to pay any attention to anything you say. It's just, we're supposed to do this and make it look good…we'll solicit public input, but it's just for the show…You know it's not a sincere exchange, it's not an exchange.
> ~Nancy, forest owner and watershed resident

Although federal and state agencies are mandated through various federal regulations to provide opportunities for citizen input into land management decisions, there are clearly some obstacles inhibiting effective communication. One such barrier seems to be an interest in providing participatory opportunities at a scale that holds little value to the public. Shindler (2000) suggests that planning at landscape levels may not be meaningful to a public who seem more concerned with immediate, tangible issues. And yet, if citizens have not participated in broad scale planning efforts, once plans are

in place, they may find themselves with few opportunities to influence specific management practices, let alone opportunities that would build trust or improve relationships.

Forest managers interviewed were the least likely to express a desire to provide input into public land management decisions about timber harvesting. This tendency seemed linked to a common interest in harvesting and a basic understanding of the regulations that guide harvest practices on public and private lands. Most managers also expressed a strong belief in private property rights and a sense of professional respect that inhibited them from telling others how to do their job, whether or not they agreed with their peers' actions. The hesitancy of forest managers to disparage their peers seemed as much an effort to present resource management in a positive light as a professional courtesy with implied reciprocity.

Surprisingly, 48% of forest owners indicated that citizen input into public decisions was not adequate (Figure 4). The discrepancy between forest owning interviewees and forest owning survey respondents may represent a difference in respondents who own forestland and those who manage forests for timber production.

Another explanation may be that forest owners felt the public had too much, rather than an adequate say in public land management decisions and so disagreed with the way the statement was presented. Forest owners were also significantly less likely than either landowners or recreationists to indicate that they had no opinion about citizen input into public land management decisions.

Figure 4. Survey respondents' opinions regarding citizen input into public land management decisions

Citizens have an adequate voice in public (e.g. state and federal) land management decisions in the Watershed.

	Agree	Disagree	No Opinion
% Resident	32	42	26
% Nonresident	32	34	34

	Agree	Disagree	No Opinion
% Overall	33	38	29
% Forest owner	35	48	17
% Landowner	28	35	38
% Recreationist	37	31	32
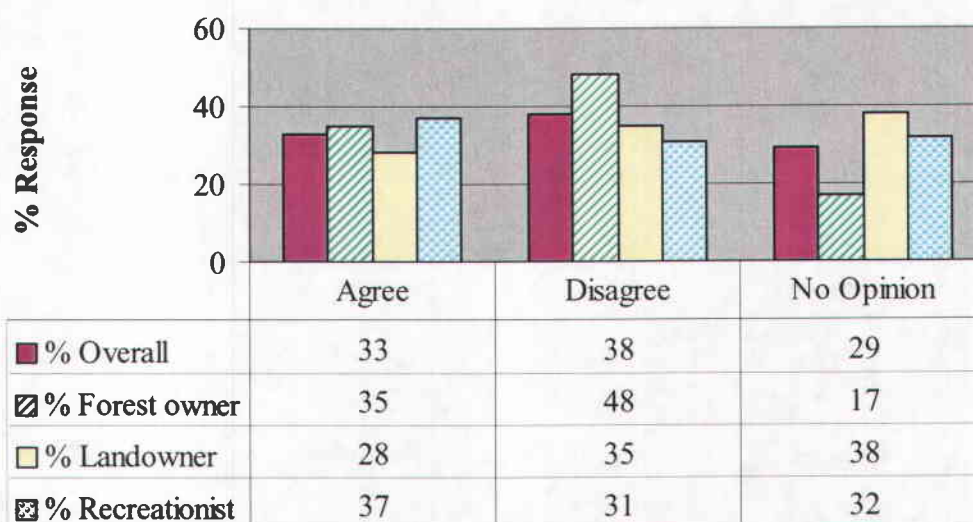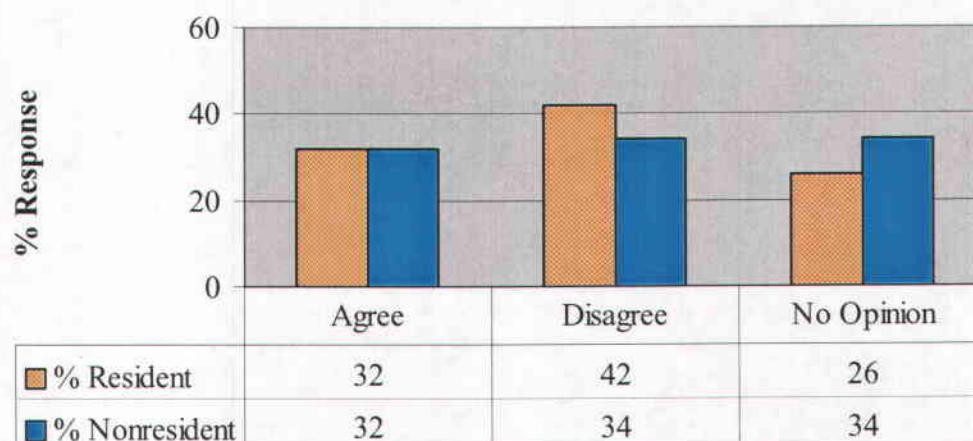
Recreationists' opinions about input into public land management decisions
were mixed. Approximately one third felt that OSU's forest plan should do more to
incorporate recreation opportunities and chances for recreationists to provide input.
Ilene, a recreationists commented what she perceived to be a decrease in recreationists
chance to influence management on OSU property:

> As recreationists we don't have much say, which in truth has
> disappointed me, not in the management of cutting and stuff like
> that; in the way the OSU recreation thing has been going for the
> last few years. Maybe its because I was in on the ground floor and
> we were very active, but it doesn't seem like there's much voice in
> it anymore. I've been told outright that they [OSU] don't plan on
> doing anymore, you know, they aren't going to build any more trails."
> ~Ilene, recreationist

Another third of recreationists indicated that input into public management
decision was sufficient. Many of these same individuals indicated that they appreciated
being able to recreate on public lands and viewed their access as a privilege rather than
a right. The remaining third of survey respondents indicated they had no opinion about
the adequacy of citizen input into public land management decisions. In total, these
responses suggest that while recreationists would like to have more say regarding
recreation opportunities on public lands, they were less concerned about providing input
into other aspects of public land management.

In an effort to compare opinions about how much say citizens should have in
private versus public land management, we included a follow-up survey question
that asked respondents to indicate their level of agreement with the statement,
"Citizens have too much say in private land management decisions in the
Watershed." Respondents from each subgroup answered the questions about citizen
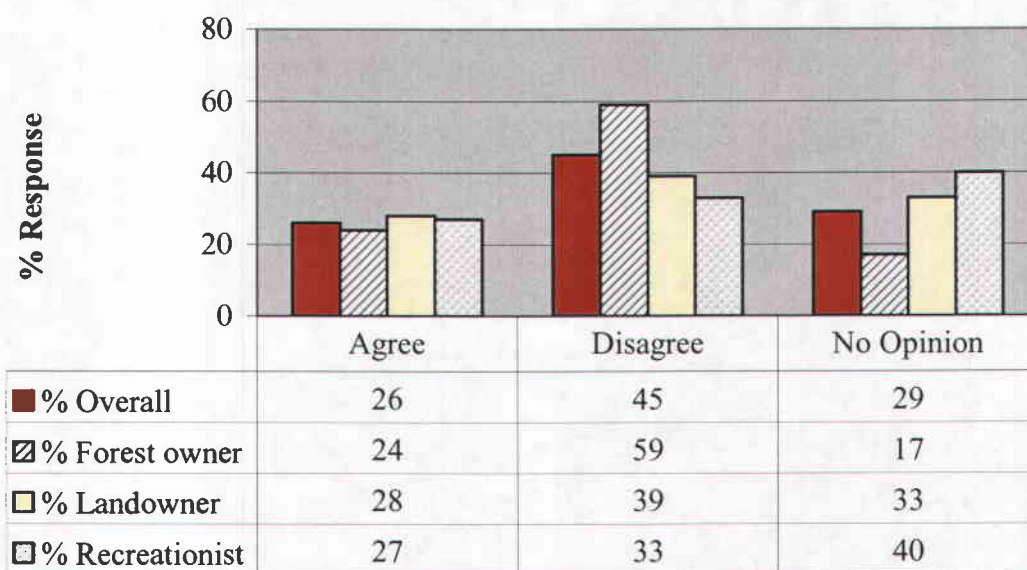
input into public and private land management decisions in a similar fashion,

despite the use of two different qualifiers and reference to different ownership types

(Figure 4; Figure 5).   Forest owners' responses to this particular question

contradicted the strong opinions they expressed in favor of private property rights

during interviews and on other survey questions.   Ron, a private timber company

representative, described his personal views regarding how much say citizens

should have regarding management decisions on private property:

> I don't think they should have much. I don't intend to personally go
> interfere with what they do on their lands. The hill right behind my
> house here just got subdivided. They're gonna put a 100 houses there. I
> didn't feel it was my right to tell them they couldn't do that, so I would
> hope that, you asked for a personal response, I would hope that they
> would respect me in the same way and let me do on my land what I want
> to do as long as it's legal. *~Ron, private timber company representative*

Because forest owners tended to favor private property rights and expressed

concern during interviews about citizens influencing their management decisions we

hypothesized that forest owners would be the most likely to agree that citizens had too

much say in private land management decisions. The discrepancy between opinions

expressed for this survey question and the rest of the results were not correlated to

residency, acreage owned or length of tenure. Therefore, our interpretation is that

survey respondents either misread the statement, failing to notice reference to private

versus public land or that they misinterpreted the statement and did not associate the

term "citizen" with someone other than the private property owners.

Figure 5. Survey respondents' opinions regarding citizen input into private land management decisions

Citizens have too much say in private land management decisions in the Watershed

	Agree	Disagree	No Opinion
■ % Resident	25	51	24
■ % Nonresident	32	36	32

	Agree	Disagree	No Opinion
■ % Overall	26	45	29
▨ % Forest owner	24	59	17
☐ % Landowner	28	39	33
▨ % Recreationist	27	33	40
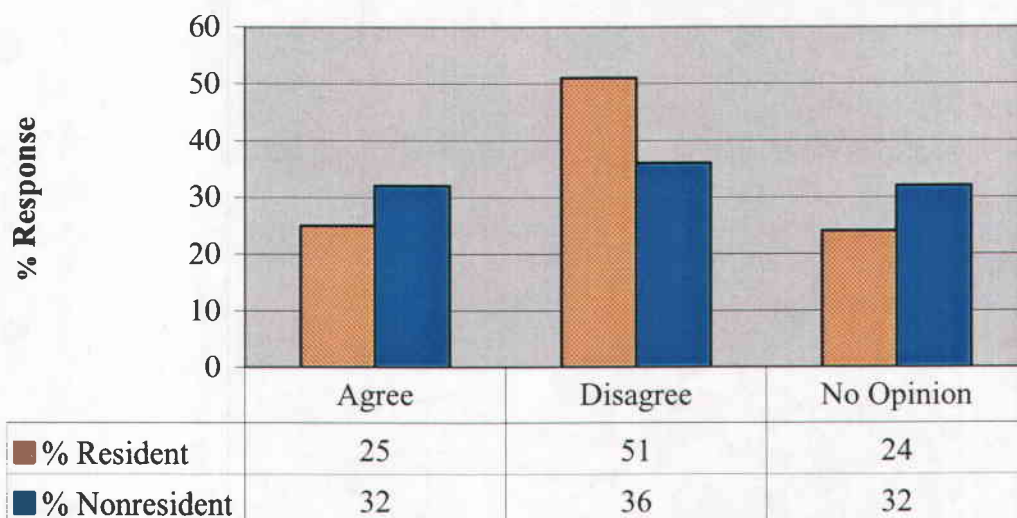
Trust is an essential element in social capital. Stakeholders in the Watershed seemed to ally their trust in individuals who provided accurate, timely and relevant information and who followed up their words with consistent actions. For example, it appeared that timber companies who made a point of being actively involved in community events, encouraged the development of personal communication with their neighbors and maintained a consistent presence on their lands felt their efforts built trust, and resulted in reduced resistance to their management practices (Sidebar 6). With regard to information about forest management actions, 61% of survey respondents thought property owners should communicate their management intentions to neighbors out of courtesy.

Public and private forest managers commented that although residential neighbors expected to receive information about corporate or public land management activities they were considerably less likely to reciprocate with information about their own land management practices (Sidebar 7). Although notification of harvest activities is unlikely to alleviate all stakeholders' concerns, 37% of survey respondents indicated that prior notification reduced their concern, 43% indicated that relevant information about harvest activities reduced their concerns and 27% of all survey respondents suggested that knowing the landowner conducting the harvest decreased their concern about harvest activities (Table 16).

An abundance of organized committees indicates that the structural framework to support social capital does exist in the Watershed. However, the cognitive component of social capital, which involves trust, reciprocity and willingness to

cooperate (Krishna and Shrader 1999), seem to be limiting factors in this urban fringe

environment. In turn, tension caused by distrust and defensive posturing undoubtedly

has the ability to detract from the stakeholders' quality of life.

Sidebar 6. Reducing conflict and building trust via interpersonal communication

"…we've all found by experience, if we do that, we get to know these people on a first name basis you know, it's real easy to call them up and say…we just had some vandalism on our property, did you see anybody? And sometimes we get tips and sometimes we don't, but…we try to be friendly with them."
~*Roy, private timber company representative*

"When we had the meeting …with the neighbors and they can see your face and develop a rapport, know who to call, have a face associated with it, person on the end of the phone line and get a confidence level of what we're doing and why we're doing it. It makes a world of difference in how secure they feel in terms of what's really going to happen relative to what we say is going to happen there…They think that you've taken an active interest. That you weren't just you know, on the other end of the line, just trying to get them off the phone. You actually went out and wanted to see what they were concerned about."
~*Howard, private timber company representative*

"I mean a lot of the forestry operations, if you don't explain them to people, their perceptions of how bad they are can be really high. We go in, we try to talk to them and make them understand what we're doing and then that reduces their concerns quite a bit, but you can't do that in every case. It's just like I was telling you, we have 25 neighbors and we have one at one end of the spectrum and one at the other end of the spectrum." ~*Nicole, private timber company representative.*

"So once we're able to set people down and talk to them about … who we are and what we actually do that does help. But you still get the people that …they don't think you should harvest no matter what." ~*Sheri, state forest manager*

"Well, I think a lot of it [improved interaction] is because we've just been willing to listen to them vent, instead of trying to ignore them or blow them off. You know, we come to their [North Benton Citizens' Advisory Council] meetings, tell them what we're doing and you know, listen to their concerns … we've kind of established a rapport… Heck, when you're strangers, it's much easier to hate you and you know, yell at you . But when you become kind of almost acquaintances or almost even into friendship, [you] start seeing each other's point of view."
~*Ron, federal land manager*

"They don't need to keep us informed of every little change out there, but we do want to be kept informed if there's going to be any major harvesting activities where we are, that might impact our…viewshed… I would want to be informed if they're going to expand the trail network close to us…if they're going to widen this parking area or if they're going to hold events." ~*Tom, forest owner and watershed resident*

Sidebar 7. Comments regarding communication between large and small landowners

"…usually the only communication we get is from other large landowners that might notify us that they're doing something. Very seldom do small private landowners notify us of anything… I got the feeling at the meeting that I was at that the group [of residents] out there…would have expected that the neighbor that was doing some harvesting, whether it was OSU, or Willamette or Starkers, would keep them informed and give them an upfront set of information regarding what was going to happen, when it was going to happen and how it was going to happen; how they would be impacted."   ~*Howard, private timber company representative.*

"Occasionally [neighbors contact us about their management], but not very often.,. we're quite often the largest landowner in the neighborhood and most of them own less than that, but they still might own a few 100 acres or you know, down to an acre or thereabouts…the most common thing is for neighboring landowners who want to haul forest products themselves to ask us if they may use our road. And invariably we allow them that with the understanding that they will bring it back to at least the same condition as it was before, which is how we also deal with people. We expect that of them too." ~*Roy, private timber company representative*

"I communicate with them first. Usually. The only time I'll hear from them is if they have a complaint, whereas we try to be a little bit more proactive. We try to contact them in advance when we can…they will typically only contact me if they have a problem. If everything's going great, they won't call me…There are lots of things that the neighbors can do that impact BC's property…some of the things that I've been seeing lately and I get notice of this, we don't hear from the neighbor, I hear from the county planning department if they're planning on building or added residence or they're subdividing their property and adding more neighbors to our property." ~*Nicole, private timber company representative*

"Actually, no they [adjoining landowners] don't. [contact us] No, they really don't…Sometimes we have situations where we're kinda like WOW, …that would have been nice to know about, or we have boundary disputes every once in a while. We have kind of a running joke that ah, there's one section of the forest where we probably own half of a couple hot tubs, cause they're actually over the boundary a little ways. No, so I don't think a lot in a lot of ways it [communication] is reciprocal, to us." ~*Sheri, state forest manager*

Table 16. Influence of information and prior notification on survey respondents' concerns regarding harvest activities

% Response	Overall	Land-owner	Forest owner	Recreationist	Resident	Non-resident	Urban	Suburb	Small Town	Rural
1. If I am notified beforehand about the harvest										
(S+S) Decreases Concern	37	32	46	31	40	39	40	50	39	36
Doesn't affect Concern	52	56	44	57	48	54	37	47	54	54
(S+S) Increases Concern	11	12	9	11	11	7	23	3	7	10
				n=333		n=250			n=234	
2. If I am provided with relevant information about the harvest										
(S+S) Decreases Concern	43	39	46	44	44	38	45	53	55	34
Doesn't affect Concern	48	53	43	48	45	59	27	43	43	58
(S+S) Increases Concern	8	7	11	7	10	2	27	3	2	8
				n=331		n=247			n=231	
3. If I know the landowner who is harvesting										
(S+S) Decreases Concern	27	26	31	20	30	27	26	27	28	33
Doesn't affect Concern	68	69	63	74	65	70	60	73	68	63
(S+S) Increases Concern	5	5	5	6	5	2	14	0	4	4
				n=331		n=248			n=232	
4. If a landowner is going to engage in a forest management activity that is likely to concern neighbors, the landowner should…										
not be obliged to notify neighbors	7	8	8	3	8	7	8	6	4	11
contact neighbors out of courtesy	61	60	63	57	62	67	49	52	64	68
be required to notify neighbors	32	32	28	39	30	27	43	42	33	21
				n=345		n=255			n=242	

5   SUMMARY AND CONCLUSIONS

The urban fringe is characteristically described as the physical transition zone between urban and rural environments, however it is as much a political as a geographic phenomenon (Vaux 1982).   Because multiple stakeholders with divergent views come together at the urban fringe, the conflict potential in these areas is amplified.   Our results offer insight into factors that can minimize or aggravate conflict associated with the management of natural resources in these interface zones.   Although our sampling design limits direct inference beyond our particular study site, many of the factors we identify may be relevant to urban fringe areas across the country that are experiencing population growth and conflict over resource use and land allocation.

Collaborative approaches to conflict management offer stakeholders the opportunity to create a win/win outcome by emphasizing the development of long term relationships based on identification of common interests.   Common interests shared by stakeholders in Oregon's Soap Creek Watershed included a desire to protect the rural character and aesthetic values of the area, concern about water quality, wildlife habitat, and open space.   Keeping these interests in mind, we draw from the four key themes that emerged during analysis for our conclusions.

5.1   Land Use

Despite a variety of different land uses within the Soap Creek Watershed, most stakeholders supported active farm and forest management and strongly opposed

conversion of farm and forestland to residential zoning. Underlying interests that fueled opposition to further development included protection of aesthetics, privacy, natural resource management options, open space, wildlife, water quality and accessibility. In the Soap Creek Watershed, zoning regulations corresponded to stakeholders' interests by legitimizing farm and forest management and effectively slowing land conversion.

Our results suggest that the existence of land use zoning regulations in conjunction with consistent enforcement can significantly reduce destructive conflict at the urban fringe by establishing procedural guidelines for acceptable land use. This is particularly important in interface areas where residential developments are mixed in among lands managed for timber and agricultural products. Procedural guidelines, in the form of zoning regulations, offer newcomers information about land use norms that may not otherwise be conveyed by realtors or neighbors.

Although zoning offers a means to protect desired environments and satisfy stakeholders' interests, the implementation of strict zoning regulations where regulations previously did not exist is bound to incite conflict. Concerns about the impact of regulations on private property rights and the potential for lost income due to increased regulations are lightening rods for criticism. Cocklin (1988) identified additional conflict potential should local, regional, or national interests have different priorities for the same resources or geographic location. Acknowledging these caveats, zoning can be utilized as a proactive means to shape the growth, structure and character at the urban fringe by delineating acceptable land uses, and providing for equitable regulatory enforcement.

Previous research and census data offer information regarding rates of land conversion on a per acre basis across the US. However, additional efforts to compile and contrast conversion rates among states that control for population growth rates and zoning restrictions would provide a more complete picture about the effectiveness of land use zoning. Such efforts would also have the potential to identify the effectiveness of land use regulations at reducing conversion, fragmentation, and parcelization.

5.2 Forestry

While most stakeholders supported active forest management, particularly as a preferred alternative to development, residents were concerned with how forest management activities would affect their underlying interests. Borrowing from Walker and Daniels' (1997) multidimensional model of conflict, our work indicates that conflicts arising over forest management at the urban fringe have more to do with procedural and relationship issues than with the substantive aspects associated with silviculture and harvesting.

Our analysis suggests that Oregon's Forest Practice Act is one factor that has helped minimize conflict over substantive issues regarding timber harvests. Despite many stakeholders' expressed lack of understanding regarding specific requirements outlined by the Act, a majority of stakeholders did not think more forest practice regulations were necessary. Oregon's Forest Practices Act apparently offers stakeholders assurance that management activities are monitored with the public welfare in mind. At the same time, regulations provide forest managers with a state-

sanctioned standard, should they need to defend their management actions. Similar to land-use planning regulations, forest practice regulations define generally accepted management standards that carry consequences in the event they are violated. Because stakeholders expressed an interest in protecting the rural character of urban fringe areas, forest practice regulations could be designed to encourage active management that produced desired outcomes rather than simply restricting specific actions. This is particularly relevant at the urban fringe where extensive regulations restricting management may be viewed by owners with small properties as too costly or complex to implement.

While Oregon's Forest Practice regulations address procedural aspects of harvesting and regeneration, they do not address the procedural or relational aspects of communicating with one's neighbors about resource management activities. This is where our research indicates most conflict regarding forest management emerges. Stakeholders felt they should be informed about forest management activities that might affect their underlying interests.

Communication plays an important in determining whether conflict produces positive or negative outcomes. Communication relays messages that either confirm or refute individuals' assumptions. If neighbors assume forest management is devastating to the environment or that managers do not care about environmental issues forest managers who do not communicate their intentions will validate the individual's negative assumption (Ebenbach and Moore 2000). However, frequent communication alone is not sufficient to eliminate negative conflict; communication must also build

trust. Lewicki and Weithoff (2000, p. 102) explain that building trust requires that individuals, "act consistently and reliably, meet deadlines and commitments and repeatedly do so over time in the relationships." When trust and communication exist, the resulting social capital improves the potential for productive future interactions (Putnam 1993; Fisher et al. 1991).

Individual private forest managers were the least likely to encounter resistance from neighbors when conducting forest management practices. This was in part due to the smaller scale of their management actions, but was also a function of communication and social capital. In the Soap Creek Watershed private owners often lived on their property and knew who their neighbors were by name. These social connections, whether developed over the back fence or at the private road association meetings, played an important role in facilitating management activities. Developing social networks that recognize and accept forest management as a desirable rural activity will be increasingly important for private forest owners as the urban fringe continues to grow.

Procedural dimensions of communication affecting conflict primarily revolved around whether or not corporate and public forest managers solicited or adequately acknowledged neighbors' interests and whether stakeholders were informed about management actions prior to their implementation. While residents expressed an interest in being notified by individual private owners, they were more likely to expect a dialogue with private timber companies and even more likely to expect to have a voice in management planning on public lands.

Although prior notification about harvest activities did not necessarily reduce individuals' concerns about harvesting, it is a procedural step that can minimize conflict. Prior notification conveys at least an acknowledgment that the management activity may be of concern to stakeholders. It also provides stakeholders with time to prepare for the activity. In some cases preparation may mean bringing children inside, away from falling trees and herbicide applications, finding an alternate trail to recreate on, or it may entail organizing a meeting to voice their concerns. In any of these situations advance notification reduces the element of surprise and the stress of uncertainty.

Our research also has implications for public forest managers. Our findings support work done by Bright et al. (1999) and Burge and Robertson (1990), which suggests that social assessments are a useful tool that can help public land managers determine the social structure and processes influencing creation and implementation of forest management plans. Although public participation efforts have primarily focused on planning for federal lands, our research indicates that procedural guidelines delineating how and when public input will be incorporated into state land management plans is key to establishing credibility and minimizing distrust and perceived power differentials which can inhibit collaborative efforts. Within the Soap Creek Watershed, OSU's property managers could convene with citizens to develop a written procedural document that clearly delineates what role stakeholders can expect to have in both long-term and annual plans for all of OSU's properties.

Forest managers, whether private or public, could minimize negative conflict

potential by making a point of keeping their neighbors informed of upcoming

management activities. Activities that aroused particular interest included harvesting,

roadwork, planting and herbicide use. Given stakeholders' lack of knowledge regarding

forest regulations, the opportunity exists to share information about regeneration and

stream protection efforts required by the Forest Practices Act.

5.3   Water

"Water blends together and links a host of otherwise distinct interests and

activities, demanding coordinated planning and action…" Kenney (1999, p. 493).

Water quality and water quantity were common concerns linking all stakeholders.

Because all land uses have the potential to affect water quality, stakeholders who

valued clean water either for their own use or for wildlife habitat expressed concern

about land management and development activities. Others were concerned about

water quality because of its potential to affect how they can use their land: whether they

can pass a percolation test to be approved for a septic field or whether they can harvest

trees near riparian areas. Despite this common link, stakeholders' interest in water

seemed just as likely to incite conflict as to illicit cooperation.

Our findings suggest that in urban fringe areas, where social capital is

weakened, inciting positive participation to address water quality issues is a challenging

endeavor, but not an impossible one. Progressive leadership, inclusive involvement

strategies that invite all stakeholders to participate, and successfully completed

watershed projects will help attract participation in proactive, rather than reactive attempts to address water quality concerns. Further, compilation of baseline data and long term monitoring will gauge not only water quality but the effectiveness of collaborative efforts.

Because water quality is an issue that concerns most stakeholders, forest managers have an exceptional opportunity to build their credibility by monitoring the water that flows from managed properties. Regardless of monitoring outcomes, communicating results and taking action to improve conditions is likely to be viewed favorably by neighbors. Many forest owners, particularly timber companies and public forest managers have either collected information on water quality or have the skills and tools to initiate water-monitoring projects. In addition to providing baseline data, water-monitoring projects have the potential to develop social capital by providing a focus point for collaboration. In the Soap Creek Watershed the local Watershed Council could facilitate such a program by coordinating the skills and knowledge that exist among the Watershed's stakeholders.

5.4   Quality of Life

In addition to the indicators typically used to measure the quality of life including access to opportunities for employment, education, and health care, quality of life in the Soap Creek Watershed was primarily defined by the existence, maintenance and access to natural capital. Our work suggests that stakeholders' focus on natural capital combined with their range of opinions about land use and a lack of investment in

social capital have increased the negative conflict potential in the Soap Creek Watershed and thus, indirectly strained the quality of life offered at this urban fringe.

Stakeholders in the Soap Creek Watershed held a range of different opinions about the acceptability of certain forest practices. We found that property owners who identified themselves as having rural backgrounds were more likely to support timber harvesting and ground herbicide application than were property owners with urban backgrounds, which suggests that rural upbringings predispose individuals towards a utilitarian or anthropocentric rather than a biocentric perspective. Additionally, our research identified a difference in values expressed by resident and nonresident property owners. Non-resident property owners were more likely to hold an anthropocentric view of their property; were less concerned about privacy and more likely to support aerial herbicide application and clearcutting than residents.

Stakeholders in the Watershed had a number of opportunities to share their differing views during formal meetings however, attendance at these meetings was quite poor unless a highly contentious issue was addressed. Few opportunities exist in the Watershed for stakeholders to engage in positive events that are not focused on controversial issues. Residents' interest in privacy and the lack of an active convening institution such as a school or church both contribute to low social capital in the Watershed. Historical conflicts in the watershed over land management issues have also inhibited the creation of social capital in this area.

These findings indicate that a lack of social capital at the urban fringe contributes to high potential for negative conflict. They also suggest that a convening

institution, such as a church or school or watershed committee is an important part of encouraging the formation of social capital at the urban fringe. In the Soap Creek Watershed the historic Schoolhouse Foundation or the Soap Creek Watershed Council may be capable of offering a central communication forum where stakeholders are invited to socialize, exchange information and develop social capital on a frequent basis.

Although stakeholders in the Soap Creek Watershed value natural resources for different reasons, and often value different resources, they did share similar interests in protecting rural qualities of the area. By drawing on these common interests stakeholders have the opportunity to build social capital and manage conflict in a way that reduces negative and enhances positive outcomes. Investment in social capital offers forest managers the potential to encounter less resistance to their work and offers residents and recreationists the potential to improve the quality of life they experience at the urban fringe. Addressing conflict as it arises over forest management at the urban fringe is a step towards protecting local productive forests and all of the values they provide.

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APPENDICES

Appendix A: Semi-Structured Interview Format

Introduction:
- Introduce who I am. Interested in learning about how this area has developed and how change is affecting areas around Corvallis.
- Ask about tape recording
- Sign informed consent form
- Warm up: land tenure and management history
- How long have you lived/owned property here/ worked with the company for?
- Why did you choose to move/buy property here?
- What kind of activities do you engage in on your property?

Getting at "Community":
- Record directions given by participant if I'm going to their house
- Maps: offer blank page to draw a map of their neighborhood and important spots
      (Back that up with a watershed map just in case they need more prompting?)
- Are there any activities that you participate in that are based in the Valley?
- Since you moved here, what changes (to the landscape, the type of residents, land use patterns etc) have you noticed in the Valley? (use as a lead in)
- Who are your neighbors? How do you get along with them?
- What are the qualities that makes a good neighbor?
- Do you and your neighbors work on any projects together throughout the year?

Issues of Concern & Scale:
- What are the best and worst things about living in the Valley?
- As a (landowner, resident, NIPF etc) are there issues that you are concerned about. Follow up/prompt
- Who are the large landowners in the area?
- What opportunities do you have to provide input into land management activities in the area?
- Do you have different expectations about how different landowners should act with regard to land management decisions/ activities?
- Forestry Issues
- A lot of land in this area is zoned as forestland, what are your impressions about forest management in the Soap Creek Valley.
- "What are your impressions about management on the Cameron Tract?
- Are you aware of any regulations that govern forest practices in this area? How do you feel about them? Do you feel they are enforced adequately?
- (If you don't like the timber harvesting) what is it that bothers you the most about harvesting?

- Have you had to comply with any regulations regarding land use activities on your own land?
- Have you encountered concern from your neighbors about your any land management activities you have tried to implement?

Problem Solving: How best to deal with current and future problems
- How do you get along with your neighbors? If there were problems between you and your neighbors how were those problems addressed?
- Where is the line between private property rights and public involvement?
- Do you think people here are interested in working together to influence future development?

Closing:
- General research completion date
- Offer to send results
- Assess interest for focus group
- What questions should I have asked that I didn't?
- Who else should I talk to?

Appendix B: Informed Consent Form

This research is being conducted to better understand the issues that arise at the urban fringe, especially those issues associated with forested landscapes. **The purpose of this project is to understand who the stakeholders in the Soap Creek Watershed are, what issues they consider important and how communication among stakeholders could be improved in the future.**

This project is supported by the Department of Forest Resources at Oregon State University, Corvallis, OR. Researchers involved in this project include:
Dr. John Bliss, professor and Starker Chair in Private and Family Forestry and Kearstin Edwards, a graduate research assistant.

Information is being gathered from individual interviews, surveys and focus groups. Interviews are expected to take from one to two hours of each participant's time. With the participant's permission, interviews will be audio-tape recorded.

We know of no risks to participants in this project. Associated benefits include;
1) the opportunity to communicate views and perceptions about land use and development in the Soap Creek area and 2) to confidentially express your opinions about the most important factors influencing communication and interaction among stakeholders.
To minimize any potential risks, the following rights are reassured to the participants:
   ‣ **Your participation in this project is entirely voluntary.**
   ‣ **You are free to decline answering any question**.
   ‣ **You are free to withdraw from the project at any time.**
   ‣ Your name or other identifying characteristics will not be included in any reports resulting from this research.

Excerpts from interviews may be made part of research reports or published articles, but under no circumstances will your name or identifying characteristics be included in research reporting unless you have otherwise specified, in writing, your agreement to be identified. Interview materials, including audio-tapes and transcripts will be archived with Professor John Bliss at Oregon State University's Department of Forest Resources.

Your signature indicates that you have read, and understand the contents of this form.

SIGNATURE:_____

NAME (printed):_____

DATE:_____

Thank you for your participation.
Questions about the project or your participation should be directed to:
Kearstin Edwards, OSU Graduate Student at (541) 738-1814,
Dr. John Bliss, Starker Chair of Private and Family Forestry at (541) 737-4427 or
Laura Lincoln, Coordinator for the Institutional Review Board at (541) 737-8008.

Appendix C: Interview Code Descriptions

Big issues: This is catch-all category for the issues as main or most important issues in the valley. However, these were not necessarily the issues that the participant spoke most about during the rest of the interview.

Communication with & expectations of OSU: This category encompasses past and expected or inferred interactions with OSU. It incorporates comments about both forestry and agriculture practices and interactions with both OSU departments.

Communication: developing it: This code is similar to the Community code, but these quotes deal more directly with establishing one on one relationships with people, where the community code relates more to activities that draw people together rather than individual conversations.

Communication: developing proactive contacts: This code is closely associated with Communication: developing it. These quotes suggest proactive measures to facilitate communication and positive interactions. This is an anticipatory step to reduce anticipated conflict situations.

Communication: formal channels: This includes all formal channels that citizens have available to provide input into land management in the watershed. Key opportunities beyond county permitting lie with the NBCAC, and the SCWC.

Communication: indirect/ after the fact: These quotes describe communication that occurs after a management action or event has occurred where no previous communication existed.

     Also incorporated are quotes that describe indirect communication through action or inaction. For example someone might purposely leave a gate open allowing animals to escape. This expresses their displeasure without actual words. The opposite side of the coin is that because you don't hear from anyone, you assume your actions do not bother them. It may be that individuals doesn't know who to contact, or don't feel that their complaint will make a difference.

Communication: ulterior motives/trust: Trust is a big issue and communication and interactions either build or destroy trust. These quotes suggest communication methods that do not foster trust.

Communication: within OSU: Provides examples of both effective and ineffective information exchange among OSU's personnel and departments.

Linking resource management to consumer use: Consumption is an important issue, but not one that arose much during interviews. However those who recognized consumption habits and linked them with good produced from the land seemed more inclined to accepting both forestry and agriculture practices. They may not have agreed with all practices but were more willing to accept management in general and potentially more open to discussion.

Some participants identified a history of logging or farming in their families and appreciated the value of resource incomes. Their concerns were that the best science or practices were being used to protect the environment while producing the commodity, rather than stopping production to protect the commodity.

Management authority: This encompasses comments about who really has decision-making authority over OSU lands, and who is perceived as having authority. Because communication within and between departments is limited, citizens are often bounced around in their search for answers, weakening credibility of the University as a whole.

Management: "good": These are comments regarding what people think "good management" of resources is, or what they would like it to be.

Management: clearcutting: perspectives: Comments, (mostly negative) regarding clearcutting.

Management: economics: This code encompasses a range of quotes referring to how money is related to land management. Many comments were specific to OSU. Residents either don't understand how the Research Forest and Ag Ranch financially support their managers, or they assume that income from management is does not go into supporting research.

Quotes also tie to the different perceptions and expectations about different landowners. Specifically, Industrial private ownership is seen as a business motivated by income. OSU is seen as tax supported and should be managing for science, not dollars."

Management: self reflections: Some reflexive thought from participants that incorporates both how they think of their own management activities and what they think others' think of their management actions.

Neighborhood types: This is a area of property owners, not renters. Generally, residents described the roads they lived on as neighborhoods where people knew one another, but the association is not a strong one. People said they would not describe their relationships with most of their neighbors as "close". There appears to be very little sense of community in the Watershed.

Neighbors "good": The "good" neighbor concept emerged of it's own accord and I eventually began incorporating it into the interview protocol. These quotes exemplify the qualities that a "good neighbor" possesses. They reveal an overlap between private rights and public goods. Interviewees didn't want others to interfere with their management but wanted a say in the management or development of the property around them.

Philosophy: OSU research: This code includes people's opinions about OSU's research in addition to the type of research people would like OSU to conduct.

Philosophy: property rights: This code incorporates interesting philosophy about property rights, stewardship, and the importance of property lines in determining neighbor relations.

QOL: acclimatization to disturbance: "Quality of Life: These quotes suggest that the norms accepted in Urban Fringe areas are changing, and while they may not be changes people like, they are changes that people are accepting to some degree. "

QOL: fringe amenities/drawbacks: "Quality of Life: These quotes refer to the amenities that the Urban Fringe provides. These are the basic reasons that people wanted or chose to live in the area. This code is linked to tenure. Newer owners may express more satisfaction with the current quality of life atmosphere than older owners who knew the area when it was less developed.

QOL: water quality: "Quality of Life: Protecting water resources is one concern tied to preserving a quality of life associated with the rural nature of the area. Threats to water quality come from ALL landowners: septic systems, livestock manure, road runoff, fertilization, herbicides all have the potential to impact the water source, especially since residents acquire household water through individual wells.

Recreation: use and issues: This is a broad category covering expressed concern over increasing recreation use (mostly by residents). It also addresses the types of use: horseback riding, mountain biking, walking/running and hunting, most of which occur on forested ground ie. OSU, Starker etc.) There seems to be a different use or expectation of use on agricultural lands, where there are fences.

Regulatory control: This code addresses whether or not current regulatory control of land use zones seems equally distributed. It includes participants' opinions or lack of opinions about current forestry regulations. The few comments regarding incentive programs as an alternative to regulations are also addressed here.

Appendix D: Mail Survey Overall Frequencies

Section I Association with the Soap Creek Watershed
This section asks you to describe your association with the Soap Creek Watershed. Use the map of the watershed boundary to help you answer the following questions

---

1. **Do you live in the Soap Creek Watershed?**
   (Circle one number and indicate years of residence if appropriate)

   | 37% | 1 NO | |
   | 63% | 2 YES | If YES, about how many *years* have you lived in the watershed? |

Years of residence	N	Range	Minimum	Maximum	Mean	Median	Mode
RESYEARS	208	63	1	64	18.12	14	3[a]

   a. multiple modes exist, 3 is the smallest

2. **Please indicate whether or not each of the following describe your association with the Soap Creek Watershed** *(Circle one number for each and indicate the approximate acreage where appropriate)*

		NO	YES
a.	I recreate in the watershed..................	30%	70%
b.	I own property in the watershed............	25%	75%
	If YES, about how many *total acres?*__		
c.	I own forestland in the watershed.........	63%	37%
	If YES, about how many *forested acres?*		
d.	I work for a company that owns Forestland in the watershed..................	94%	6%
	If YES, about how many *total acres?*___		
e.	Other (specify)_____	97%	3%

Acreage	N	Range	Minimum	Maximum	Mean	Median	Mode
ALL_ACRE	259	7099	1	7100	109.10	8	2

Acreage classes	Landowner	Forest owner	Total
1-9 acres	93	51	144
10-19 acres	10	23	33
20-49 acres	13	20	33
50-99 acres	7	7	14
100-199 acres	1	10	11
200-499 acres	7	2	9
500-999 acres	1	6	7
1000-4999 acres	1	3	4
5000 + acres	2	2	4
Total	**135**	**124**	**259**

3. As a landowner, how important to you are each of the following reasons for owning land in the Soap Creek Watershed? *(Circle one number for each)*

	NOT AT ALL IMPORTANT	SOMEWHAT IMPORTANT / NO OPINION	VERY IMPORTANT	NO IMPORTANT
a. Investment opportunity from resale of land...	31 %	37 %	29 %	3 %
b. Scenic beauty or aesthetic values...............	3	16	80	1
c. Income from timber production...............	73	13	9	5
d. Personal use of forest products (firewood/ crafts)	49	34	12	4
e. Non-motorized recreation use (hiking/ horses)	28	32	37	3
f. Motorized recreation (4 wheelers/ motorcycles)	81	9	6	3
g. Privacy associated with rural lifestyle...........	5	13	80	1
h. A legacy for my heirs.............................	23	33	38	6
i. Eventual subdivision or development...........	81	10	7	2
j. Provide for wildlife habitat......................	7	36	55	2
k. Income from agriculture (crops/livestock)......	56	21	19	3
l. Maintain undeveloped green space..............	18	36	44	2
m. Keep horses...	66	17	11	5
n. Other (specify)_____	5	8	87	0

4. Please indicate whether or not you have <u>ever</u> participated in each of the following:

(Circle one number for each)

	NO	YES
a. Soap Creek School House Foundation................	81%	19%
b. Soap Creek School House Benefit Run..............	85%	15%
c. Soap Creek community 4th of July picnic.............	90%	10%
d. North Benton Citizen's Advisory Council...........	88%	11%
e. Soap Creek Watershed Council........................	91%	9%
f. Private road association meetings....................	82%	18%
g. OSU McDonald Dunn information meeting.........	80%	19%
h. Adair Volunteer Fire Department	92%	8%
i. OSU Cameron Tract Tour...............................	92%	8%
j. Mudslinger mountain bike event......................	93%	7%

5. The following questions refer to the general character of the Soap Creek Watershed. Please indicate your level of agreement with each of the following statements. *(Circle one number for each)*

	STRONGLY DISAGREE	SOMEWHAT DISAGREE	SOMEWHAT AGREE	STRONGLY AGREE	NO OPINION
a. The Soap Creek Watershed has a rural character	.6 %	3 %	25 %	69 %	2 %
b. The Soap Creek Watershed is changing too fast	3	21	37	19	19
c. The Soap Creek Watershed is only a bedroom community of Corvallis.........................	22	31	28	10	10
d. Actively managed forests are important to sustaining the character of the Soap Creek Watershed....	5	7	29	52	7
e. Actively managed agricultural lands are important to sustaining the character of the Soap Creek Watershed...	4	5	29	55	6
f. There is a strong sense of community that unites residents across the Soap Creek Watershed......	8	21	29	11	30
g. Privacy is very important to the people who live in the Soap Creek Watershed...	.6	.9	31	49	18
h. I would like the Soap Creek Watershed to maintain its current character.................................	2	7	25	63	5
i. Land use zoning protects the character of the Soap Creek Watershed.......................................	7	10	32	35	17

Section II Issue Identification
In this section, we want your opinion about what issues are important in the Soap Creek Watershed.

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6. Use the space below to briefly identify any issue(s) specific to the Soap Creek Watershed that are important to you, list as few or as many as you like. Then, review the issues you listed and rank them in order of importance by placing a #1 by the most important, followed by #2, #3 and so on.

If there are *no* issues specific to the Soap Creek Watershed that are important to you, please check the box ☐ and go to question 7.

**7. Listed below are different opinions that people may hold regarding the Soap Creek Watershed. Given your own experience in the watershed, indicate your level of agreement with each of the following statements.*(Circle one number for each)*

	STRONGLY DISAGREE	SOMEWHAT DISAGREE	SOMEWHAT AGREE	STRONGLY AGREE	NO OPINION
a. Water quality in the watershed is improving	13 %	22 %	14 %	3 %	49 %
b. The large number of recreationists using the watershed is causing problems.................	14	17	30	8	21
c. I am concerned for my safety in the watershed during hunting season..........................	18	21	31	19	12
d. Maintaining private roads in the watershed brings neighbors together..............................	5	15	33	8	38
e. I am concerned about the effects of herbicide spraying in the watershed.......................	15	20	28	28	9
f. I am concerned about wildland fires starting in the watershed.................................	7	20	35	29	9
g. Neighbors have close relationships in the Watershed......................................	6	17	30	9	38
h. There is too much timber harvesting (all harvest methods) in the watershed...........	19	26	16	18	20
i. Clearcutting* is an appropriate way to harvest trees in the watershed.............................	33	14	22	22	8
j. I am concerned about private property rights being compromised by changing regulations...	6	14	28	39	12
k. Current land zoning regulations are good for the watershed......................................	4	10	37	18	31
l. Trespassing is a problem in the watershed......	9	23	17	11	40
m. Vandalism of property is a problem in the watershed.	7	20	25	12	37
n. Citizens have an adequate voice in *public* (eg. state and federal) land management decisions in the watershed.........................	15	23	25	8	29
o. Citizens have too much say in *private* land management decisions in the watershed.........	19	26	16	11	29
p. More land should be converted from farm or forest zoning to residential zoning in the watershed...	65	19	5	3	7

*Clearcutting: A tree harvesting method that removes essentially all of the trees in a stand during one operation[1] (No clearcut unit in Oregon, within a single ownership shall exceed 120 acres in size[2]). Helms, J. (1998).The dictionary of forestry. Bethesda, MD: The Society of American Foresters. Forest Practices Act: ORS 527.740 Harvest type 3 limitations.

8. In your opinion, what are the primary factors influencing water quality in the Soap Creek Watershed?

If you have no opinion about factors influencing water quality in the Soap Creek Watershed, please check the box [ ] and go to question 9.

Section III Forest Management Activities
Now we are interested in learning what specific concerns you may have about forest management.

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9. In your opinion, how well are each of the following types of landowners managing their lands in the Soap Creek Watershed to sustain the environment?
(Circle one number for each)

	POOR	FAIR	GOOD	EXCELLENT	NO OPINION
a. Individual private horse & cattle ranchers.........	11 %	21 %	34 %	8 %	26%
b. Farmers...	5	16	43	15	21
c. Private timber companies.............................	10	19	30	15	25
d. Individual private forestland owners................	5	18	35	14	28
e. Residents...	5	27	42	7	19
f. E.E. Wilson Wildlife Refuge.........................	2	8	35	36	20
g. OSU College of Forestry	8	11	37	27	17
h. OSU College of Agriculture (eg. OSU ranch)....	8	12	32	22	25
i. National Guard Rifle Range..........................	9	15	20	9	47
j. Coffin Butte Landfill.................................	12	18	34	18	17
k. Other (specify)_____	29	6	6	12	47

10. Please indicate how much, if at all, each of the following factors influence your level of concern about timber harvesting in the Soap Creek Watershed.
 (Circle one number for each)

	STRONGLY DECREASES CONCERN	SOMEWHAT DECREASES CONCERN	DOESN'T AFFECT CONCERN	SOMEWHAT INCREASES CONCERN	STRONGLY INCREASES CONCERN
a. If the harvest covers a large acreage.........	1 %	2 %	22 %	31 %	44 %
b. If harvesting occurs frequently..............	9	2	28	34	35
c. If the harvest is near my property...........	.9	.9	36	25	37
d. If the harvest is near where I recreate.......	2	2	41	31	24
e. If the harvest affects my property value.....	.9	.9	25	25	47
f. If the harvest is a not a clearcut..............	13	32	38	13	4
g. If the harvest significantly changes the scenery..	.6	5	30	32	33
h. If new trees are planted after the harvest...	29	3	25	3	5
i. If I am notified beforehand about the harvest	7	30	52	5	6
j. If I know the landowner who is harvesting...	6	21	68	2	3
k. If the harvest is on public forestland	3	11	58	15	13
l. If the harvest is on individual private forestland..	3	10	65	15	7
m. If the harvest is on private timber company forestland..	4	11	62	14	9
n. If I am provided with relevant information about the harvest..................................	7	37	48	4	5
o. If the harvest significantly changes existing habitat...	2	.9	17	33	46
p. Other (specify)_____	2	.9	17	33	46

11. Listed below are statements concerning land use and regulation. Using the Soap Creek Watershed as a reference, please indicate your level of agreement with each statement. *(Circle one number for each)*

	STRONGLY DISAGREE	SOMEWHAT DISAGREE	SOMEWHAT AGREE	STRONGLY AGREE	NO OPINION
a. Oregon's laws adequately regulate forest management activities on private lands........	10 %	20 %	31 %	19 %	19 %
b. Landowners should have the right to do what they want on their property, as long as they do not violate the law................................	11	22	27	39	.6
c. There need to be more regulations to guide forest management activities on private lands...	32	25	20	13	9
d. Oregon's land use regulations do a good job of protecting landowners' rights to manage their land consistent with the way it is zoned....	7	19	43	9	20

The following questions ask for your opinion about certain forest practices conducted by different types of landowners. Assume the practices are conducted in compliance with state and federal laws. Indicate your level of agreement with each practice on the following types of ownerships in the Soap Creek Watershed. *(Circle one number for each)*

	STRONGLY DISAGREE	SOMEWHAT DISAGREE	SOMEWHAT AGREE	STRONGLY AGREE	NO OPINION

12. Aerial herbicide spraying: (by plane or helicopter) appropriate…

	STRONGLY DISAGREE	SOMEWHAT DISAGREE	SOMEWHAT AGREE	STRONGLY AGREE	NO OPINION
a. on private timber company forestland.	25 %	14 %	33 %	24 %	4 %
b. on individual private forestland……...	26	15	32	24	4
c. on public forestland (eg. forestland managed by state or federal entities)…	26	16	30	24	4

13. Ground herbicide spraying: (backpack spraying) appropriate….

	STRONGLY DISAGREE	SOMEWHAT DISAGREE	SOMEWHAT AGREE	STRONGLY AGREE	NO OPINION
a. on private timber company forestland.	7 %	10 %	40 %	38 %	4 %
b. on individual private forestland……...	7	10	40	38	3
c. on public forestland (eg. forestland managed by state or federal entities)	9	12	39	36	4

14. Clearcutting: appropriate…

	STRONGLY DISAGREE	SOMEWHAT DISAGREE	SOMEWHAT AGREE	STRONGLY AGREE	NO OPINION
a. on private timber company forestland.	27 %	17 %	28 %	26 %	2 %
b. on individual private forestland……...	27	16	28	27	2
c. on public forestland (eg. forestland managed by state or federal entities)	30	19	25	25	.9

15. Timber harvesting (methods other than clearcutting) appropriate…

	STRONGLY DISAGREE	SOMEWHAT DISAGREE	SOMEWHAT AGREE	STRONGLY AGREE	NO OPINION
a. on private timber company forestland.	.9 %	3 %	40 %	54 %	.9 %
b. on individual private forestland……...	.6	4	40	55	.6
c. on public forestland (eg. forestland managed by state or federal entities)	3	7	39	50	1

Section IV Communication
In this section, we would like to learn about information you use regarding land use issues.

---

16. **How useful to you are each of the following sources of information concerning land use issues in the Soap Creek Watershed? By useful, we mean sources that you pay attention to and that you think provide accurate information.**
    (Circle one number for each)

	NOT USEFUL	SOMEWHAT USEFUL	VERY USEFUL	NO OPINION
a. Newspapers......................................	18%	48%	28%	6%
b. Radio stations.....................................	42	38	12	8
c. Television news programs.......................	37	36	18	9
d. Friends or relatives...............................	12	45	35	7
e. Newsletters sent through the mail..............	6	30	57	7
f. OSU Scientists....................................	12	31	43	14
g. County planners.................................	29	39	19	14
h. Internet web pages...............................	30	29	16	24
i. E-mail notices.....................................	29	27	22	22
j. Extension Agents..................................	16	32	39	13
k. Private road association meetings............	28	24	15	34
l. North Benton Citizen's Advisory meetings...	29	20	9	42
m. Soap Creek Watershed Council meetings......	26	21	10	42
n. Other (specify)_____	23	0	77	0

17. **Please complete the following sentence with the statement that best reflects your opinion.**   *(Circle one number)*

If a landowner is going to engage in a forest management activity that is likely to concern neighbors, the landowner.......

7%   1 Should not be obligated to notify their neighbors at all.
61%   2 Should contact their neighbors out of courtesy before engaging in the activity.
32%   3 Should be required to contact their neighbors before engaging in the activity.

Section V About You
Before closing, we would like to learn more about your background. Be assured that all of the information you provide in this survey will be kept completely confidential.

---

18. Are you? *(Circle one number)*   33% FEMALE   67% MALE

19. How old are you? *(Fill in the blank)*   _____YEARS

.3%	< 25 years
7%	25-34 years
22%	35-44 years
35%	45-54 years
15%	55-64 years
20%	65>

20. Which of the following best describes the environment where you grew up? *(Circle one number)*

16%	1	URBAN / CITY
13%	2	SUBURB
24%	3	SMALL TOWN
45%	4	RURAL AREA
2%	5	OTHER (please specify)_____

21. What is the highest level of education you have completed? *(Circle one number)*

2%	1	SOME HIGH SCHOOL
8%	2	HIGH SCHOOL GRADUATE / GED
12%	3	SOME COLLEGE
12%	4	ASSOCIATE'S DEGREE / TRADE SCHOOL
21%	5	BACHELOR'S DEGREE
9%	6	SOME GRADUATE COURSEWORK
24%	7	MASTERS DEGREE
11%	8	DOCTORAL DEGREE (PHD)
3%	9	OTHER (please

specify)_____

22. From which source does your household derive its PRIMARY income?
(Circle one number)

21%	1	RETIRED
13%	2	NATURAL RESOURCES (Agriculture / Forestry / Fishing / Mining)
0%	3	RECREATION / TOURISM
13%	4	OSU / OTHER EDUCATION PROVIDER
13%	5	COMPUTERS / HIGH TECH
10%	6	CONSTRUCTION / MANUFACTURING
.6%	7	WHOLESALE TRADE
4%	8	RETAIL TRADE
3%	9	FINANCE / INSURANCE / REAL ESTATE
2%	10	PUBLIC ADMINISTRATION
14%	11	OTHER (please specify)_____
5%	12	*HEALTH/ MEDICAL (category created from "other" responses upon survey return)

23. Which of the following categories best describes your total annual household income from all sources? *(Circle one number)*

2%	1	UNDER $20,000
6%	2	$20,000 TO $29,999
7%	3	$30,000 TO $39,999
10%	4	$40,000 TO $49,999
29%	5	$50,000 TO $74,999
22%	6	$75,000 TO $99,999
22%	7	$100,000 AND OVER