

**DESIGNING CONSERVATION COVENANTS FOR
CONSERVATION FORESTRY: A CASE STUDY
FROM CORTES ISLAND, BRITISH COLUMBIA**

by

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ABSTRACT

Conservation covenants have the potential to be powerful tools for protecting both ecological values and timber harvesting opportunities on lands dedicated for forestry purposes. Covenants for conservation forestry are among the most complex form of conservation covenants and must be carefully tailored to reflect ecological conditions and conservation objectives. In this report I evaluate the design of a covenant for conservation forestry on Cortes Island, British Columbia. I assess both structural and ecological provisions of the covenant to determine whether covenants were a useful tool for conservation forestry in this case. Effective covenants for conservation forestry must include clear objectives, balance flexibility with rigour, adopt provisions to maximize compliance and include a monitoring program. In addition to regulating forest practices, covenants for conservation forestry should protect habitat at multiple scales, designate reserves, maintain structural complexity and ensure connectivity across the landscape. Careful consideration must also be given to how covenants for conservation forestry will incorporate societal values.

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TABLE OF CONTENTS

APPROVAL.....	ii
ABSTRACT.....	iii
ACKNOWLEDGEMENTS.....	iv
TABLE OF CONTENTS.....	v
LIST OF TABLES	vi
LIST OF FIGURES	vii
1 INTRODUCTION	1
1.1 CONSERVATION AND THE ROLE OF PRIVATE LAND.....	1
1.2 INTRODUCTION TO CONSERVATION COVENANTS.....	2
1.3 RESEARCH RATIONALE AND QUESTIONS	5
1.4 REPORT STRUCTURE	7
1.5 SCOPE AND CONTEXT OF RESEARCH.....	7
2 RESEARCH METHODS AND CASE STUDY DESCRIPTION.....	9
2.1 CASE STUDY RATIONALE.....	9
2.2 APPLIED RESEARCH TECHNIQUES	10
2.3 CASE STUDY CONTEXT	12
2.3.1 <i>Ecological and Geographic Context</i>	12
2.3.2 <i>Social Context</i>	15
2.3.3 <i>Renewal Land Company Conservation Development Initiative</i>	17
2.3.4 <i>Overview of the Covenant Structure</i>	20
2.3.5 <i>Covenant Design Process</i>	23
3 CRITERIA FOR EVALUATING THE CONSERVATION COVENANT.....	26
3.1 CRITERIA FOR EVALUATING COVENANT DESIGN.....	27
3.2 CRITERIA FOR EVALUATING ECOLOGICAL PROTECTION	33
4 CASE STUDY FINDINGS.....	37
4.1 EVALUATION OF THE COVENANT DESIGN	37
4.1.1 <i>Identify clear objectives</i>	37
4.1.2 <i>Balance flexibility with rigour</i>	40
4.1.3 <i>Maximize the likelihood of compliance</i>	42
4.1.4 <i>Design and implement a monitoring plan</i>	45
4.2 EVALUATION OF ECOLOGICAL PROTECTION	48
4.2.1 <i>Maintain habitat at multiple scales</i>	48
4.2.2 <i>Designate reserves</i>	51
4.2.3 <i>Maintain structural complexity</i>	53
4.2.4 <i>Restore and maintain connectivity</i>	54
4.3 SUMMARY OF RESEARCH FINDINGS	55
5 DISCUSSION.....	58
5.1 LESSONS FROM THE RLC EXPERIENCE	59
5.2 FUTURE RESEARCH PROJECTS.....	69
5.3 CONCLUDING REMARKS	70
6 REFERENCES	71

LIST OF TABLES

Table 1: RLC covenant management zones.....	22
Table 2: Summary of criteria used to evaluate the design of the conservation covenant	27
Table 3: Summary of criteria used to evaluate ecological protection provisions.....	34
Table 4: Summary of Research Findings.....	56

LIST OF FIGURES

Figure 1: Map showing location of Cortes Island.....	13
Figure 2: Map showing 100-hectare case study area on southern tip of Cortes Island.....	14

1 INTRODUCTION

1.1 Conservation and the Role of Private Land

As population growth, urban sprawl, resource exploitation and economic development pressures increase, so does the need to become more diligent about protecting biodiversity and the environmental values that safeguard the existence of human (and non-human) communities. Around the world communities are exploring different approaches to conservation (e.g. Gadgil et al. 1993, Gonzales et al. 2003, Berkes 2004, Johnson 2004). At a broad, socio-political level conservation efforts are dependent on an understanding of the social, legal, political and economic frameworks within which land-use decisions are made, and a recognition of how contemporary institutions influence conservation goals and opportunities (Gadgil and Rao 1995, Freyfogle 1996, Clogg et al. 2004). At a more local, applied scale conservation requires not only an understanding of ecosystems but also of property regimes and the specific tools available for protecting environmental values on both public and private land. At a local level, tools available for conservation range from legal and regulatory instruments (e.g. Findlay and Hillyer 1994, Clogg et al. 2004, Hillyer and Atkins 2005) to First Nations traditional ecological knowledge (Berkes 1999) or local knowledge (Berkes 2004). There is an increasing focus on promoting conservation through voluntary incentives (e.g. CBSR 2004), certification schemes (e.g. FSC 2002), market-driven pressures (e.g. ForestEthics 2003) or shareholder activism (e.g. FOE 1999).

In British Columbia, the vast majority of conservation efforts have focused on, and continue to target, public land, which constitutes ninety-four percent of the provincial land base (MOF 2004). There remain important opportunities for the conservation of biodiversity and environmental values on private lands throughout the province. In order to be effective, conservation strategies must consider both public and private land and the complementary roles

that each can play in protecting environmental values (Morrisette 2001). Privately-owned properties, ranging from small urban lots to extensive tracts of grassland or forest ecosystems, provide wildlife habitat (LTA 2004b), contain sensitive or rare ecosystems (Parfitt 2001), provide connectivity corridors and greenways across fragmented landscapes (Morrisette 2001) and play a key role in the overall maintenance of ecological integrity and the conservation of biodiversity (LTA 2004b).

Private land conservation also plays an important role in promoting a land ethic centered on stewardship and the conservation of environmental values. It can help foster a sense of collaboration and cooperation among private landowners, conservation organizations and public officials who work together to create, implement and manage conservation initiatives (Beliveau 1993). Developing a strong stewardship ethic among private landowners may help promote such an ethic on all lands, regardless of ownership (Morrisette 2001).

1.2 Introduction to Conservation Covenants

Conservation covenants can be a very effective conservation tool for private land. A conservation covenant is a legal agreement (or prescription) under which a designated third party, such as a land trust, is granted a non-possessory interest in a parcel of land along with rights of access and enforcement (Wiebe et al. 1997, Gustanski and Squires 2000, Ohm 2000, Kwasniak 2003, Merenlender et al. 2004).¹ Conservation covenants are typically a statutory tool used to protect natural, cultural or heritage features from development and extractive uses (LTA 2004b). They are legally binding agreements that ‘run with the land’, binding all future owners of the property for the full term of the agreement, which may be perpetual (LTA 2004b, Hillyer and Atkins 2005). Statutory conservation covenants have been available as a conservation tool in

¹ This paper is not intended to be a comprehensive presentation of the legal and technical aspects of conservation covenants in British Columbia. For a more thorough discussion see Hillyer, A. and J. Atkins. 2005. *Greening Your Title: a Guide to Best Practices for Conservation Covenants*. 2nd Edition.

British Columbia since 1994, when the Land Title Act was amended to allow private landowners to grant covenants to qualified third-party organizations (Hillyer and Atkins 2005).² The use of conservation covenants is increasing rapidly throughout the province and figures are expected to grow significantly over the coming years as both awareness and capacity are built (Mahoney 2002, LTA 2004a). Conservation covenants are permitted for a wide range of conservation priorities, which in British Columbia specifically include the protection of “natural, historical, cultural, scientific, architectural, environmental, wildlife or plant life value relating to the land that is subject to the covenant” (Land Title Act s.219(4)(b)).

In addition to the valuable role they play in protecting environmental values on private land, conservation covenants are helping re-shape contemporary views of property rights and land ownership. Property law traditionally views property as a bundle of divisible rights, with the default assumption being that title, or ownership, typically includes most of the rights in this bundle (Singer 2000). Contemporary property systems, however, could be more accurately described as “a series of separable rights often held by a bundle of owners” (Singer 2000). Although title may be held by one owner, other property rights such as access, exclusion and use are commonly shared by multiple interests (Wiebe et al. 1997). Even fee simple land, which is considered to include the largest ‘bundle’ of property rights, is almost always encumbered by a division of property rights among multiple owners, or statutory restrictions on the exercise of property rights (e.g. zoning bylaws). The rising popularity of conservation covenants in recent decades suggests a gradual shift from the conception that land ownership confers with it a comprehensive bundle of property rights, or exclusive domain, to a model where the rights associated with a piece of property are explicitly disaggregated and held by different owners (Collins 1996, Singer 2000).

² The *Land Title Act* (s. 219(3)) authorizes a conservation covenant to be granted in favour of any of the following entities: the Crown or a Crown corporation; a municipality; regional district; the GVTA; a local trust committee under the *Islands Trust Act*; or any person designated by the Minister of Water Land and Air Protection (the term ‘person’ has a specific legal meaning which includes organizations).

Covenant-enabling statutes, such as British Columbia's Land Title Act, are structured to make it legally feasible for landowners to place long-term, conservation-oriented restrictions on their land (Beliveau 1993). Prior to the enactment of covenant-enabling statutes, such restrictions could only be placed on private land under limited conditions, and were subject to common law standards that made it difficult or even impossible to protect conservation values over the long-term (Loukedelis 1992, Hillyer and Atkins 2005).

In addition to their role in the preservation of ecological, cultural or heritage features, conservation covenants are also used as a tool to protect 'working' lands, such as agricultural farmlands or managed forests (SAF 2000). Conservation covenants used to protect ecological values in situations where industrial or other economic activity is occurring vary in complexity from those which simply dictate acceptable land-uses (e.g. to prohibit the conversion of farmlands to residential lands (Stanger 2004)) to more complex versions which go further to regulate the nature of management and specific practices related to allowable land-uses (e.g. Beliveau 1993, Ohm 2000, SAF 2002, ECO-Initiatives 2004).

Covenants for conservation in a forestry context are among the most complex forms of conservation covenants. In spite of their complexity, covenants for conservation forestry offer significant opportunities, including (Pacific Forest Trust 1997):

- To help reduce the conversion of forestlands to industrial, commercial, residential or other development uses.
- To provide landowners with a financial incentive to preserve forestlands, through a range of tax relief options.
- To demonstrate high-quality forest stewardship.
- To protect forest ecosystems, and restore degraded landscapes.

The complexity of these covenants follows from the complexity and uncertainty of forest ecosystems, as well as the range of management options and the diversity of forestry practices

that may or may not be compatible with the protection of biodiversity (Pacific Forest Trust 1997). Covenants for conservation forestry also tend to require a high degree of ongoing involvement of both the covenant holder and the landowner because of the complexity of management issues (Pacific Forest Trust 1997, Hillyer and Atkins 2005).

1.3 Research Rationale and Questions

In this research paper I employ a case study method to evaluate a project from Cortes Island, British Columbia, where conservation covenants are being used as a tool to protect biodiversity on forested lands while promoting ‘conservation forestry’.³ In this report, I use the term ‘conservation forestry’ to mean the dedication of lands for forestry purposes, including timber harvesting and silvicultural interventions, with a focus on the protection of ecological values and biodiversity. I use this term to distinguish from ‘forest conservation’ which suggests an emphasis on the protection of forest ecosystems and is not always compatible with forestry. The primary purpose of this research is to expand the body of knowledge on potential applications of conservation covenants, specifically as a tool for promoting conservation forestry on private lands.

This research is unique and relevant in several ways:

1. It expands the body of literature on conservation covenants, specifically in British Columbia and with respect to covenants for conservation forestry.
2. It provides Renewal Land Company (the current landowner in the case study) and The Land Conservancy of British Columbia (the holder of the covenant in this case study) with additional insight into the strengths and weaknesses of their

³ In British Columbia the term conservation covenant is used, while in the United States the term ‘conservation easement’ is used. For consistency I will use the term ‘conservation covenant’ or ‘covenant’.

conservation covenant, and makes specific recommendations to strengthen the ongoing implementation of the covenant and associated management plan.

3. It offers insights, lessons and ideas to landowners, conservancies, researchers and others who may be considering the use of covenants for conservation forestry on private land.
4. It increases public awareness of this particular legal tool for the conservation of both forestry lands and ecological values and in doing so contributes to larger strategies to promote private land conservation in British Columbia.

In this report I address three specific research questions:

1. Are conservation covenants a useful tool for conservation forestry?
2. What are some of the key challenges associated with the design of covenants for conservation forestry, and what measures can be used to overcome these challenges?
3. Are there specific knowledge gaps regarding the application of covenants for conservation forestry, and if so what future research projects should be pursued to address these gaps?

1.4 Report Structure

This report is divided into five chapters. In Chapter One, I outline the research rationale, research questions and scope of the research, and review key elements of conservation covenants. In Chapter Two, I present the research methods I employed and provide a context for the case study research. In Chapter Three, I present the evaluative criteria used to inform my analysis. Chapter Four presents the findings of my evaluation and in Chapter Five, I discuss how my findings relate to the research questions and comment on the usefulness of this case study as a broader learning experience. I also make recommendations for landowners, conservancies and others considering covenants as a tool for conservation forestry and conclude by suggesting future research projects and making closing remarks.

1.5 Scope and Context of Research

This case study examines a covenant for conservation forestry. The covenant is part of a larger 'conservation development' initiative taking place across two hundred hectares of forest lands on Cortes Island, British Columbia. This non-profit, conservation development initiative incorporates conservation covenants, low-impact residential development and a network of public trails and parks. It also demonstrates how community ideals can be incorporated into a private venture. In this research paper I focus primarily on the use of conservation covenants in the conservation development initiative and also reflect on the implications of incorporating community values into the venture. Other components of the conservation development initiative, such as the residential development and the stakeholder consultation process, are beyond the scope of this research and are not addressed. In addition, an analysis of ongoing debates about the implications (legal, social and ecological) of placing long-term or permanent conservation-oriented restrictions on private land (e.g. Cheever 1996, Thompson and Jay 2001, Mahoney 2002) is beyond the scope of this research. In this report I assume that conservation

covenants in general are an acceptable tool for conservation on private land, and focus primarily on the question of whether they are equally useful for preserving forestry lands over the long-term.

2 RESEARCH METHODS AND CASE STUDY

DESCRIPTION

In this research project I employ qualitative research methods to address the research questions, specifically a case study evaluation using both direct observation and participatory action research as research techniques. Neither the covenant nor the larger conservation project of which it is a component were originally intended to serve as a case study for research purposes. However, as the covenant and my own participation in the project evolved over an eighteen month period, it became clear that it could serve as an illustrative and relevant case on the design of effective covenants for conservation forestry.

2.1 Case Study Rationale

Case study research has been described as a form of inquiry that examines a modern phenomenon within its real-life context, when there are no apparent distinctions between the context and the phenomenon itself and where a range of sources of evidence can be used (Yin 2003). Case studies can be useful because of the ability of the research to increase our understanding of complex situations, for their applicability to practical, 'real-life' situations, and for strengthening existing knowledge about a particular subject (Yin 2003). Case study research is most appropriate when research is focused on questions that begin with 'how' or 'why' and that seek to understand a unique situation that is inextricably linked to a political, social, historical and/or personal context (Yin 2003). A case study approach was chosen here because:

1. The research seeks to answer *how* covenants for conservation forestry can be designed to achieve both ecological and operational objectives.
2. The research seeks to answer *why* certain design choices were made in the covenant and the consequences of those choices.

3. Both the conservation covenant design process and the substantive content of the final document were inextricably linked to, and influenced by, the political, social, historical and ecological history of land-use and community values on Cortes Island.

Case study research allows a researcher to study one aspect of a complex problem in greater depth (Blaikie 2000). In this case, the broader conservation development initiative is a multi-faceted, three-year undertaking influenced by complex social, political and economic realities on Cortes Island. The initiative triggered complex discussions about the social, political and economic structure of the island community, including issues such as gentrification, resource exploitation, housing and social services, population growth and sustainable development. To study the initiative in its entirety would be an extensive undertaking. Similarly, conservation covenants are complex legal documents that raise a myriad of issues relating to property rights, the role of government in regulating private land-use, the legal structure of long-term agreements and the effectiveness and consequences of various conservation strategies and incentives to promote such strategies. To evaluate all of these aspects of a conservation covenant would require a substantial interdisciplinary analysis. In contrast, focusing this case study on a discrete component of the overall conservation development initiative (i.e. the design of the conservation covenant) enabled me to examine the subject comprehensively and maximize the effectiveness of my research.

2.2 Applied Research Techniques

To complete my case study research I employed approaches from both Participatory Action Research (PAR) and direct observation as research techniques. PAR is a form of qualitative research that aims to link theory and practice in solving practical problems (Hatten et al. 1997). Unlike many forms of research, in PAR the researcher is not just a passive observer but actually

participates in the action being researched (Fubara and Mguni 1995). Prior to, and during my case study research, I was employed as Project Director for Renewal Land Company (RLC). RLC owns the property to which this conservation covenant applies and is responsible for the larger conservation development initiative of which this covenant is one component. In my position as Project Director I oversaw the entire conservation development, and was the sole staff person responsible for drafting the conservation covenant, carrying out an extensive, two-year community consultation process and incorporating the results of that process into both the covenant and the overall initiative. I worked closely with the project leader (RLC's Principal) and a team of consultants and advisors. As a result of this experience I was well positioned to incorporate PAR as a research approach. My position with RLC also enabled me to learn from direct observation and apply these findings to my case study research.

PAR has been criticized for introducing a high risk of researcher bias (Whyte 1984, Easterby-Smith et al. 2002). Nonetheless, PAR offers the researcher a unique perspective on the research problem, often leading to unique insights and opportunities for learning (Yin 2003). In the case of this evaluation, I felt that the unique insights and depth of knowledge available to me as a result of my employment, and role in the design of the covenant, were significant enough to offset any risk associated with researcher bias. To address the legitimate risk of researcher bias associated with PAR, I have taken steps to minimize my personal bias, including making an explicit effort to remain neutral and to be critical about both the covenant and the design process itself. RLC also engaged independent reviewers to assess the covenant prior to its completion. Although there are incentives for me to promote this covenant, as it is a product of my employment, I also have an incentive to seek out strengths and weaknesses with the covenant. Specifically, I may have opportunities to modify both the covenant and the associated management plan through my ongoing employment with RLC and will therefore be able to act on the recommendations that result from my research. For clarity, and to distinguish between my research and my work as Project Director, I use the term 'RLC' throughout this report to refer to

work I completed in my capacity as an employee (e.g. “RLC decided to incorporate conservation covenants into their development initiative”).

2.3 Case Study Context

2.3.1 Ecological and Geographic Context

Cortes Island is a 12,750 hectare island located at the northern end of the Strait of Georgia on the southwest coast of British Columbia. Figure 1 shows the location of Cortes Island and Figure 2 shows the case study lands for this research. With the exception of the northernmost tip, Cortes Island falls within the Coastal Western Hemlock Very Dry Maritime biogeoclimatic subzone (Pojar et al. 1991) and is influenced by the rainshadow of nearby Vancouver Island. The majority of the island is relatively low lying, with elevations less than 200 metres above sea level and relatively subdued terrain (CES 2002). The southern portion of the island can be susceptible to summer drought, while the northern portion is typically wetter (CES 2002). Much of the island was logged and subsequently burned in the 1920’s (CES 2002). As a result the landscape is dominated by sixty to eighty year-old Douglas-fir forests with components of western redcedar, western hemlock, red alder and arbutus (CES 2002, Haberl et al. 2003). Although there are some remnant patches of older forest, very little old-growth forest remains (CES 2002).

The research area for this case study is 100-hectares of private property located on the southern tip of Cortes Island and owned by RLC. The property was logged almost in its entirety in the 1920’s and was selectively harvested again in 1999 using a combination of commercial thinning and small patch cuts (Weyerhaeuser 2003). As a result, the forest cover is primarily sixty to eighty year-old conifers interspersed with small patches (on average one hectare or less) in which the regenerating trees are all in early stages of development (Haberl et al. 2003). A limited number of large western redcedar trees which are residual from the old-growth are

scattered on the property. The terrain is relatively flat and homogenous, and contains only one small wetland (Haberl et al. 2003).

Figure 1: Map showing location of Cortes Island. Used by permission of Richard Trueman.

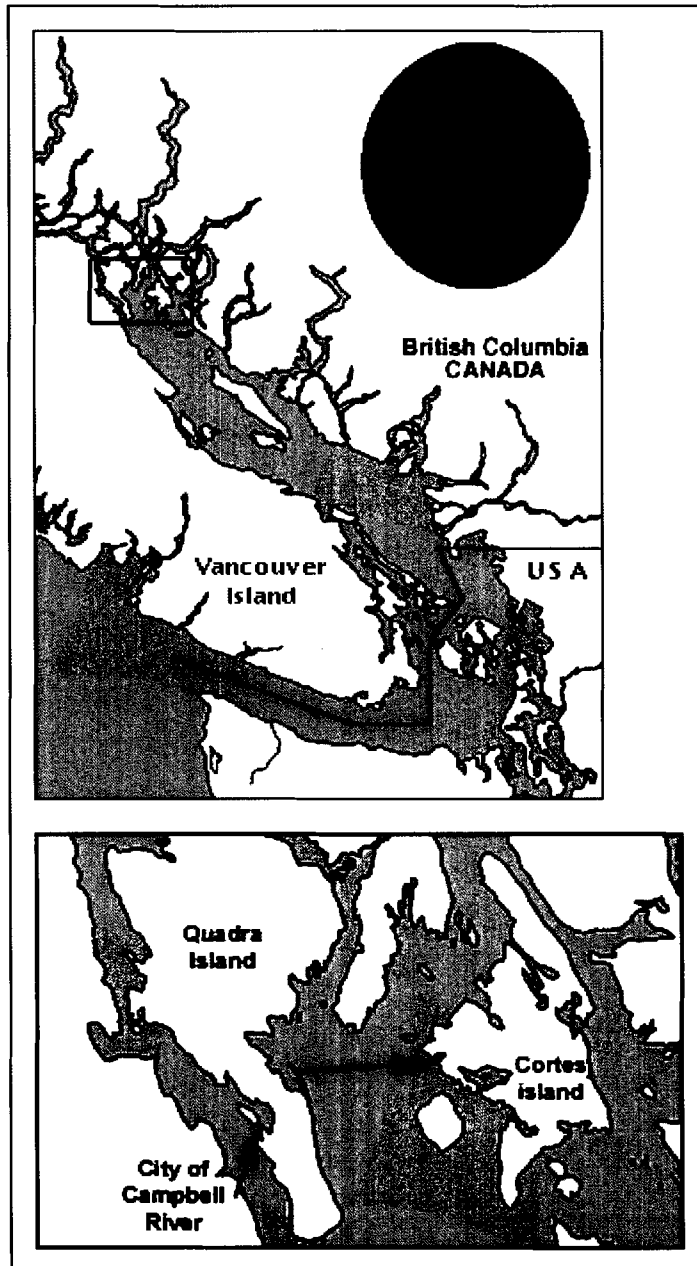
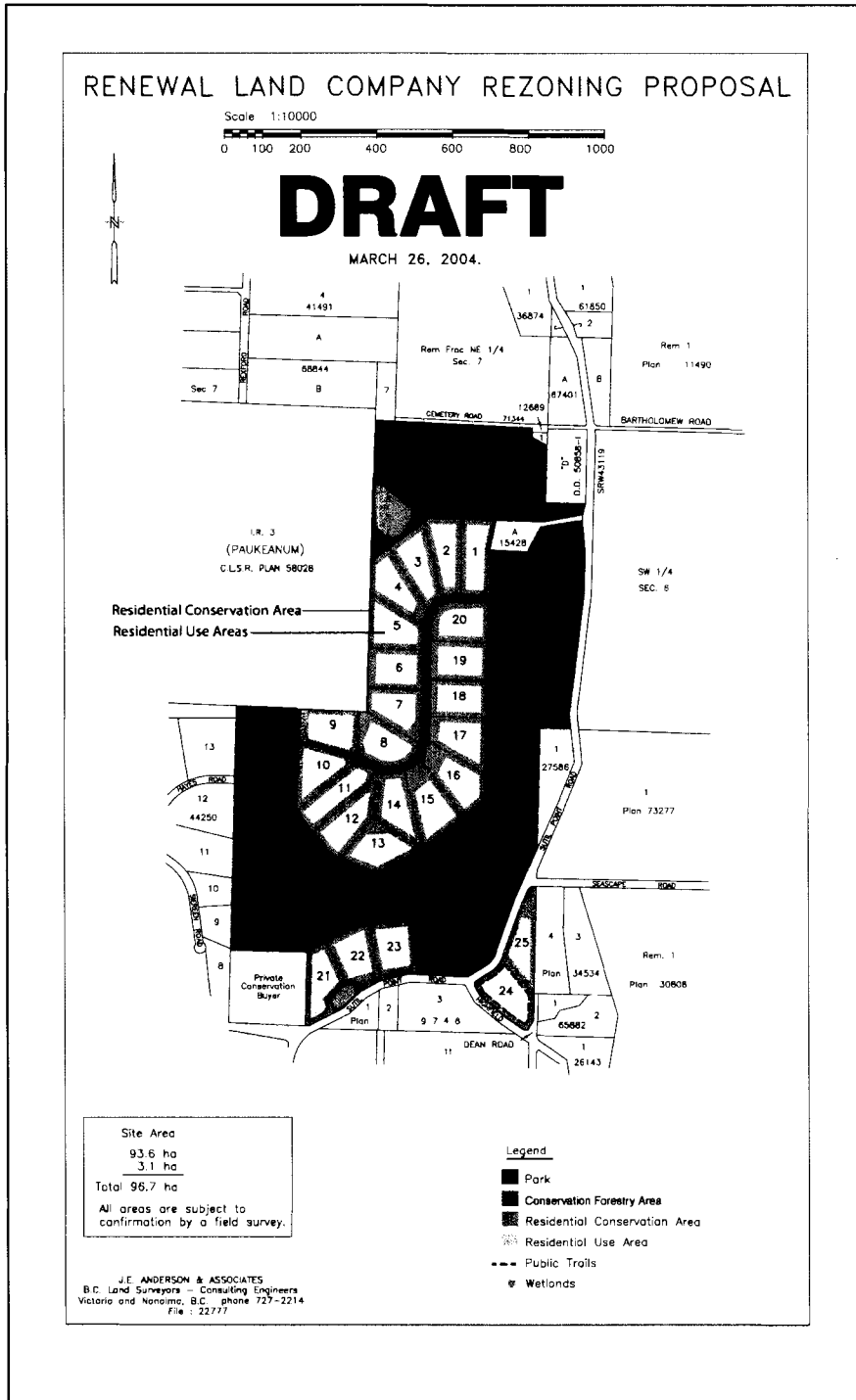


Figure 2: Map showing 100-hectare case study area on southern tip of Cortes Island.

This map shows the Conservation Forestry Area, Public Park, Residential Use Areas, Residential Conservation Areas and Public Trails that are part of RLC's conservation development initiative and will be established and managed according to the conservation covenant evaluated in this case study. Map used by permission of Renewal Land Company.



2.3.2 Social Context

Cortes Island is home to roughly one thousand full-time residents (Cortes OCP 1995), including both an aboriginal and a non-aboriginal community. Historically the island was home to both the Klahoose First Nation and the Sliammon First Nation. Currently the Sliammon First Nation has one unpopulated Indian Reserve on the island (RDCS 2004b) while there is a year-round Klahoose community of approximately one hundred members, many of whom reside on one of two Klahoose Reserves on the island. For over a decade both the aboriginal and non-aboriginal local communities have actively lobbied (at times in conjunction with each other) to promote community control of the forest land base and the adoption of progressive forestry practices centered on ecosystem-based management (West 2004).

Over 1300 hectares of forestland on Cortes are privately owned by Weyerhaeuser – a major international industrial forestry corporation (CES 1999). In 2001, Weyerhaeuser announced plans to sell all of their Cortes holdings over a period of two to five years, and began the largest private land transfer in the recent history of the island. The sale of the Weyerhaeuser lands caused considerable concern among many island residents and community organizations (Anderson 2004), many of whom had lobbied for almost a decade to have the lands transferred into a community forest and managed according to ecosystem-based management principles (West 2004). Local concern increased when three of the Weyerhaeuser properties sold to small private forestry companies and were extensively logged between 2003 and 2004.

In recent years the Cortes community has consistently taken a strong public position on land-use and forest management, advocating strongly for greater community control and the implementation of ecosystem-based management (West 2004). In the early 1990's the Cortes Ecoforestry Society (CES), strengthened by a membership that included a significant majority of the adult population on the island, undertook a comprehensive land-use planning process for the

entire island (CES 2002). This process resulted in the Cortes Island Ecosystem Based Plan (Silva Forest Foundation 1996), which has yet to be legally implemented but remains a driving force behind the community's assessment of, and potential support for, any land-use initiatives. This land-use plan clearly defines the community vision of what constitutes ecosystem-based management. The community continues to advocate for the implementation of ecosystem-based management and RLC was subject to significant pressure to adopt this approach in their covenant. Ultimately the covenant is not, nor does it claim to be, an ecosystem-based management covenant as it focuses almost entirely on the protection of ecological values and does not incorporate the social or economic elements typically associated with ecosystem-based management. However, it could be complementary to the broader community vision of ecosystem-based management.

In addition to a strong desire to implement their vision of ecosystem-based management, the Cortes community has also clearly articulated their desire to maintain a 'working landbase' for local resource-based economic opportunities. This desire was reflected in 1995 when, as part of an Official Community Plan process, a new forestry zone (Forestry-One) was created that restricts the subdivision of forestry lands to forty-hectare parcels and limits housing on these forestry lands to two dwellings per property (OCP 1995). This new forestry zone applies to all of Weyerhaeuser's private forest properties on the island as well as the majority of public forest lands (RDCS 2003, RDCS 2004b). Currently fifty-four percent of the island's landbase is zoned for forestry purposes, with the intention of dedicating a 'working landbase' on the island (RDCS 2004b). The creation of the forestry zoning and the desire for a 'working landbase' resulted in significant pressure on RLC to preserve opportunities for forestry on their properties. Although there is a desire for a 'working landbase' the community is clear that their desire is specifically for a working landbase managed according to ecosystem-based management (as defined in the Ecosystem Based Plan for Cortes Island) rather than for industrial forestry. It is also clear that the

community prefers to see land maintained for forestry purposes rather than converted to private residential landholdings.

Finally, although the Weyerhaeuser lands have been privately owned for decades (including those acquired by RLC), the corporate owners have accommodated community use of trails on the lands and periodic harvesting of vegetation such as salal. An extensive trail network has developed over the years, and is frequently used by local residents for both non-motorized (and on occasion motorized) transportation and recreation. As a result, the trails and properties are perceived by many as quasi-public. For instance, RLC was under pressure to legitimize and preserve the public right of access in perpetuity. In summary, there were three important social dynamics at play that had a significant influence on the design of the covenant:

1. A strong community desire to see their vision of ecosystem-based management implemented on the island's forest landbase, coupled with opposition to large-scale industrial forestry.
2. A strong community desire to see forest land dedicated for conservation forestry purposes (i.e. not merely forest conservation), ideally to support a local, resource-based economy.
3. A strong sense of *de facto* public access rights to a well-developed trail network on private lands.

2.3.3 Renewal Land Company Conservation Development Initiative

RLC is a small private company whose mission is to implement a community-driven, conservation-oriented model of land-use on private forest lands on Cortes Island. RLC's creation in January 2003 was motivated in part by local concern over the sale of Weyerhaeuser lands and the likelihood of industrial-scale timber harvesting on many of the properties. Local concern over the potential loss of public access to these properties was another motivating factor. RLC eventually purchased seven properties from Weyerhaeuser, encompassing just over 200 hectares

of forest land, with the intention of registering conservation covenants that reflected community values and then re-selling the properties, having protected ecological values in perpetuity. Three of the seven properties were immediately re-sold with protective covenants that prohibited any timber harvesting and limited residential use to a single cabin (TNT 2003).

Faced with the challenge of balancing forest conservation and public benefits with the high cost of private land acquisition, RLC proposed a 'conservation development' on the remaining properties (a contiguous one-hundred hectare parcel), where twenty-five residential lots would be developed to finance the costs of land acquisition and conservation. The conservation development proposal was refined over the course of an extensive, two-year consultation process and incorporates:

- Twenty-five residential lots of 1.5 hectares each under a bare land strata subdivision.
- Protection of biodiversity and ecological values, using conservation covenants.
- Conservation forestry, i.e. the permanent protection of a 'working landbase' for local economic opportunities. The area dedicated to conservation forestry is under common ownership of the bare land strata (i.e. the area is considered the common property of all the strata owners).
- A network of public trails and parks.
- Principles to help minimize the ecological impact of residential use, such as constraints on building size, location and materials.
- Significant community participation in the planning process.

RLC did not originally intend to include residential development in their conservation initiative. However, it quickly became evident that without extensive logging, options to recover land acquisition costs were extremely limited. For several months efforts were made to identify conservation-minded buyers who were interested in purchasing large tracts of inland forest for

either preservation or to support a small-scale, ecosystem-based management demonstration site. However, these efforts failed and it became clear that residential development was the only source of sufficient revenue to fund the land acquisition and conservation initiative. The decision to create twenty-five smaller residential lots (as opposed to fewer, larger lots) stemmed from local pressure to keep prices relatively low so that lots would not be priced exclusively for wealthy, off-island buyers. Conservation covenants were adopted as a tool to help minimize the ecological impact of residential use by regulating land-use practices and limiting further development.

The success of RLC's proposal was contingent on rezoning properties from the existing Forestry-One zoning to Forest Land Stewardship, a new zone that permits a higher density of residential development in exchange for the permanent designation of at least sixty percent of the land for either sustainable forestry or conservation purposes (RDCS 2003). The rezoning required a strong show of community support in order to be approved by the local government. This in turn influenced the design of RLC's covenant, as there was pressure to use the covenant to alleviate community concerns around the loss of Forestry-One zoning and the increased residential density by ensuring both a high level of conservation and the permanent establishment of land for forestry purposes.

Like many community initiatives, RLC's proposal had both supporters and detractors and was a catalyst for widespread debate over land-use and planning policies on the island. Ultimately there was a strong base of support for the proposal. It was informed by community values and reflected a strong desire on the part of many locals to see a higher standard of conservation on private forest lands. At the formal public hearing for the rezoning, 169 residents were in favour of the proposal, eighteen opposed it and nine offered neutral comments or suggestions (RDCS 2004a). Opposition to the proposal stemmed largely from a preference for timber harvesting instead of increased residential density. Support for the proposal stemmed from a variety of factors, including a preference for higher standards of conservation and sustainable forest practices. Some support also stemmed from a desire to see new residential

properties made available on the island, where there is a shortage of available housing and where rapidly increasing land costs have excluded many locals from the housing market.

2.3.4 Overview of the Covenant Structure

The covenant applies to RLC's entire 100-hectare property. Thirty-six hectares are allocated for residential use (in the form of strata lots), of which eighteen hectares can be cleared for homesites and the remaining eighteen hectares are designated as residential reserve areas where no home building or development is permitted. The remaining sixty-four hectares are designated for a combination of conservation forestry and preservation – twelve hectares will be designated as a Public Park under the jurisdiction of the Comox-Strathcona Regional District and fifty-two hectares will be allocated for conservation forestry under the ownership of the strata residents. Table One summarizes the allocation of land to different uses. There will also be approximately seven kilometers of public trails for non-motorized use. The trails will be designated under a statutory right-of-way (a form of legal easement) that forms part of the covenant and puts liability and trail management obligations onto the Comox-Strathcona Regional District (RLC 2004). The decision to designate the trails under a permanent statutory right-of-way was made in order to protect private landowners from any of the legal responsibilities associated with public use of trails on private land, such as liability, maintenance or enforcement.

The covenant creates four management zones on the property, each of which is subject to different rules and restrictions (RLC 2004) (see Table One):

- ***Conservation Forestry Area:*** dedicated to conservation forestry, with priority given to the protection of biodiversity and ecological values, and the restoration of old-growth attributes. This area will be common property under the joint ownership of the strata residents.

- ***Residential Use Area:*** dedicated to residential use, including homes, gardens and associated outbuildings. Each residential lot is limited to one dwelling, and the combined square footage of all structures on the property cannot exceed 5000 square feet. Each lot will be individually owned, but will be part of the bare land strata.
- ***Residential Conservation Area:*** dedicated to conservation and privacy. The residential conservation area consists of reserve zone on each residential lot where timber harvesting and other forms of development are restricted.
- ***Public Park:*** dedicated to forest preservation, recreation and public access. The park will be under the ownership of the Comox-Strathcona Regional District. Although it will be legally designated as a Regional District Park, the conservation covenant will provide an additional layer of land-use certainty for this portion of RLC's property to ensure that it will always remain a park, regardless of future development pressures on local government, changes in their land-use policy, or amendments to the permitted uses of a Regional District Park.

Table 1: Covenant Management Zones

Table 1 summarizes the allocation of case study lands to four management zones: a public park, conservation forestry area, residential conservation area and residential use area. Table 1 also summarizes the primary purpose of each management zone.

Management Zone	Key Purpose of Zone
RESIDENTIAL USE AREA	<ul style="list-style-type: none"> 0.75 hectare zone on each of twenty-five 1.5 hectare, clustered residential lots where owners will be permitted to clear up to seventy-five percent of the trees for housing, gardens and associated outbuildings. 18 hectares in total is allocated to this zone, or nineteen percent of the total property.
RESIDENTIAL CONSERVATION AREA	<ul style="list-style-type: none"> 0.75 hectare zone on each of twenty-five 1.5 hectare, clustered residential lots where owners will be prohibited from building and structures or clearing trees. 18 hectares in total is allocated to this zone, or nineteen percent of the total property.
CONSERVATION FORESTRY AREA	<ul style="list-style-type: none"> fifty-two hectare zone where limited timber harvesting will be allowed according to ecosystem-based management principles set out in the conservation covenant and detailed in an associated management plan, and riparian areas, wildlife trees and other sensitive areas will be protected. This zone encompasses fifty percent of the total property.
PUBLIC PARK	<ul style="list-style-type: none"> twelve hectare public park, donated to the local government to be managed for conservation and recreation while protected with a conservation covenant that prohibits any development, timber harvesting or motorized use.⁴ This zone encompasses twelve percent of the total property.

⁴ Although for technical reasons a separate conservation covenant will be registered on the park portion of the property, the design process viewed the entire property as a single unit and created zones and management guidelines accordingly.

2.3.5 Covenant Design Process

During the design of RLC's covenant several factors were taken into account, including:

- RLC's overall objective of conserving forest biodiversity and restoring older forest ecosystems.
- Pressure for the covenant to incorporate elements of ecosystem-based management, stemming from the local desire to see ecosystem-based management implemented on the forest land base rather than large-scale, industrial timber harvesting.
- Local pressure to keep the lands as part of the 'working landbase' on Cortes.
- Local pressure to legitimize and guarantee public access to the trail network.
- The unique ecological conditions and characteristics of the property.

The covenant was drafted in three stages over an eighteen-month period. The initial drafting stage began with a review of all available information to be sure the covenant was tailored to reflect conditions on the property. RLC then incorporated community input, which was solicited through the larger consultation process in which RLC was simultaneously engaged as part of the overall conservation development initiative. The community consultation process, in which over 400 local residents participated, included a series of public forums, group tours on the property, small 'living room' sessions, neighbourhood meetings, an interactive website, community mapping exercises and regular updates from RLC to the community. Although RLC solicited and incorporated extensive community input, and shared information willingly, they did not share final decision-making authority with the community. This decision was based largely on the fact that RLC was solely accountable for several million dollars in loans that were financing the overall conservation development initiative, including the design of the covenant. This precluded the possibility of shared decision-making with the community, given the risk that community decisions would not reflect the financial reality of the project (e.g. a community

decision to create only parklands on the property would not have been financially acceptable, even if it were socially preferable).

The second stage of the covenant design entailed a formal review by several local groups, including the local land conservancy, local environmental groups, community organizations and individuals with practical experience in the design and implementation of conservation covenants. After incorporating feedback from this review process, the covenant was reviewed by legal experts and the covenant holder (TLC) and finalized. In summary, the final draft draws from several sources, including:

- Feedback resulting from RLC's broader community consultation process.
- Feedback resulting from the formal public review process.
- Relevant literature on conservation biology, landscape ecology, forest ecology and resource management.
- A conservation covenant drafted by The Trust for Sustainable Forestry, a Cortes-based charitable organization with a mandate to promote and practice eco-forestry on private forestlands (ECO-Initiatives 2004).
- A conservation covenant and management plan developed by The Land Conservancy of British Columbia (TLC) for application on their 'Wildwood' property, a privately-owned woodlot that has been sustainably managed for several decades (TLC 2003a).

The design of RLC's conservation covenant was further complicated by a decision Weyerhaeuser made to register covenants on all of their Cortes properties prior to sale. This decision by a major, corporate landowner to voluntarily register conservation covenants on private land holdings is virtually unprecedented in British Columbia, and stemmed in part from local pressure to protect key environmental values. The Weyerhaeuser covenants require that twenty percent of the timber on each property be retained and prohibit harvesting within ten metres of streams, wetlands, public roads and any sensitive habitat areas noted on a baseline

study (TLC 2003b). Sixty to eighty percent of each property is considered 'operable', i.e. available for timber harvesting, and subdivision is permitted according a set of administrative criteria (TLC 2003b). In exchange for registering these covenants under Canada's Ecological Gifting Program, Weyerhaeuser received a federal tax credit based on the value of the covenants. As a result of this tax credit, amendments to the Weyerhaeuser covenants require the approval of the Canadian Wildlife Service (CWS 2005).

Although the Weyerhaeuser covenants offer some protection to environmentally sensitive areas, they were perceived as inadequate by some members of the local community because they did not reflect the community's vision of ecosystem-based management, nor did they establish a permanent right of public access to the lands. In response to this perceived inadequacy, as well as to meet their own conservation mandate, RLC proposed to discharge the Weyerhaeuser covenants and immediately replace them with the covenant for conservation forestry evaluated here. This new covenant substantially increases the extent of ecological protection, in part by limiting both the nature and extent of timber harvesting and prohibiting any subdivision beyond RLC's initial creation of twenty-five residential lots (RLC 2004). Canadian Wildlife Service approval is required in order to replace the Weyerhaeuser covenants with the new conservation forestry covenant. At the time this research was completed a decision from the Canadian Wildlife Service was pending.

3 CRITERIA FOR EVALUATING THE CONSERVATION COVENANT

In this report I develop two sets of criteria against which to evaluate a covenant for conservation forestry. I use the first set of criteria to assess the design of the covenant, and help answer the question “what are some of the challenges associated with the design of covenants, and how can they be overcome?” Accordingly, these criteria focus on how a covenant should be structured, how to establish a clear purpose, how to minimize the risk of failure or non-compliance, how to assess efficacy and how to respond to changing conditions. The second set of criteria focuses on the ecological aspects of the covenant and is intended to help assess whether the covenant protects ecological values while conserving forestry opportunities. The two sets of criteria are discussed in sections 3.1 and 3.2 of this chapter.

I have specifically chosen to evaluate one particular outcome of RLC’s conservation development initiative – the covenant itself – rather than the process through which the covenant was drafted. There were several key reasons for this decision. First, the covenant provides a clear and measurable outcome that is well suited to a structured evaluation. Second, RLC had very clear conservation goals that the outcome (i.e. the covenant) was intended to support. As such, an evaluation of the covenant provides insight into how well RLC’s overall conservation goals have been achieved. Thirdly, covenants for conservation forestry are a relatively new concept in British Columbia and an evaluation of the RLC covenant may offer insights and lessons to support the development of other similar covenants around the province. Last, the process through which the RLC covenant was drafted was inextricably linked to RLC’s overall conservation development initiative. In order to be effective, a detailed evaluation of the drafting process would need to be done in conjunction with an assessment of the overall development initiative. Such an assessment was beyond the scope of this research project.

3.1 Criteria for Evaluating Covenant Design

The original design of a conservation covenant will have an enormous influence on its success over time (Cheever 1996, Ohm 2000). Through a review of the literature on covenants I identified four broad criteria that are consistently related to the success of a covenant: identify clear objectives (Wright 1994, Ohm 2000), balance flexibility with rigour (Cheever 1996, Sader et al. 2002), maximize the likelihood of compliance (while maintaining rigorous standards) (Ohm 2000, Morrisette 2001) and monitor for compliance and efficacy (Morrisette 2001, Sader et al. 2002, Merenlender et al. 2004). These four criteria, against which the design of the covenant is evaluated, are listed in Table Two.

Table 2: Summary of criteria used to evaluate the design of the conservation covenant.

Criteria	Rationale
Identify Clear Objectives	<ul style="list-style-type: none"> The inclusion of clear, understandable objectives is critical, as the design and implementation of individual agreements will flow from the original intent or objectives of an agreement (Ohm 2000, Morrisette 2001).
Balance Flexibility with Rigour	<ul style="list-style-type: none"> Covenants must incorporate some degree of flexibility while maintaining rigorous, enforceable standards. A balance must be struck between language that is precise enough to maintain the long-term integrity of the covenant while still allowing adaptive management in response to changing ecological and social conditions (Sader et al. 2002).
Maximize the Likelihood of Compliance	<ul style="list-style-type: none"> Achieving compliance with the terms of a conservation covenant is crucial to the long-term success of both individual agreements and the broader perception of covenants as a useful tool for achieving conservation objectives on private land (Stanger 2004).
Design and Implement a Monitoring Plan	<ul style="list-style-type: none"> An effective monitoring program can be used to promote compliance, facilitate enforcement actions, objectively verify that objectives are being met and inform amendments (Sader et al. 2002, Merenlender et al. 2004).

IDENTIFY CLEAR OBJECTIVES

The first step in creating an effective conservation covenant is to consider the objectives of both the landowner and the covenant holder (Ohm 2000, Morrisette 2001, LTA 2004b). This step is critical, as the design and implementation of individual agreements will flow from the original objectives. Conservation objectives may range from preservation of a unique natural feature (LTA 2004b) to the protection of scenic viewsheds (Ohm 2000), from preservation of pristine habitat to restoration of a degraded ecosystem or sustainable management of forestlands (SAF 2000). Other objectives may include financial incentives such as tax credits, a desire to prevent subdivision and development, or the protection of an inheritance for family members (Cheever 1996, Morrisette 2001). Significant care should be taken with the wording of objectives to be certain that they accurately reflect the overall purpose or intention of the covenant, are clear enough to minimize ambiguity and misinterpretation, and relate to the unique condition and characteristics of the property.

BALANCE FLEXIBILITY WITH RIGOUR

The concepts of continuous change and inherent uncertainty are difficult to reconcile with the 'permanent' nature of most conservation covenants, especially those for conservation forestry (Mahoney 2002). Incorporating a degree of flexibility can help alleviate this tension if careful consideration is given to the design of covenants (Cheever 1996, Morrisette 2001), and to the limitations on the ability to amend or modify agreements (i.e. certain elements of a conservation covenant cannot be amended, even in the event of new knowledge). Although flexibility is important, rigorous and enforceable standards must be maintained so that the integrity of the agreement is not compromised. Adopting a flexible management approach at the outset of the covenant design process will help ensure that appropriate mechanisms for dealing with change, new knowledge and modification can be incorporated into the agreement, thereby maximizing the

potential to be flexible, learn from experience and ensure covenant objectives are being achieved. In addition to adopting a flexible approach to management, covenants should adopt language and provisions that are precise enough, and sufficiently detailed, to make conservation objectives, land-use restrictions and monitoring parameters clear and maintain the long-term integrity of the agreement. At the same time, covenants should avoid terms that are too prescriptive or detailed to permit adaptive management in response to changing ecological and social contexts (Sader et al. 2002). Overly restrictive language could contribute to the failure to achieve conservation objectives or invalidation of a covenant in the event of a dispute (Thompson and Jay 2001).

Incorporating flexibility is especially important with covenants for conservation forestry, as what is considered sustainable forest management today will almost certainly be viewed differently in the future (Mahoney 2002). Covenants for conservation forestry must provide landowners and covenant holders the flexibility to adapt not only to changing circumstances but also to new scientific information regarding forest ecosystems (Sader et al. 2002, Merenlender et al. 2004) and forestry. Covenants can incorporate flexibility without compromising integrity by distinguishing between provisions that cannot be modified without jeopardizing the success of the agreement and those that could be amended or interpreted in various ways without risking failure. Provisions on which the long-term success of a covenant is contingent should be incorporated into the agreement itself and carefully worded to avoid misinterpretation. Those that could be modified or interpreted in various ways with little threat to the overall success of the agreement can then be delegated to a more flexible management plan that is easily modified or updated.

MAXIMIZE THE LIKELIHOOD OF COMPLIANCE

Achieving compliance with the terms of a conservation covenant is crucial to the long-term success of individual agreements and to the broader perception of covenants as a useful tool for achieving conservation objectives on private land (Stanger 2004). The initial terms of a covenant, including whether or not adequate provisions for modification, termination, dispute resolution and enforcement are included, will have an enormous impact on compliance over the long-term (Ohm 2000).

Compliance is linked to understanding, remedies for non-compliance and arrangements for conflict resolution (Ostrom 1992). It can be promoted through voluntary measures, such as education, that foster a greater understanding (and awareness) of the terms of a covenant and the restrictions it imposes on land-use. It is important to take steps to ensure landowners are aware there is a covenant on their property, and understand the implications it has for land-use, the legal powers of enforcement available to covenant holders and the consequences for non-compliance. This becomes even more important as properties change hands and new owners are required to adapt to the terms of a covenant on their land. Compliance can also be promoted by encouraging a desire on the part of the landowner to see the covenant objectives achieved.

Compliance is closely linked to the enforceability of individual agreements (Morrisette 2001). Without adequate provisions for enforcement, covenant holders may lack the legal authority to enforce terms of the agreement and landowners may have less incentive to comply with the terms of a covenant. Clear enforcement provisions also give landowners a mechanism to hold covenant holders to their obligations under the terms of the agreement. Enforcement provisions become even more important with second generation landowners, i.e. those who acquire land with a covenant already on it, as they may have less attachment to the original conservation objectives and in some cases may be opposed to either the entire agreement or specific clauses. Compliance also relates to the sanctions available for violations, which must be serious enough to act as a legitimate deterrent to would-be violators. Covenants in British

Columbia often include provisions for monetary penalties, referred to as a 'rent charge' (the term 'rent' is a legal term under the Land Title Act which essentially means 'penalty'). The amount of a rent charge varies with individual agreements and can range from as low as a few hundred dollars per infraction up to tens of thousands of dollars (Stanger 2004).

Last, compliance is linked to the adequacy of arrangements for dispute resolution (Ostrom 1992, Ohm 2000), which in British Columbia typically include a structured process of discussion, mediation and arbitration. Should all other avenues of dispute resolution fail, parties may turn to the courts for a final decision, although in British Columbia, due to the relatively recent enactment of covenant legislation, it remains unclear how the courts will interpret conservation covenants and the rights and responsibilities of each party (Hillyer and Atkins 2005). In the United States courts have been reluctant to consider conservation covenants, relying instead on the dispute resolution mechanisms built into each agreement to resolve conflicts (Collins 1996, Thompson and Jay 2001).

DESIGN AND IMPLEMENT A MONITORING PLAN

One of the most critical factors for the success of a covenant is the design and implementation of a well-structured monitoring program (Morissette 2001, Sader et al. 2002). An effective monitoring program can be used to promote compliance, facilitate enforcement actions, objectively verify that objectives are being met and inform amendments to both covenants and management plans (Sader et al. 2002, Merenlender et al. 2004). Monitoring can also provide covenant holders with the opportunity to develop an ongoing relationship with landowners (Sader et al. 2002). In spite of its importance, monitoring often suffers from a lack of commitment, insufficient funding, a lack of controls and a failure to adopt standardized protocols. When designing covenants, consideration must be given to the fact that their permanent nature requires capacity on the part of the covenant holder to monitor regularly and maintain records so that they

can enforce the terms of the covenant and ensure objectives are being met (Merenlender et al. 2004). Financial capacity is a significant issue, as many of British Columbia's land trusts operate on minimal budgets and depend on volunteer labour, donations and charitable funding (Stanger 2004). Increasingly, conservancies must consider mechanisms that enable monitoring to be self-funding, including endowments, fee-for-service provisions and annual monitoring fees.

Monitoring is an ongoing process, with regular visits to the property scheduled at least annually and additional visits scheduled following specific activities on the property, such as logging or house building, in order to monitor for compliance and record changes to the property (TLC 2004a). Covenants typically contain provisions that require the covenant holder to monitor regularly (Sader et al. 2002), in part because under certain circumstances, a failure to monitor adequately could result in breaches sufficient to invalidate an entire covenant.

A comprehensive monitoring program begins with the collection of accurate and thorough baseline data that describes the condition of the property at the time the covenant is registered. Baseline data includes physical features, human-engineered features, ecosystem types, forest and cultural resources and existing residential, commercial or industrial uses (Sader et al. 2002, Haberl et al. 2003). Baseline documentation is critical in order to be able to measure changes in the condition of the property, detect any violations and assess the impact of management activities over time. After collecting appropriate baseline information, the monitoring program can focus on tracking changes in the condition of the property and assessing compliance with the covenant and any management plans (Sader et al. 2002). In order to monitor effectively, covenant holders must identify appropriate attributes to assess, consider how those attributes can be effectively assessed, confirm when monitoring should take place, and determine a practical, cost-effective process for monitoring that will ensure the covenant holder and the landowner can work together over the long-term (Sader et al. 2002). The final component of an effective monitoring program is to ensure that the results of monitoring are used to inform amendments to management plans and, if necessary, the covenant itself.

3.2 Criteria for Evaluating Ecological Protection

I use four criteria to evaluate how well the covenant protects ecological values: maintain habitat at multiple scales, designate reserves, maintain structural complexity and maintain connectivity. These criteria represent a subset of generally-accepted strategies for protecting ecological values. They are not intended to be a comprehensive review of the ecological underpinnings of forest conservation. Rather, the criteria are ones that I consider useful for the purpose of this evaluation and applicable to its context. I have intentionally focused on criteria that can be applied at a stand level, as the case study is limited to a 100-hectare area. I specifically exclude criteria relating to hydro-riparian protection because there are no riparian areas on the property, with the exception of a small, aquifer-fed wetland that lies entirely within a designated reserve area (and is therefore protected from any form of development). Table Three summarizes the criteria against which the ecological components of the covenant are evaluated.

Table 3: Summary of criteria used to evaluate ecological protection provisions in the covenant

Criteria	Rationale
Maintain Habitat at Multiple Scales	<ul style="list-style-type: none"> • Habitat conservation is a key strategy for stemming the decline of species. • Habitat availability influences abundance and distribution of organisms as well as survival, reproduction and long-term population persistence.
Designate Reserves	<ul style="list-style-type: none"> • A representative network of ecosystem reserves is one of the most widely recognized mechanisms for the conservation of biodiversity.
Maintain Structural Complexity	<ul style="list-style-type: none"> • Structural complexity is critical for regulating natural processes, preserving habitat and ultimately protecting biodiversity. • Complexity can arise from a range of live and dead trees, coarse woody debris, under-story plant communities and surface organic layers.
Maintain Connectivity	<ul style="list-style-type: none"> • Connectivity can influence ecological processes and counter the negative impacts associated with habitat loss and fragmentation. • Connectivity can generally be provided by the retention of habitat at multiple scales and the retention of suitable structural elements.

MAINTAIN HABITAT AT MULTIPLE SCALES

Conserving or restoring viable populations of native species in natural patterns of abundance and distribution is a well-accepted strategy for the conservation of biodiversity (Grumbine 1994, CSSP 1995, Noss 1999, Drever 2000). Native species contribute to overall levels of biodiversity and play various functional roles that, in some cases, are critical for preserving ecological processes and the health of the overall ecological community (CSSP 1995, Drever 2000). The availability of habitat will influence the survival, reproduction, long-term population persistence and distribution of organisms (Lindenmayer and Franklin 2002). Loss of habitat is a predominant cause of species decline (Ehrlich 1988, Wilcove et al. 1998,

Lindenmayer and Franklin 2002, Wilson 2002). As such, it follows that maintaining suitable habitat should be a key component of any strategy to conserve biodiversity.

DESIGNATE RESERVES

Conservation biologists generally agree that a representative network of ecosystem reserves is a fundamental component of any strategy to conserve biodiversity (Noss 1996, Soule and Terbourgh 1999, Margules and Pressey 2000, Morrisette 2001, Hockings 2003) particularly when coupled with appropriate measures in the landscape matrix (Lindenmayer and Franklin 2002). Ecological reserves can contribute to the conservation of biodiversity in numerous ways. Depending on size and other factors, reserves may provide opportunities for the occurrence of natural evolutionary processes (Putz et al. 2000, Lindenmayer and Franklin 2002) and support functioning examples of ecosystems, landscapes, stands, habitat and biota and their inter-relationships (Lindenmayer and Franklin 2002, Ervin 2003, Hockings 2003). Reserves may also provide a venue for research to increase our understanding of complex ecosystems (Norton 1999, Lindenmayer and Franklin 2002), support breeding populations sufficient to maintain genetic variation (Holling and Meffe 1996, Hockings 2003) and act as 'safety nets' relatively free from the effects, cumulative or otherwise, of human disturbance (Paine et al. 1998, Lindenmayer and Franklin 2002).

MAINTAIN OR RESTORE STRUCTURAL COMPLEXITY

One of the major threats to forest biodiversity is the simplification of historically complex ecosystems (Noss 1999, Franklin et al. 2000). Maintaining structural complexity at both landscape and stand levels is critical for regulating natural processes (Franklin et al. 2000), preserving habitat (Wilcove et al. 1998) and, ultimately, protecting biodiversity (Franklin et al. 2000, Lindenmayer and Franklin 2002). Unmanaged forests are typically a mosaic of patches, each with different composition, structure and age classes (Spies and Turner 1999, Lindenmayer

and Franklin 2002) and a diversity of structural elements, including a range of live and dead trees (multiple species, sizes and degrees of decay), coarse woody debris (multiple species with varying sizes and decay classes), under-story plant communities (diversity of both cover and composition), and surface organic layers (Mulder et al. 1999). These elements are arranged in various ways to provide vertical heterogeneity, such as multiple canopy layers and varying percentages of live crown, and horizontal heterogeneity such as diverse spatial patterns created through gaps, 'anti-gaps' or dense areas (Franklin et al. 2002) and multiple age cohorts (Lindenmayer and Franklin 2002).

MAINTAIN CONNECTIVITY

Noss (1991) defines connectivity as "linkages of habitats...communities and ecological processes at multiple spatial and temporal scales." Natural forests typically have a high degree of connectivity (Lindenmayer 1998) and as such the maintenance or restoration of connectivity is a critical component of maintaining biodiversity. Connectivity can influence many ecological processes at multiple scales, including population persistence and recovery after disturbance (Lamberson et al. 1994), the degree to which habitat patches are utilized (Villard and Taylor 1994), recolonization after disturbances (Lindenmayer and Franklin 2002), the ability of individuals within a population to interbreed (Leung et al. 1993), population size (Fahrig and Merriam 1994) and the distribution of individuals or populations in a landscape (Lindenmayer and Franklin 2002). Although different species have different requirements for connectivity because of species-specific traits and their unique interaction with structure (Wiens et al. 1997, Bennett 1998) connectivity can often be provided by the retention of habitat at multiple scales, e.g. in the form of corridors, or discrete patches of habitat that act as 'stepping stones' (Beir and Noss 1998, Lindenmayer and Franklin 2002) and the retention of suitable structural elements (Franklin et al. 2002).

4 CASE STUDY FINDINGS

In this section I will present the results of my evaluation of Renewal Land Company's Cortes Island covenant, using both the design criteria and the ecological criteria shown in Tables Two and Three.

4.1 Evaluation of the Covenant Design

4.1.1 Identify clear objectives

The articulation of clear objectives is one of the most important aspects of covenant design (Ohm 2000). Objectives inform readers about what the covenant is trying to achieve and provide guidance to structure both restrictions and permitted uses. Objectives also play a key role in dispute resolution – in the event of a disagreement they provide arbitrators (or a court of law) a basis for evaluating the extent to which a violation (or an amendment) jeopardizes the original integrity of the agreement (Thompson and Jay 2001). RLC's covenant objectives, in order of priority, are as follows (RLC 2004):

1. To protect, conserve, maintain and enhance the natural environment, ecosystems and biological diversity of the conservation forestry area, including the habitats, water, soil, scenic and spiritual values.
2. To restore old-growth forest conditions and attributes and maintain old-growth forest characteristics in perpetuity.
3. To limit the area of non-forested land and of young seral stage forests.
4. To protect trees with special wildlife habitat values, including large old trees.
5. To practice ecologically sensitive forest management, including timber harvesting, in the conservation forestry area according to the restrictions in the covenant.

6. To create small-footprint dwellings and outbuildings while protecting any sensitive areas from building activity.
7. To provide non-motorized public access, where appropriate, through a network of public trails in the conservation forestry area.
8. To prevent any occupation or use of the Land that will significantly impair or interfere with the natural state of the Land or the Amenities, except as expressly permitted in the covenant.⁵

These objectives make it clear that the overarching purpose of the covenant is to protect ecological values and restore or maintain old-growth forest characteristics. The objectives also reflect some aspects of the community's desire to see ecosystem-based forestry implemented and public access legitimized. Although every effort was made during the drafting and review process to phrase the objectives as clearly as possible, it is difficult to foresee all the potential interpretations of a specific word, phrase or sentence. Future landowners and covenant holders may interpret an objective in different ways and as such may or may not agree on how, when or whether an objective has been achieved.

During RLC's formal covenant review process, reviewers were asked to provide their interpretation of the objectives to help assess how closely their understanding matched RLC's intent. Objectives 1, 2, 3, 4, 5, 7 and 8 (as listed above) were consistently interpreted as intended. Objective 6 was interpreted differently by certain reviewers due to the lack of clarity over what was meant by "small-footprint dwellings." Including a clear definition of this term in the covenant would have alleviated this problem. Although this 'mock interpretation' was a helpful exercise, the results are of limited use because the reviewers were all individuals with a desire to

⁵ The terms 'land' and 'amenities' are legal terms used to refer to the property and its natural features.

see the covenant succeed and who shared objectives similar to RLC. Since clear objectives are most important in the event of a dispute over interpretation of restrictions, or where a landowner wishes to contest the validity of restrictions in an agreement, a more helpful exercise would have been to engage reviewers who were not familiar with the RLC context and would take the perspective of a landowner wishing to contest the covenant.

As with the term 'small-footprint', the other subjective terms should have been defined with clear, operational definitions. Certain terms including 'ecologically sensitive forest management' and 'wildlife trees' are defined in the covenant (RLC 2004). Other terms are referenced in the objectives and throughout the document but either never defined or given a definition that is difficult to assess. The term 'old-growth' is an example. Old-growth is defined in the covenant as "a mature or old forest ecosystem containing a complex set of ecological conditions and attributes, including large standing and fallen trees, well-developed understory vegetation, gaps in the canopy, multiple canopy layers, a diversity of tree ages, diameter classes and degrees of decadence, large biomass of live and dead wood and a significant majority of old trees" (adapted from Lindenmayer and Franklin 2002). The definition in this context has both strengths and weaknesses. Because the definition has the potential to be interpreted subjectively (e.g. how many snags must the stands have to constitute old-growth, what does 'diversity of trees' mean, etc.) it leaves some room for flexibility with management practices, particularly timber harvesting or silvicultural measures intended to promote old-growth characteristics. In addition, the definition can be used to guide the development of measurable attributes for monitoring purposes (e.g. specific diameter classes, tree ages, canopy layers and decay classes) to track the development of old-growth characteristics. At the same time, the subjective nature of the definition could lead to disputes over when old-growth conditions have been established.

In order to simplify future assessments (taking into account the covenant holders limited financial capacity for monitoring), it would have been useful to incorporate a working definition, such as one that included tree age as a surrogate for old-growth (Wells et al. 1998). Ideally the

covenant's old-growth definition would incorporate both descriptive elements (e.g. a 'diversity of trees, well-developed understory vegetation') and an appropriate age class, such as 'greater than 120 years' (MacKinnon 2003). An appropriate age class would be one that reflects the age at which forests in the region typically begin to exhibit mature or old-growth characteristics, to simplify monitoring practices and reduce the potential for conflict. Alternatively, the covenant could have included specific measurable parameters for each component of the definition, e.g. a range of cubic metres per hectare of coarse woody debris, number of snags per hectare etc. that would collectively constitute acceptable old-growth conditions.

Although it is important to clearly define what is meant by objectives there is also some value in the use of general 'motherhood' statements such as "to protect, conserve, maintain and enhance the natural environment, ecosystems and biological diversity..."(RLC 2004). Such broadly worded objectives help set a tone for the overall agreement and articulate a philosophy of land stewardship that prioritizes conservation. When viewed in context with the remaining provisions of the covenant, broad objectives such as these support RLC's intention that the property be managed for conservation values and not large-scale resource extraction or development.

4.1.2 Balance flexibility with rigour

Covenants must be drafted to strike an appropriate balance between detailed, prescriptive terms which constrain incompatible land-uses and broader, more flexible terms that permit both the landowner and covenant holder to amend management strategies in response to changing ecological or social conditions (Sader et al. 2002). RLC's covenant attempts to strike this balance by including both strict restrictions and broad, guiding principles. The covenant explicitly restricts numerous practices that are seen as incompatible with the overall purpose of the agreement. For example, building of new roads is prohibited (logging will rely on an existing network of skid trails and roads), as is clearcutting as a method of timber harvesting (the covenant

is silent on the use of other silvicultural systems, but limits the size of patch cuts to a single tree length in diameter). The RLC covenant also restricts commercial and industrial use to either home-based small-business ventures or commercial or industrial activity explicitly related to forest management (RLC 2004). Subdivision and the use of pesticides are also prohibited, and the covenant limits the combined square footage of all built structures (including residential homes) to 5000 square feet per strata lot (RLC 2004). In addition, the covenant restricts the rate of timber harvesting by limiting young forests to no more than fifteen percent of the landbase at any given time and capping harvest levels at 75% of the annual growth increment (RLC 2004).

In addition to explicit restrictions, the covenant sets out guiding principles where there is less risk of jeopardizing the overall integrity of the agreement (i.e. the covenants ability to continue to meet original objectives). For example, the covenant requires that a management plan be prepared according to current, science-based forest management principles but does not explicitly define what constitutes 'science-based'. The covenant also retains a degree of flexibility by setting out desired outcomes (i.e. restore old-growth forest and conserve biodiversity) but not regulating how to achieve the desired outcomes as long as forest management strategies are compatible with the terms of the covenant. For example, the covenant requires that a forest management plan include measures to protect wildlife trees and restore old-growth characteristics (RLC 2004) but does not specifically dictate how to achieve these outcomes.

Finally, the covenant maintains some flexibility by delegating operational forestry decisions, such as when, where and how to harvest timber or protect wildlife trees, to a management plan that, once developed, can be easily amended and updated. Although the covenant itself specifically lists what must be addressed in the plan and imposes restrictions on certain practices, it leaves the details of operational decisions to the management plan. For example, the management plan is required to include measures for ecological restoration, but landowners are free to adopt strategies they deem suitable as long as they are consistent with the

purpose and details of the covenant. Similarly, although the covenant requires that a minimum of eight-five percent of the landbase be maintained as older forests, it does not specify where on the landbase this eight-five percent must be situated. Since the management plan is easily amended and must be updated every five years, this delegation of operational decisions allows land-use practices to be responsive to changing conditions and new information about forest ecosystems and conservation forestry.

Although the covenant has some flexibility to allow landowners to respond to changing conditions, the base level of restrictions is quite high given the intentionally restrictive nature of conservation covenants. The fundamental objective of the RLC covenant is to conserve biodiversity and, over time, restore old-growth forest conditions on the property. All other management objectives, including the desire to see timber harvesting according to conservation forestry principles, are secondary. As such, strict restrictions on timber harvesting and development were intentionally included in the agreement in spite of their impact on the short-term timber harvesting potential in the covenant.

4.1.3 Maximize the likelihood of compliance

Unless landowners comply with them, covenants are of little use as a tool for private land conservation (Morrisette 2001). Compliance is related to understanding, sanctions for non-compliance (e.g. enforcement provisions) and arrangements for conflict resolution (Ostrom 1992). In the case of RLC's covenant, every effort was made to encourage voluntary compliance. Numerous drafts were reviewed for clarity, consistency of language and potential for misinterpretation, by legal experts, resource managers, community groups, local landowners with covenant experience and staff from TLC. In addition, RLC developed a “plain language User’s Guide” to the covenant which uses straightforward language to explain the purpose of the covenant, the restrictions it imposes on land-use, benefits it confers to landowners, the meaning of legal terms and conditions and the consequences of non-compliance. The User’s Guide,

coupled with efforts to make the actual document as straightforward as possible, promotes voluntary compliance through education, awareness and understanding.

In the event that compliance cannot be achieved through voluntary measures, the covenant includes sanctions for infractions as well as provisions that enable the covenant holder to take enforcement actions. The covenant holder has the right to access the property at any time to monitor for compliance and assess violations if necessary. Enforcement provisions in the covenant grant TLC the right to charge a financial penalty for violations, and include mechanisms to facilitate the collection of outstanding penalties. Violations can include any infraction of the covenant and include harvesting trees without an approved management plan, exceeding the allowable rate of harvest and building an excessively large house or a new road.

The RLC covenant includes provisions for three monetary penalties. The covenant holder may levy a financial penalty of up to \$10,000 for non-compliance on individual residential lots and \$100,000 for non-compliance on the conservation forestry area. The question of whether an infraction has occurred, and the extent to which a penalty is warranted is left to the discretion of the covenant holder, acting reasonably. These figures are intended to be high enough to be a serious disincentive to would-be violators. Non-compliance on individual residential lots is the responsibility of individual lot owners within the strata, while penalties for non-compliance on the conservation forestry area (commonly owned by all strata owners) are shared among all strata owners. The figure of \$100,000 for violations on the conservation forestry area was chosen because penalties are shared among all of the residential owners, and a lower figure was not considered a sufficient disincentive when shared among a large group of owners. Having a substantial penalty to be shared among all residential owners may increase compliance by introducing a self-policing mechanism among landowners, counteracting opportunistic behaviour on the part of individuals (Ostrom 1992) and creating a sense of shared responsibility for ensuring compliance. The figure of \$10,000 for violations on the individual lots is expected to be high enough to act as a legitimate disincentive to individual owners. In addition to the \$10,000 and

\$100,000 penalties, if the violation involves the illegal removal of merchantable trees, landowners may be fined an additional amount equal to one hundred and fifty percent of the market value of the trees removed. BC's Land Title Act is structured so that covenant holders have a legal right to enforce the terms of a covenant, impose penalties when necessary and hold landowners accountable for paying penalties. The covenant holder's enforcement powers are given further weight by provisions that give TLC first priority on the property title for any outstanding financial penalties. This effectively puts the covenant holder 'first in line' to collect any monies owing if the property is sold, which acts as an additional incentive for landowners to comply with the covenant.

The RLC covenant includes a clear process for conflict resolution to be followed in the event of a dispute regarding alleged violations of the covenant or a disagreement over the interpretation of specific clauses (RLC 2004). The dispute resolution process begins with a request for reasoned discussion between the parties. If the dispute cannot be resolved through discussion, mediation is required, followed by binding arbitration if necessary (RLC 2004). Terms and conditions for both mediation and arbitration, including guidelines for the selection of an appropriate mediator or arbitrator and financial obligations for all parties involved, are clearly outlined in the covenant. If all other avenues for conflict resolution fail, a dispute can be taken to provincial court.

Collectively, the efforts made to promote voluntary compliance, coupled with sanctions, powers of enforcement and a clear dispute resolution process should result in a reasonable degree of compliance. The design and implementation of a monitoring program will play also an important role in promoting compliance (see Section 4.1.4 below). With the exception of the dispute resolution guidelines, which are standard for many covenants in British Columbia (Stanger 2004), the provisions in this covenant go beyond what is typical in terms of the magnitude of monetary penalties. The development of a User's Guide to promote voluntary

compliance also goes beyond typical measures to promote compliance, and will likely be a valuable tool for promoting compliance.

4.1.4 Design and implement a monitoring plan

The design and implementation of an effective monitoring strategy is closely related to compliance, enforcement and the overall success of a covenant. Monitoring often suffers from a lack of commitment, insufficient funding, a lack of controls and failure to adopt standardized protocols. RLC's covenant was designed to address these common oversights while acknowledging the limited financial capacity of the covenant holder. In British Columbia, landowners who register conservation covenants on their land are not legally obligated to commit any funds to support the perpetual monitoring of the agreement unless explicitly required in individual covenants (Stanger 2004). This places a substantial burden on covenant holders, particularly as they take on an increasing number of covenants. Covenants for conservation forestry pose a unique challenge as they require a more complex monitoring program to assess the ecological impacts of forest management (Pacific Forest Trust 1997) and as a result may have higher monitoring costs than other, less complicated covenants (Hillyer and Atkins 2005).

RLC's covenant requires that a monitoring plan be designed and implemented, and that monitoring occur at least annually (RLC 2004). Some effort was made to provide a source of revenue for monitoring by including provisions that enable TLC to charge a fee for the review and approval of management plans, and an annual fee of \$500 intended to offset the costs associated with monitoring. Additional funding for the monitoring program will come from endowments established by Weyerhaeuser and RLC. RLC contributed \$2,500 per residential lot which builds on an endowment fund that was established by Weyerhaeuser at the time the original covenants were registered (the endowment total amounts to \$62,500 from RLC, plus an undisclosed amount from Weyerhaeuser). Although the combination of endowment revenue and income from the annual fee is unlikely to cover the full costs of monitoring in perpetuity, there

will be at least some revenue to offset some of the costs, particularly as the endowment grows over time.

As the use of covenants increases in BC it will become critically important to consider sources of revenue to finance the long-term costs of monitoring. Although one option is to place a greater share of the financial burden onto landowners, care must be taken not to make the costs of a covenant outweigh the benefits. If costs are perceived to be too high, landowners will be less likely to register them on their property. Furthermore, financial status should not be a barrier to registering covenants, given the conservation value of doing so. Although RLC's covenant incorporates significant mechanisms to ensure a source of revenue in perpetuity, the annual monitoring fee could have been higher given that it is shared among all of the lot owners. RLC's decision not to include a higher annual fee for monitoring stemmed from a sense that the combination of land-use restrictions and financial obligations as a result of the covenant was already fairly high, particularly if some landowners have a lower income than others. However, even a monitoring fee of \$50 per lot per year would have provided TLC with \$1,250 to cover annual monitoring costs instead of \$500, while placing very little financial burden on individual lot owners. This evaluation suggests that a higher annual fee should have been included with the RLC covenant.

RLC Covenant Monitoring Provisions

Several controls have been put in place to increase the effectiveness of monitoring and enable TLC to assess both compliance and efficacy. First, like many covenants, RLC's includes a detailed baseline report that describes the condition of the property at the time of covenant registration. This baseline report will be used as the basis against which to measure future changes to the condition of the property and determine whether these changes are in compliance with the terms of the covenant. For example, the baseline includes a detailed assessment of each individual lot, including the age class, species and density of trees so that monitoring can assess (among other things) whether landowners have complied with the requirement to retain at least

75% of the mature trees in their residential conservation area. The baseline report will also help track whether management strategies are supporting the conservation objectives, including the restoration of old-growth forest conditions and the conservation of biological diversity.

Second, the covenant requires that a series of permanent sample plots be established on the conservation forestry area and assessed annually to measure specific ecological indicators and document stand development. Indicators will be selected during the development of the monitoring plan, and the covenant requires that the plan include a rationale which clearly demonstrates how each indicator will be used to evaluate progress towards the overall conservation goals. The choice of indicators, and survey methods for monitoring them, will require careful consideration. The monitoring plan must also include remedies that may be pursued if the results of monitoring indicate the objectives of the agreement are not being met, or if selected indicators prove inappropriate for measuring progress towards conservation goals. RLC has committed to developing a monitoring plan on TLC's behalf that will include standardized protocols for annual monitoring. It is unclear whether the lack of detailed monitoring rules in the covenant will prove problematic by creating ambiguity, or useful because it will provide a degree of flexibility. RLC felt that managers would be able to implement a more effective monitoring program if the covenant did not dictate how or what to monitor. As a result, the RLC covenant requires that a monitoring program be established but allows landowners to tailor the program in response to changing conditions and new knowledge.

At this point it is too early to assess how well monitoring will be implemented on this property. In principle, the provisions described here are sufficient to at least partially overcome a lack of commitment to monitoring, insufficient funding, a lack of controls or a failure to adopt standardized protocols. However, it remains to be seen in practice whether a successful monitoring program will be maintained over time and whether the results of monitoring will be incorporated into future management plans. The design of monitoring plans, including how to choose indicators, how to survey them accurately and consistently, and how to interpret and

respond to new knowledge poses significant challenges (Noss 1999) and is the subject of a considerable body of literature that should be referenced during the design of RLC's monitoring plan. To design and implement an effective monitoring strategy for this covenant, given the financial and technical limitations discussed here, will be one of the key challenges to the long-term success of the agreement. Future evaluations of this covenant should examine the effectiveness of the monitoring program.

4.2 Evaluation of Ecological Protection

4.2.1 Maintain habitat at multiple scales

One of the covenant's objectives is the conservation of biodiversity (RLC 2004), which in turn relates to maintaining habitat (Grumbine 1994). The covenant includes several provisions to ensure the permanent protection of habitat, with a focus on habitat associated with mature and old forest. While the covenant does not dismiss the value of habitat associated with younger forests, emphasis is placed on habitat associated with mature and older forest ecosystems because older forests are the least represented ecosystem on Cortes (CES 2002), have significant habitat values (Franklin et al. 2000) and were historically more widespread on the island than their current (extremely limited) distribution (CES 2002). In addition, according to British Columbia's biogeoclimatic classification system (Pojar et al. 1991) the RLC property falls within the Coastal Western Hemlock Very Dry Maritime subzone (CHWxm), which has among the least remaining old-growth forest of any coastal zone (MacKinnon 2003).

The RLC covenant objectives explicitly establish that the purpose of the agreement is "to protect, conserve, maintain and enhance the natural environment, ecosystems and biological diversity...including the habitats..." (RLC 2004: p.11). Including habitat protection as an objective helps ensure that management strategies and/or amendments are always compatible

with habitat conservation as both management plans and amendments must always reflect the original objectives (Stanger 2004, Hillyer and Atkins 2005). Habitat is also protected by prohibiting any future subdivision or road building on the property which will minimize habitat loss from fragmentation or conversion to non-forest uses (RLC 2004).

One effective strategy for protecting habitat is simply to limit the rate of timber harvesting. RLC's covenant limits the annual rate of harvest to a volume equivalent to no more than 75% of the annual growth of the stands. This annual rate of harvest can be combined over a five-year period to ensure that the harvest is significant enough to be economically viable (RLC 2004). There are two weaknesses with this approach to regulating harvest levels. First, it is unclear how growth rates will be calculated (i.e. how often will growth be assessed, by whom and according to what methodology), and which measure of growth should be used (e.g. mean annual increment, periodic increment). Not only does this leave considerable room for variation in the rate of harvest, potentially jeopardizing the conservation objectives, but it is also a management strategy better suited to even-aged stands where growth rates tend to be more uniform and easier to measure than to stands where the management objective is to achieve an old-growth, uneven-aged forest. Second, the figure of 75% was chosen arbitrarily, based in part on the perception that harvesting only a portion of the annual growth (i.e. the 'interest' from the forest) rather than a volume greater than annual growth (i.e. the 'capital' from the forest) can be equated with sustainable harvest rates (a thorough discussion of whether this is a valid approach to sustainable forestry is beyond the scope of this paper). Given that a standard sustained yield approach to timber harvesting assumes that one hundred percent of annual growth can be harvested, a harvest rate of 75% was considered conservative. However, although it appears to be relatively conservative, the 75% figure was not based on any data suggesting it was an appropriate volume to remove from the stands with little risk of ecological impact.

Notwithstanding the shortcomings of how the rate of cut is established, the most significant measure in the covenant to protect habitat is the requirement that at least eighty-five percent of

the conservation forestry area be mature or old forest at all times (RLC 2004). This figure was chosen arbitrarily, but was felt to be compatible with protecting biodiversity and restoring old-growth forests on a significant majority of the property. Although there are no site-specific data available, regional data suggests that it is reasonably representative of the historic distribution of older forests on the island (CES 2002).

As noted earlier, seventy-percent of the conservation forestry area is currently dominated by 60-80 year-old conifers, while the remaining thirty percent of the area consists of patches where regenerating trees are less than ten years old (Haberl et al. 2003). As a result, the target distribution of mature or old forest will not be met for several decades, until the patches have matured. This target for mature and old-growth forest is of fundamental importance for two reasons. First, the covenant fails to define 'mature forest', leaving the door open for future debates over what can be considered mature, and thus when the 85% target has been met. Similar problems with the definition of old-growth were discussed earlier in this report. Given that the term 'mature forest' is used to establish this critical management target, it should have been defined in a clear and measurable way. Second, and most importantly, the target effectively precludes any timber harvesting for at least six decades, as trees cannot be removed from the conservation forestry area until at least 85% of the area is mature or old forest.

There was considerable debate over the inclusion of this provision because of its impact on timber harvesting and the resulting effect on the community's desire to see ecosystem-based forestry implemented. Ultimately the provision was included for several reasons. First, RLC's fundamental objective is to see old-growth forest restored on the property (RLC 2004). Timber harvesting is a lesser priority. Second, the property has already been impacted by timber harvesting twice in the past century and will be impacted again by harvesting and residential use for RLC's conservation development. Third, conservation covenants represent a long-term commitment to land management and conservation. To take a short-term view by allowing timber harvesting at the expense of conservation objectives would be at odds with the long-term

planning horizon of a covenant. Although it precludes harvesting for the foreseeable future, in the long-term the covenant allows harvesting. Furthermore, it successfully protects what is perceived by the community as the 'working forest' in perpetuity since the conservation forestry area will be available for future generations for harvesting. Ultimately, RLC decided that old-growth restoration and the conservation of biodiversity must take short-term priority over any desire to see immediate harvesting on the landbase.

Finally, the covenant strives to protect habitat by requiring that any forest management activities retain or encourage old-growth characteristics and associated structural attributes (RLC 2004). Individual old-growth and wildlife trees also provide habitat, and are protected through provisions that require the management plan to include measures that will "identify, protect and recruit wildlife trees in order to ensure the continued existence of wildlife trees on the conservation forestry area..."(RLC 2004). Additional strategies to conserve habitat that are evaluated later in this report include the designation of a reserve area and commitments to promote structural complexity and connectivity.

4.2.2 Designate reserves

Due to the small size of the subject property (100 hectares), it was not physically possible to designate large reserves. However, the covenant creates a small reserve of twelve hectares at the northern end of the property, which will be designated as a public park and managed by the local Regional District (RLC 2004). In terms of absolute size, this reserve is too small to meet many of the ecological purposes commonly associated with reserves, such as supporting breeding populations sufficient to maintain genetic variation (Holling and Meffe 1996, Hockings 2003) or acting as a 'safety net' relatively free from the effects, cumulative or otherwise, of human disturbance (Paine et al. 1998, Lindenmayer and Franklin 2002). Its ecological value may also be limited by edge effects (Kremsater and Bunnell 1999) given that it is bounded by residential development to the south, a paved road to the east, and a small gravel road to the north, beyond

which lies a large parcel of land zoned for residential use (but currently undeveloped). To the west is a one hundred hectare forested property for which long-term plans are unknown (the property is an Indian Reserve owned by the Sliammon First Nation (RDCS 2004b)).

In spite of certain limitations due to size, the reserve will provide connectivity to adjacent lands, and will support small-scale examples of stands, habitat and biota and their inter-relationships (Lindenmayer and Franklin 2002, Ervin 2003, Hockings, 2003). It will also provide opportunities for the small-scale occurrence of natural evolutionary processes (Putz et al. 2000, Lindenmayer and Franklin 2002) and will likely provide habitat for many species, such as various birds (Schiek et al. 1995). The reserve is also sufficiently large to eventually develop into a structurally complex old-growth stand, providing well-developed understory vegetation, canopy gaps and a diversity of tree ages, diameters and degrees of decadence. Furthermore, the reserve will provide recreational, spiritual and social opportunities for the community and is likely to become more valuable 'green space' as population and growth pressures increase on the more developed southern end of the island, where this property is located.

Strictly speaking the conservation forestry area is not a reserve, as the covenant allows timber harvesting if certain conditions are met. However, these conditions, i.e. mature or old forest on at least 85% of the property, will not be met for several decades. Even once the conditions have been met timber harvesting will be limited or non-existent (the covenant contemplates harvesting but does not impose a minimum annual harvest, so landowners could decide not to harvest any timber). As a result, the conservation forestry area is effectively a reserve, at least in the short-term. Furthermore, it will likely continue to serve many of the ecological and social functions of a reserve even if timber harvesting is initiated in later decades, given the low rate of harvest permitted under the covenant (e.g. Maraj 1999).

4.2.3 Maintain structural complexity

RLC's property lacks the structural complexity that would likely have existed prior to large-scale human intervention. The land was heavily logged and subsequently burned in the 1920's. It was logged again in 1999 using a combination of small patch cuts and commercial thinning (Haberl et al. 2003). This recent patch-cutting resulted in two distinct age classes on the property. Sixty-to-eighty year old conifers are interspersed with small patches (one hectare or less) in which regenerating trees are approximately six years old. Over time this distinction, coupled with natural tree death and regeneration, will lead to older and increasingly uneven-aged stands, with an overall increase in structural complexity at all scales (Franklin et al. 2002). The RLC covenant relies on a relatively passive approach to restoring structural complexity. The underlying assumption is that older forests in BC's southern coast are more structurally complex than younger ones (Wells et al. 1998, Frazer et al. 2000, Franklin et al. 2002) therefore allowing the stands to age naturally, with minimal impact from timber harvesting, will result in a more structurally complex forest over time. Although there is some evidence to suggest that silvicultural treatments such as thinning could potentially hasten the development of more structurally complex stands (O'Hara 1998) such management activities can be costly and require a level of technical expertise, management and financing not readily to RLC or TLC. Furthermore, since the forest was thinned in 1999 (Haberl et al. 2003) RLC decided that any potential benefits from additional treatments would not warrant the cost or potential negative impact.

The covenant includes several provisions intended to promote structural complexity over time. First, the objectives explicitly support the restoration of old-growth forest, which is typically more structurally complex than a younger forest (Wells et al. 1998, Frazer et al. 2000, Franklin et al. 2002). Second, wildlife trees must be protected, which will increase complexity relative to the current state by adding to both the number and diversity of standing and fallen

trees. Although the RLC covenant identifies and protects existing wildlife trees, there is no explicit mechanism in the agreement to recruit and protect new wildlife trees as the existing ones age and decay. However, wildlife trees will be indirectly 'recruited' through natural aging processes and limits on timber harvesting. The protection of wildlife trees is also included in the covenant objectives, suggesting that future management plans will need to demonstrate how wildlife trees will be maintained on the property. Third, the covenant requires that at least eighty-five percent of the conservation forestry area be maintained as mature or old forest (RLC 2004). Notwithstanding the shortcomings of this provision (as discussed earlier), as the stands age and begin to reach this target, natural development patterns will result in increasing complexity (Franklin et al. 2002). Last, provisions that prohibit subdivision and road building will indirectly promote complexity by limiting conversion to younger forests or non-forest uses (RLC 2004).

4.2.4 Restore and maintain connectivity

The covenant protects connectivity throughout the stands and to adjoining lands through several measures. First, by retaining habitat on the entire conservation forestry area, and promoting older forests in particular on eight-five percent of the area, a certain degree of connectivity is assured. Second, the recruitment and retention of large standing and fallen trees and other structural elements (e.g. understory vegetation) provides connectivity at a finer scale (Lindenmayer and Franklin 2002). Last, the covenant establishes a fifteen-metre reserve area around the perimeter of each residential lot. These reserves effectively create a series of thirty metre corridors (fifteen metres on either side of each property line) that provide connectivity through the residential areas and to adjoining lands. Although the ecological value of these corridors will be limited by their small size, edge effects and proximity to human activity, they will provide connectivity for certain local species, such as small mammals and birds, and for species that are less adverse to human interaction (e.g. deer). The corridors may also provide connectivity for certain flora.

4.3 Summary of Research Findings

The results of this evaluation suggest that RLC's covenant has the potential to effectively protect and restore forest lands on Cortes Island in perpetuity. It is also likely to lead to the development of structurally complex old-growth stands in the future, barring unforeseen natural or human disturbances such as fire. Table Four summarizes the findings from the evaluation. Given that RLC's covenant is only just being implemented, there are many questions about its long-term efficacy that cannot be answered. Future evaluations of this case study would provide valuable insight into the design and implementation of covenants for conservation forestry.

Future assessments should answer, at a minimum:

1. Are the covenant objectives being achieved? Have they been misinterpreted by new landowners or staff from TLC? Have there been disagreements over varying interpretations of the objectives?
2. Have managers had sufficient flexibility to respond to changing conditions or new knowledge?
3. Has a monitoring plan been designed and implemented as required by the covenant? How effective is the monitoring plan? Have financial constraints made it difficult to implement the monitoring strategy? Were appropriate ecological indicators selected, and do monitoring records suggest that the covenant objectives are being achieved?
4. Have there been violations of the covenant? If so, were they a result of a lack of understanding, or did they stem from a willful infraction of the agreement? How could compliance have been improved?
5. Has the RLC covenant influenced other landowners to adopt covenants for conservation forestry on the island or elsewhere? Has it been a useful template for TLC to draw on?

Table 4: Summary of Research Findings

Table 4 summarizes the key research findings for the case study evaluation. The covenant was evaluated against criteria drawn from the literature on conservation covenants, conservation biology and ecology.

Evaluation Criteria	Results
Identify Clear Objectives	<ul style="list-style-type: none"> • Overall RLC’s objectives are well articulated and make it clear that their overall objective is to protect biodiversity and restore old-growth conditions on the property. • Important terms, such as ‘mature forest’ and ‘small-footprint’ should have been more clearly defined.
Balance Flexibility with Rigour	<ul style="list-style-type: none"> • The covenant delegates operational decisions to a mandatory management plan to maintain a degree of flexibility. • Overall the agreement leaves little room for flexibility in terms of forest practices, particularly for the first several decades until conditions meet the target of 85% older forest.
Maximize the Likelihood of Compliance	<ul style="list-style-type: none"> • RLC’s User’s Guide to the covenant may help promote voluntary compliance. • Monetary penalties may also discourage violations.
Design and Implement a Monitoring Plan	<ul style="list-style-type: none"> • Some funding to support monitoring is provided in perpetuity through an endowment fund and an annual monitoring fee. • The annual fee of \$500 should have been higher to help offset monitoring costs.

Table 4 continued.

Evaluation Criteria	Results
Maintain Habitat	<ul style="list-style-type: none"> • Habitat is well-protected by limiting timber harvesting to a volume equivalent to 75% of the annual growth increment. It is unclear how growth rates will be assessed in the future. This will become more problematic as the stands become increasingly uneven-aged. • At least 85% of the conservation forestry area must be mature or old forest at all times. Failure to define 'mature' or 'old-growth' adequately may lead to future debate over when this target has been achieved.
Designate Reserves	<ul style="list-style-type: none"> • Given the small size of the property no large reserves were designated. The small reserve will be subject to edge effects and is too small to meet certain ecological objectives. • Over time the reserve will develop into a structurally complex old-growth stand, and will support small-scale examples of stands, habitat, biota and their inter-relationships (Lindenmayer and Franklin 2002). • The reserve will be of spiritual, recreational and scenic value to the community.
Maintain Structural Complexity	<ul style="list-style-type: none"> • The stands currently lack the structural complexity that would have existed prior to human intervention. • Over time, more structurally complex old-growth stands will develop.
Maintain Connectivity	<ul style="list-style-type: none"> • Thirty-metre reserve corridors between each residential lot will provide connectivity for some species. • The high levels of forest retention across the conservation forestry area will result in stand-level connectivity. • Connectivity to adjacent properties is limited as the property is bordered by roads on three sides.

5 DISCUSSION

In this section I return to my key research questions to examine insights and lessons that the RLC case study can offer to anyone considering the use of covenants for conservation forestry. Specifically, I will discuss the following two points:

1. Do the results of this evaluation suggest that covenants are a useful tool for conservation forestry?
2. What lessons can be drawn from RLC's experience to help others create effective covenants for conservation forestry?

Some landowners will be uncomfortable with the permanent nature of most conservation covenants (Cheever 1996, De Alessi 2000) and will prefer not to constrain future land-use or forest management decisions (De Alessi 2000). However, for landowners who are seeking long-term or permanent protection of their land for forestry purposes, my evaluation of the RLC covenant suggests that covenants have the potential to be a powerful tool. The RLC covenant permanently designated a large parcel of private land on Cortes Island for forestry purposes. While several thousand hectares of private land on Cortes Island are currently zoned for forestry uses, there is nothing to prevent future rezoning, subdivision or conversion to non-forest uses. In contrast, the RLC lands are now permanently designated for forestry purposes. Covenants for conservation forestry are powerful because not only can they be used to ensure lands are dedicated to forestry purposes but they can simultaneously be used to protect ecological, cultural or heritage features (TLC 2004c) and to govern forest practices in keeping with a landowner's philosophy of forest stewardship.

There is some risk that the permanent nature of covenants for conservation forestry will lead to situations where inappropriate forest practices become legally entrenched and difficult to modify. However, this can be overcome by including clear provisions for modification of the agreement (Ohm 2000) and by carefully designing the covenant to allow adaptive management in

response to changing circumstances and new knowledge (Sader et al. 2002). For landowners who wish to permanently allocate lands for forestry purposes, disadvantages stemming from the long-term nature of covenants may be outweighed by the security of being able to regulate land-use and guide management practices in perpetuity.

5.1 Lessons from the RLC Experience

Understand Your Objectives and Ensure they are Articulated Clearly

It is critical that objectives be articulated clearly if covenants for conservation forestry are to succeed (Ohm 2000). Landowners and covenant holders must take extra care to understand, identify and prioritize the forest values they wish to protect (Pacific Forest Trust 1997) and articulate objectives accordingly. In RLC's case, the overarching objectives of the covenant were clearly to preserve biodiversity and restore forests with old-growth character on the property. These objectives were a reflection of RLC's general philosophy of land stewardship, forestry and conservation, and shaped the design of the covenant, in particular the provisions guiding forest management.

Landowners must be careful to ensure that objectives, restrictions and guiding principles in their covenant actually reflect the forestry values they wish to adhere to. As demonstrated by debate over forest practices in British Columbia, there are dramatically differing perspectives on how to manage forestry lands (e.g. Kohm and Franklin 1997, Marchak et al. 1999). The complexity and intensity of debates over forest management is illustrated by controversies such as clearcutting in Clayoquot Sound (Greenpeace 1996), defining ecosystem-based management across the province's Central Coast region (CIT 2004) or timber harvesting in community drinking watersheds (SVWA 2001). There is no consensus on what constitutes sustainable forestry (e.g. Kimmins 2002) or ecosystem-based management (e.g. Grumbine 1994, Holt 2001) or on how best to protect forest ecosystems in a managed landscape (e.g. CSSP 1995, Weyerhaeuser 2001, Lindenmayer and Franklin 2002). Each perspective is influenced by a

myriad of factors including ideological views, ecological conditions and regulatory frameworks. Landowners should give consideration to their own values and context when adopting a particular approach to forestry.

Covenants for conservation forestry present a unique opportunity for landowners to dictate land-use policy on private lands. This in turn raises complex questions about how to respond when the rights of landowners clash with efforts to protect the public interest (Freyfogle 1996) or with contemporary views of property rights and land ownership⁶ (Singer 2000). Covenants also raise the question of how future generations should be taken into account when making land-use decisions (Mahoney 2002). Covenants for conservation forestry also lead to questions about whether private landowners should be entitled to regulate forest practices when such practices may have unforeseen consequences (negative or positive) for adjacent landowners, communities, ecosystems or future generations. For example, should covenants for conservation forestry be allowed to dictate a rate of harvest (minimum or maximum) as determined by individual landowners, despite the potential consequences that harvesting could have on ecological, social or spiritual values that are in the public interest?

These questions are applicable to issues of property rights and conservation covenants in general, not just covenants for conservation forestry. They are, however, of particular importance to consider in the context of covenants for conservation forestry because of the potential impact that forestry can have on present and future options. In RLC's case, there was clearly support for the view that dictating land-use policy to protect forestry lands and ecological values on private lands is acceptable in light of the benefits (perceived and real) to adjacent landowners, the

⁶ The law has evolved to commonly consider property as a 'bundle of sticks', each representing a specific right that may be separated and allocated to different parties (Wiebe et al. 1997, Hurley et al. 2002). Although in practice the idea of property as a bundle of separable rights prevails in our contemporary institution of property, conceptually many people hold the view that private property should confer exclusive dominion to an owner (Hurley et al. 2002). This poses significant challenges to conservation efforts, as constraints on private ownership are often seen as a burden or imposition, as opposed to a reciprocal obligation associated with the privilege of land ownership.

community at large and future generations. RLC's assumption is that the covenant, if successful, will provide benefits to both landowners and the community as a result of the ecological services that functioning forest ecosystems provide (Daily et al. 1997) and the social, spiritual and recreational values that will be available to all.

In the case of covenants in general there are several points that bear noting. First, although covenants in British Columbia are considered long-term or perpetual agreements, they are a statutory 'product' of the provincial Land Title Act and, like all statutory agreements, could theoretically be amended or abolished if the Act were amended or rescinded. Second, although covenants are sometimes criticized for imposing restrictions on future generations the same can be said for many of the choices made by the present generation. For example, the choice to harvest an old-growth forest today effectively eliminates that option for many generations to come. Similarly, many land-use decisions made today will reduce options available to future generations – the decision to develop a wetland for industrial use precludes the possibility of using that same area for flood control or water purification in the future.

In other words, while it may be true that conservation covenants preclude certain land-use options for future generations, the same can be said of many land-use decisions and covenants should not be unduly singled out and criticized for their impact on future options. Furthermore, given that covenants include provisions for modification and can, at least theoretically, be amended or revoked through legislative amendments, it could be argued that they are in fact an effective tool for preserving options for future generations. In addition, while covenants may preclude certain land-use options that are typically associated with economic development (e.g. real estate development or resource extraction) they do not preclude land-use options associated with non-market values and ecosystem services provided by functioning ecosystems, such as water filtration, air purification, nutrient cycling or habitat conservation (Daily et al. 1997).

For landowners who are comfortable with the notion of long-term protection and the issues noted above, covenants for conservation forestry are also powerful in that they can be

tailored to suit virtually any context or forestry objective. They can be applied to small-scale, family-owned acreages (Pacific Forest Trust 1997) or vast, corporately-owned holdings (Sader et al. 2002). They can be structured simply to preclude conversion to non-forest uses (TLC 2004c), or designed to accommodate complex management regimes (Sader et al. 2002). Where landowners are not attached to any particular ‘style’ of forest management, covenants for conservation forestry can be relatively simple, allowing managers to implement management plans as they see fit. Alternatively, a landowner may have very particular views about the nature of forest practices they wish to allow on their property (e.g. RLC 2004, ECO-Initiatives 2004), and the forest values they wish to protect, in which case covenants for conservation forestry can be more comprehensive and dictate specific practices.

Consider How to Address Public Values

In addition to considering their personal objectives, landowners must give careful consideration to the degree to which they wish to accommodate public values, and if so how they will solicit appropriate input. Typically conservation covenants are a privately negotiated agreement between a landowner and a covenant holder. There is no legal requirement to take into account community ideals or societal objectives (except in so far as societal objectives are expressed in the laws that govern land-use practices on private land). Landowners who agree to incorporate public values should consider the consequences, both positive and negative, that this may have on the final structure of their covenant and set clear boundaries around who ultimately will have decision-making power.

For example, although RLC engaged in an extensive public process, and explicitly committed to incorporating public values into their covenant, they retained ultimate decision-making authority and their final covenant is not based solely on community values. Although RLC was influenced to a degree by the community’s desire to see lands dedicated to ecosystem-based forest management, the final covenant does not adopt the entire framework set out in the

community-driven “Cortes Island Ecosystem Based Plan” (Silva Forest Foundation 1996), nor does it follow other recognized approaches to ecosystem-based management (e.g. CIT 2004). RLC does not claim to have produced an ecosystem-based management covenant. The RLC covenant does not address the social or economic components of ecosystem-based management, and it focuses almost entirely on protecting ecological values at a stand level rather than a landscape level. Landowners are not required to take the regional context into account when drafting management plans for the property, or to compensate for unsustainable land-use practices on adjacent lands (e.g. if adjacent lands were negatively affected by extensive clearcutting, residential owners on the RLC property would not be required to reduce harvest levels on their property to compensate). There is no requirement for public input into the covenant management plan, or for community approval of forest practices that are in compliance with the covenant. Last, although the covenant establishes lands that will remain dedicated to forestry in the long-term, it essentially creates a forest reserve in the short-term by precluding timber harvesting for several decades. This goes against the community’s desire to see timber harvesting opportunities made immediately available to locals.

In the case of covenants for conservation forestry, landowners may often find themselves under pressure to take public values into account, in part because of the potential for controversy over forest practices, whether on public or private land. Furthermore, covenants, like property law, assume that administrative boundaries can be drawn onto the landscape with little or no regard for the dynamic nature of ecosystems and their components (Freyfogle 1996), however the ecological impacts of forest management (whether positive or negative) are not constrained to the administrative borders of a particular property. As a result, private landowners may often be under public pressure to conform to certain management regimes (e.g. ecosystem-based management) or adopt certain practices to protect ecological or social values from the potential impacts of forest practices (e.g. designate a specific reserve area to protect sensitive habitat, or

establish riparian reserves to protect downstream water quality), regardless of their personal objectives.

Based on RLC's experience, incorporating public values will almost certainly complicate the covenant design process, and may result in compromise over certain objectives (RLC 2004). RLC's decision to incorporate community values influenced the final covenant in various ways. Most importantly, it resulted in the design of a covenant for conservation forestry, whereas in the absence of community pressure RLC may have designed a much simpler covenant strictly for forest conservation. On the other hand, engaging local communities provides landowners and covenant holders with an opportunity to incorporate local or traditional knowledge and develop positive relationships with community members. In RLC's case, engaging island residents and incorporating community values helped garner support for their broader conservation development initiative by alleviating local concerns about the rezoning of forestry lands. Community members also provided invaluable information such as the location of environmentally sensitive areas on the property and widely-used walking trails. This information strengthened both the baseline report and the final covenant. Engaging the local community also gave RLC and TLC an opportunity to educate residents about the role covenants can play in private land conservation and forest management.

The question of how to address public values in a conservation covenant relates to the equally important question of whether conservation covenants are an appropriate substitute for government land-use control. It is important to note that although covenants allow landowners to dictate land-use policy to a certain extent they do not replace government land-use controls. Lands with a registered conservation covenant must still comply with government regulations such as zoning bylaws or endangered species legislation (RDCS 2003). Covenants can be seen as a mechanism to support and enhance government land-use regulations, not as a tool in lieu of government controls.

Find an Appropriate Balance of Flexibility and Rigour

Covenants for conservation forestry must be strict enough to protect the overall integrity of the agreement yet flexible enough to allow landowners to adapt to changing circumstances (Sader et al. 2002). RLC included provisions that were critical to the overall success of their covenant in the agreement itself, while less critical provisions were delegated to a management plan. RLC's experience suggests that the actual covenant should include:

- Overall guiding principles and objectives;
- Provisions that are considered fundamental to achieving the goals of the covenant; and,
- Conditions that landowners do not want or expect to change easily or regularly.

In contrast, the management plan should include:

- Conditions that will change regularly, or where the ability to adapt to changing conditions or knowledge is important;
- Operational information related to planning and management; and,
- Provisions that could be interpreted subjectively without risk of compromising the fundamental objectives of the covenant.

An appropriate degree of flexibility for each covenant will be context-specific. For example, in RLC's case it was considered appropriate to place severe constraints on the rate of timber harvest. In other cases, however, such constraints could be incompatible with a landowner's forestry objectives. It is important that covenants for conservation forestry offer at least some guidance for establishing a rate of harvest, as it is arguably one of the greatest determinants of the ecological impacts of timber harvesting (CSSP 1995). Landowners must give careful consideration to how much timber they want to harvest, how they want to control harvest rates and the long-term consequences of these choices. Covenants must be structured carefully so that sufficient restrictions are in place to ensure harvest rates are compatible with the overall

covenant objectives. Permitting a high degree of flexibility for determining harvest rates could increase the risk that timber harvesting will conflict with other objectives. Alternatively it could ensure that landowners have the flexibility they need to effectively meet their objectives. Conversely, explicitly regulating harvest rates could either constrain landowners from responding effectively to unexpected changes in the landscape (e.g. a severe natural disturbance such as fire or insect attacks) or could ensure that the overall integrity of a covenant is protected in perpetuity.

Adopt Measures to Maximize Compliance with the Covenant

Covenants for conservation forestry are only effective if landowners comply with the terms of the agreement. As noted earlier, compliance is related to understanding, enforcement, sanctions and arrangements for conflict resolution (Ostrom 1992). Ideally landowners will understand and support the objectives of a covenant and will voluntarily comply with the terms it imposes on them. This is most likely to be the case with landowners who willingly place a covenant on their property (Cheever 1996). ‘Second generation’ landowners, i.e. those who purchase or inherit land with a covenant on it, are less likely to comply voluntarily since they may or may not understand or support the covenant (Cheever 1996, De Alessi 2000). In certain cases, even landowners who support a covenant in principle may violate the terms of the agreement because they misinterpret the language, or the rules are not clear (TLC 2004c). Landowners and covenant holders should consider the likelihood of non-compliance and the potential impact of infractions, and structure incentives, sanctions and measures for conflict resolution accordingly. RLC’s experience emphasizes that when designing compliance provisions, consideration should be given to the nature of the covenant (e.g. how complex are the terms of the agreement, how large is the area to which it applies) and to the objectives, as well as to the capacity (professional and financial) of landowners and the covenant holder.

Covenants for conservation forestry should include mechanisms to promote voluntary compliance. Although it is too early to assess whether landowners will comply with the RCL

covenant, every effort was made to promote voluntary compliance. For example, RLC felt that the complexity of their covenant was such that there was a high risk of non-compliance stemming from a lack of understanding on the part of residential owners. To reduce this risk RLC developed a plain language ‘User’s Guide’ to help lot owners understand the implications of having a covenant on their land. Conservation covenants are complex legal documents that can be confusing to many landowners, leading to misunderstandings and infractions. Providing landowners with a straightforward guide to the restrictions and permitted uses on their land (i.e. one specific to their covenant, as opposed to a general overview of conservation covenants) could help promote voluntary compliance.

Covenants for conservation forestry should include enforcement mechanisms that will act as a legitimate deterrent to would-be-violators, and will empower covenant holders to take whatever enforcement actions are necessary to maintain the integrity of an agreement. Sanctions should be tailored to reflect the context of each individual covenant. For example, RLC felt that the combination of residential and forestry use on a single property created a perverse incentive for residential lot owners to see the conservation forestry area as a source of wood to be freely available for firewood or other personal uses. In order to reduce the risk of illegal timber harvesting, the RLC covenant includes monetary penalties specifically linked to the market value of logged trees. These sanctions are in addition to substantial monetary penalties for any infraction of the covenant. Sanctions should also be tailored to reflect factors such as the size of operations and the risk of harm. The monetary value of sanctions will vary from covenant to covenant depending on circumstances and the landowner’s objectives. For example, sanctions for a large-scale, industrial forestry operation with a significant potential for revenue may need to be higher than those applied to a small-scale, family-owned property where only nominal timber harvesting takes place.

Design and Implement a Monitoring Strategy

Commitment to a comprehensive monitoring strategy is key to the overall success of covenants for conservation forestry. Monitoring plans should identify indicators that are relevant to the covenant objectives, easily monitored, clearly measurable and enforceable. In addition to identifying appropriate indicators to track, monitoring requires determining the most effective method for assessing key attributes. In the case of the 762,192-acre Pingree Forest Conservation Easement in Maine (Sader et al. 2002), managers recognized that the sheer size of the covenant area precluded effective monitoring of all attributes, and that a prudent strategy would distinguish key 'indicator' attributes and focus on those. Managers and the covenant holder worked together with a range of groups to develop a complex monitoring strategy that encompassed a multi-scaled, hierarchical approach using remote sensing and spatial analysis tools, as well as field visits, to assess compliance, impacts of forest management and changes in forest structure based on the assessment of specific forest attributes (Sader 2002). In contrast, while RLC's monitoring plan will also identify and track key indicators, it will be tailored to reflect a much smaller property (100-hectares) and to accommodate a lower budget and limited (if any) access to technologies such as remote sensing or spatial analysis tools.

Monitoring should be tailored not only to assess compliance with terms of the agreement and the efficacy of management practices, but also to reflect the context of the property (e.g. size, nature and extent of forest management) and the capacity of both the landowner and covenant holder. Many covenant holders lack expertise in certain aspects of forest management, as they typically focus more on conservation than silviculture or timber harvesting (Stanger 2004). The technical capacity and expertise of covenant holders should be accounted for during the design and implementation of a monitoring plan. In addition to addressing technical capacity, covenants for conservation forestry should account for financial capacity and include provisions that provide the covenant holder with an ongoing source of revenue to cover the costs of management and monitoring over the long-term. This is important because covenants for conservation forestry

typically require greater involvement on the part of the covenant holder, more complex monitoring strategies and a more active relationship with the landowner than standard covenants (Pacific Forest Trust 1997, Hillyer and Atkins 2005). Revenue options include requiring an endowment payment as part of the original covenant agreement, including fee-for-service provisions in the agreement, or structuring the covenant so that a periodic payment may be required from the landowner to support annual monitoring or management costs.

5.2 Future Research Projects

Although this evaluation presents a detailed analysis of one covenant for conservation forestry it leaves many research questions unanswered. Some of these questions are specific to RLC's covenant, while others apply to the design and implementation of covenants for conservation forestry in general. This is by no means an exhaustive list of potential research questions, but will present ideas that will hopefully inspire future research into the use of covenants for conservation forestry.

Recommended Research Questions for Conservation Covenants for Conservation Forestry

- Are there more effective criteria for evaluating the design of covenants for conservation forestry than the criteria used for this case study evaluation?
- How have forestry operations of different scales implemented covenants for conservation forestry? What impact does the scale of operations, both geographic and economic, have on the design and implementation of covenants for conservation forestry?
- Over the long-term, how successfully will covenants for conservation forestry adapt to changing conditions, new information about forest ecosystems and evolving social values?

- How successful are monitoring programs for covenants for conservation forestry? Comparative research of different models for monitoring would provide valuable insight into how best to structure monitoring programs for managed forests in the context of a conservation covenant.
- What is the relationship between covenants for conservation forestry (or covenants in general) and government land-use regulation?

5.3 Concluding Remarks

Covenants for conservation forestry can be an effective and powerful way to designate lands for forestry purposes in perpetuity, in addition to preserving ecological and social values. RLC's experience offers valuable insights and lessons about how to design a covenant for forestry conservation, what factors to consider and how various choices can affect the final covenant. RLC's covenant should be evaluated again in the near future to assess how well it has been implemented and what lessons have been learned from the early stages of implementation and monitoring.

Landowners, forest managers and covenant holders will face certain challenges when implementing covenants for conservation forestry. These challenges will include balancing flexibility with rigour, ensuring high standards and high compliance, financing the ongoing implementation and monitoring of covenants, determining acceptable forest practices and incorporating social values where appropriate and feasible. Future research involving covenants for conservation forestry should further explore key questions, such as the relationship between conservation forestry covenants and government land-use policy, and the benefits and risks of placing long-term, conservation-oriented restrictions on forest lands.

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