

# COMMUNITY FORESTRY PRACTICE AND VISIBLE STEWARDSHIP: A CASE STUDY EVALUATION IN BRITISH COLUMBIA

Ashley V. Smith, Environmental Scientist, Department of Indigenous Services Canada<sup>1</sup>

Stephen R.J. Sheppard, Professor, University of British Columbia

Evelyn W. Pinkerton, Professor, Simon Fraser University

**Abstract.**—This study examines how visual resource management functions in three community forests in British Columbia. We interpret the findings through the lens of visible stewardship theory that encourages care for forest landscape values and making visible the evidence of management activities. We conducted visual quality effectiveness evaluations on each of the forests to assess achievement of Visual Quality Objectives determined by the Ministry of Forests, Lands, Natural Resource Operations & Rural Development. In addition, we interviewed forest staff and community members to collect data on their aesthetic values and insights. Findings reveal that the community forests are managing scenic quality well and that the dominant aesthetic values identified by community members are reflected in the practices of forest managers. These values and practices appear reasonably consistent with the principles of visible stewardship, demonstrating care of the forest resource, safeguarding ecological values, and helping ensure the compatibility of management objectives with local aesthetic and cultural perceptions.

## INTRODUCTION

Community forests are a type of forest management tenure that attempts to incorporate various local values and priorities, in part through community-based governance and management systems (Charnley and Poe 2007). As such, community forests offer a valuable context for assessing how visual resource management can help meet local aesthetic values. While there is a long history of visual resource management on Federal lands in the United States (USDA Forest Service 1995) and some State and provincial public lands in North America, few studies have focused on the relationship between community forestry and visual resource management. The strong role of community values and emphasis on local stewardship in managing community forests may influence how visual management is carried out, how effective it is, and how it relates to prevailing theories and principles in protecting visual quality across the landscape.

This study examines how visual resource management performs in three community forests in British Columbia and interprets the findings in relation to the theory of visible stewardship, which advocates for making sustainable management more visible to the public (Sheppard 2001).

---

<sup>1</sup> Corresponding author contact information: 600-1138 Melville Street, Vancouver, BC V6E4S, 604-828-4496, [ashleyvictoriasmith@gmail.com](mailto:ashleyvictoriasmith@gmail.com).

## COMMUNITY FOREST TENURE IN BRITISH COLUMBIA

Community forest tenure in British Columbia has evolved over time in response to changing public values and environmental conditions (Pearse 1992). In 1998, the New Democratic Party announced a pilot project called the Community Forest Agreement Program. The program devolved a portion of the Crown timber supply area to small, locally based forest tenures and allowed communities to harvest timber and nontimber forest products (NTFPs) on public lands. In return, a portion of the sales is paid back to the Crown through stumpage.

The overall goals of community forest agreements are to diversify management of Crown forested land, give communities an opportunity to acquire small forest licenses, and manage for a variety of local values, thereby providing for a range of social, environmental, and economic benefits (Teitelbaum et al. 2003). These benefits include creating jobs, fostering sustainability, and gaining public acceptance. Community forestry contrasts with more typical tenures on provincial timber supply areas in British Columbia that have largely been administered to maximize sustained timber yield. This management regime emphasizes high levels (>50 percent) of basal area removal and economic gains over other landscape objectives (Pearse 1992). Land managers under these tenures

**Table 1.—Sample community forests**

|                                           | Revelstoke Community Forest Corporation                 | McBride Community Forest Corporation    | Creston Valley Corporation                  |
|-------------------------------------------|---------------------------------------------------------|-----------------------------------------|---------------------------------------------|
| Location                                  | Columbia Forest District                                | Headwaters Forest District              | Kootenay Forest District                    |
| Size (ha)                                 | 119,748                                                 | 60,000                                  | 17,639                                      |
| Organizational type                       | Private corporation (Privately owned Tree Farm License) | Private corporation (municipally owned) | Private corporation (not-for-profit status) |
| Land ownership                            | Provincial Crown                                        | Provincial Crown                        | Provincial Crown                            |
| Annual allowable cut (m <sup>3</sup> /yr) | 100,000                                                 | 50,000                                  | 15,000                                      |

may operate under remote government control rather than being embedded in and influenced by local communities.

The amendments made to British Columbia's Forest Act in 1996 established the first statutory framework for community forests, defining them as any forestry operation managed by a community group, First Nation, or local government in the interest of the community (Charnley and Poe 2007, Statutes of British Columbia 1996). Initial community tenures were issued under the Community Forest Pilot Program with subsequent tenures awarded through community forest agreements in the form of 25-year renewable leases (British Columbia Community Forest Association 2013).

A team research project on community forests in the interior rainforest of British Columbia provided an opportunity to assess the visual resource performance of three community forests. Creston, Revelstoke, and McBride were selected based on geographical, socioecological, and regulatory considerations (Table 1).

Each community forest is located in a distinct forest district that is subject to independent decision making (Fig 1). All of the sample forests are in rural settings, avoiding the need for comparisons with semi-rural or urban landscapes values (Zube et al. 1974). The allowable annual cuts (AAC) of each community forest collectively represent small (Creston), medium (McBride), and large (Revelstoke) timber harvesting volumes. This allowed aesthetic values and management practices to be evaluated across a spectrum of operational contexts. Both Creston and McBride are subject to provincial visual quality objectives (VQOs), as they occur within areas classified

as visually sensitive by the province. In contrast, Revelstoke practices strictly voluntary aesthetic management as it is not located within a designated area of visual sensitivity.

## Hypothesis and Research Questions

On most public forest lands in the United States and British Columbia, a structured system of visual resource management is available or mandated to address aesthetic values through specified objectives for acceptable levels of visual contrast in different areas (Ministry of Forests 2001, USDA Forest Service 1995). Mapped inventories of landscape conditions and important viewing areas guide appropriate management/design solutions to meet these objectives. In addition, conventional aesthetic design principles, such as emulating natural patterns and reducing visibility or visual contrasts of forest management activities, are used in the most visible areas (Litton 1968).

Some researchers have argued that the concept of landscape aesthetics needs to be broadened to address appreciation of ecological values (Gobster 1999, Kimmins 2001) and socio-cultural preferences for landscape attributes, such as orderliness or landscape care (Nassauer 1995). Drawing on these ideas, Sheppard (2001) proposed a perceptual theory of visible stewardship, which suggests that managers should pay more attention to making visible the evidence of sustainability and their care or stewardship in managing forest resources and fostering public acceptance. This theory emphasizes the importance of visible indicators, which demonstrate active care of a landscape, representing nonvisible and sustainable ecological conditions to the viewer (Kaplan et al. 1998) and reflecting socio-cultural values and benefits. In

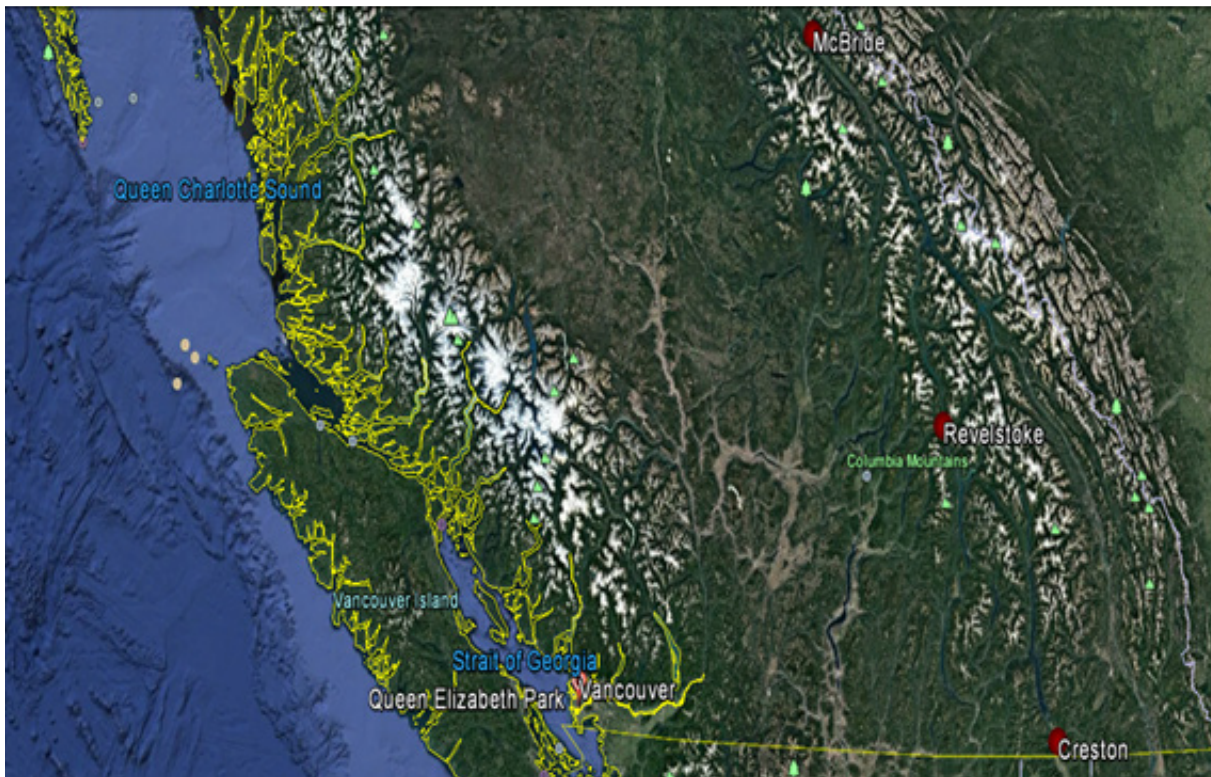


Figure 1.—Map of sample community forest locations. © Google Earth.

some cases, this may mean making forestry practices and treatments more visible in the commonly seen landscape, rather than trying to hide or locate them in wilder and more remote settings. However, it may also require more thoughtful design to demonstrate ecologically and socially sensitive management practices.

In this paper, we hypothesize that there is a natural fit between community forests and management approaches such as visible stewardship that demonstrate sustainable forest values in plain sight of residents, often within the viewshed of the community itself. Specifically, we argue that by making visible the management regime's presence and care for the forest, sustainable forest objectives will also help meet the multiple values of community residents. The central research questions of this paper further explore whether:

- Management of community forests in these case studies meets or exceeds standard visual quality objectives (in terms of visual impacts/contrasts on the ground) and achieves public acceptance.
- There is evidence that community forest practices are aligned with the principles of visible stewardship.

It should be noted that this study does not attempt an explicit comparison with nearby traditionally managed forest landscapes but instead relies on past findings in the British Columbia literature as context for community forest performance.

## METHODS

We used two parallel methods of evaluation to assess the three community forests. The first was a quantitative approach that included benchmarking aesthetic standards using an established British Columbia Visual Quality Effectiveness Evaluation method. The second was a qualitative approach, which used interviews and participant observation to explore goals, values, social processes, and perceived outcomes of community forest management. The second approach was conducted by a research team of four graduate students and a professor who spent 10 weeks visiting five community forests in 2009, supplemented by a second professor for a week. The initial sample group of five community forests was reduced to three, as two of the sample forests were not actively practicing visual resource management at the time of the study.

## Quantitative Analysis

The lead author conducted the visual quality effectiveness evaluations for the Creston, Revelstoke, and McBride community forests, using the provincial standard assessment method. This included selecting, photographing, and measuring disturbances on key landforms. No official provincial assessments had previously been conducted on any of these tenures. The intent was to determine if operations at the sample community forests were meeting the visual goals and objectives established by the province under the Forest and Range Practices Act and Government Action Regulation (GAR) (Province of British Columbia 2005).

The quantitative analysis included the following procedures:

- We selected viewpoints using VQO Maps (where available), management plans, and site plans for each community forest (Ministry of Forests 2004). We selected cutblocks (designated harvest areas) that had been harvested within the past 3 years and were approximately 1.8 km from identified viewpoints. These areas provided consistent middleground locations for optimal cutblock viewing in scenic areas. We validated all selected viewpoints during field visits.
- We used visual inventory techniques outlined in the Forest and Range Evaluation Program (FREP) Protocols for visual quality management for each effectiveness evaluation (Marc 2008). During field evaluations, we recorded GPS coordinates and viewing direction along with all visual design elements. We also took photographs of landforms and alterations at a standard 55 mm focal length as well as 35 mm and 10 mm wide-angle views to capture additional harvest area details. Following the field evaluation, photographs were stitched together to create panoramas and key landforms (visual landscape units) were delineated.
- We measured forest openings and landform areas in perspective view in the panoramas using Adobe Pro 9 software and determined percent alteration by dividing individual disturbance areas by the total landform area. Percent alteration is the proportion of the landscape surface affected by cutblocks, as seen in perspective view (Marc 2008).

- Following in-field data collection, we completed a FREP Visual Quality Effectiveness Evaluation Form (Appendix 1). We used percent alteration along with the effectiveness of any visual design elements such as boundary treatments, lines of force, cutblock size and shape to provide an overall “visual quality class” rating.<sup>2</sup> We then compared visual quality class with the provincially assigned VQO (established in the context of the relative viewer sensitivity, scenic importance, etc.) in order to determine an effectiveness rating of “not met,” “borderline met,” “met,” and “well met.” Finally, we compared these assigned effectiveness values with established VQOs following guidelines set out by the Ministry of Forests and Range.

In the case of Revelstoke Community Forest Corporation where no provincially established visual quality values exist, management goals prioritize extractive resource development. However, the Revelstoke Community Forest Corporation timber supply area is also valued for a number of nontimber resources including aesthetics and recreation opportunities. To assess success in implementing visual management practices, the lead author evaluated three cutblocks in view of a popular ski lodge identified in the Revelstoke Community Forest Corporation's Management Plan as being visually sensitive (Revelstoke Community Forest Corporation 2010).

In order to conduct an effectiveness evaluation, we assigned the areas containing the three selected cutblocks a VQO of “partial retention.” This rating is consistent with the legal definition for this visual quality class, which most closely aligns with the visual resource management objectives for lodges, commercial cabins, and camps outlined in the management plan. Partial retention is defined as a “human caused alteration that is evident but subordinate and therefore not dominant on the land form” (Resources Inventory Committee 1999). As with the effectiveness evaluations conducted for other community forests, we assessed all three cutblocks in accordance with provincial guidelines.

---

<sup>2</sup> VQO classes most commonly fell within one of the following levels of compatibility or contrast/dominance in relation to natural landscape patterns: Retention, Partial Retention, and Modification. In the BC system, these VQO classes are associated with typical thresholds of percent alteration, as well as other factors.

## Qualitative Analysis

We conducted a qualitative assessment of the aesthetic values of approximately 50 community members from all three sample community forests. We used interviews and participant observations to obtain deeper insights into the goals of community forest management, as well as social, cultural, and perceptual constraints and any regulatory standards followed. We used nonrandom sampling methods and rapid rural appraisal to gather information on community members' visual landscape values (Teitelbaum et al. 2003). We selected interview respondents to represent the diversity in the community and included community forest managers, forestry experts, and interested community members. Data collection methods were consistent across all sample groups.

To examine community members' aesthetic values, the research team used qualitative, semi-structured interviews with individual participants, focus groups, and field visits. During interviews and focus groups, the interviewer directed the conversation around topics relevant to the research issues without over-prescribing the discussion. Our interviews focused on the interests of the five principal researchers, including economics, water quality, ecology, comanagement, and aesthetic management of community forests.

When conducting data analysis for this project, we employed blended techniques from a grounded theory approach and more general qualitative research approaches. Grounded theory is well suited for this type of study as it is reflexive and facilitates collecting the subjective details of aesthetic landscape preferences. We collected data without applying any predetermined hypotheses or leading the participants, and we developed explanatory theories following the analysis. This method allowed for responsive theory exploration informed by a comparison of variables from the research literature on interpreting landscape aesthetics.

We established provisional categories or themes from interview data then cross-referenced the provisional categories with externally developed categories from a review of the aesthetics literature. We continually validated the categories from this analysis against each other as new categories emerged in subsequent analyses, as discussed in the findings section. Corbin and Strauss (1998) note the importance of validation

in identifying contextually specific categories in this process. The interview questions targeted cultural issues, aesthetic landscape preferences, aesthetic management goals, and the forestry activities used to achieve them. We asked participants to answer questions as openly as possible but emphasized that they were not obliged to answer. We did not mention or explain visible stewardship theory or principles or other theories to participants.

## RESULTS

### Quantitative Results

The following sections briefly summarize results from the visual analyses for each of the three community forests, which addressed harvesting design practices, number of cutblocks, VQOs, and standards (see Smith 2015 for further details).

The results of the effectiveness evaluation suggest that all three community forests are successfully implementing visual management practices at all of the sample locations and achieving ratings of "borderline met" to "well met" across sample blocks. Forest staff demonstrated a high degree of concern for visual quality and knowledge of alternative harvesting practices such as edge treatments and use of partial cutting (tree retention) that adhere to visual lines of force and borrow from the natural character of the landform. Creston Valley interviewees identified external factors such as pest infestations and existing disturbances on the landscape as occasional challenges (Fig. 2).

At Revelstoke, a number of large anthropogenic disturbances significantly increased the overall level of disturbance but the forest's final visual condition was still "partial retention" and the effectiveness evaluation rating was "well met" or "borderline met" for the three cutblocks (Fig. 3). In addition, the Revelstoke Community Forest Corporation Stewardship Plan is certified by the Sustainable Forestry Initiative (SFI) and approved by the Ministry of Forests. An SFI audit, which included a review of stakeholder communications, found Revelstoke met SFI Objective #5, Management of Visual Quality and Recreational Benefits. The audit also noted that the community forest had undertaken voluntary aesthetic management practices in a number of visually sensitive recreational areas (SAI Global 2012).



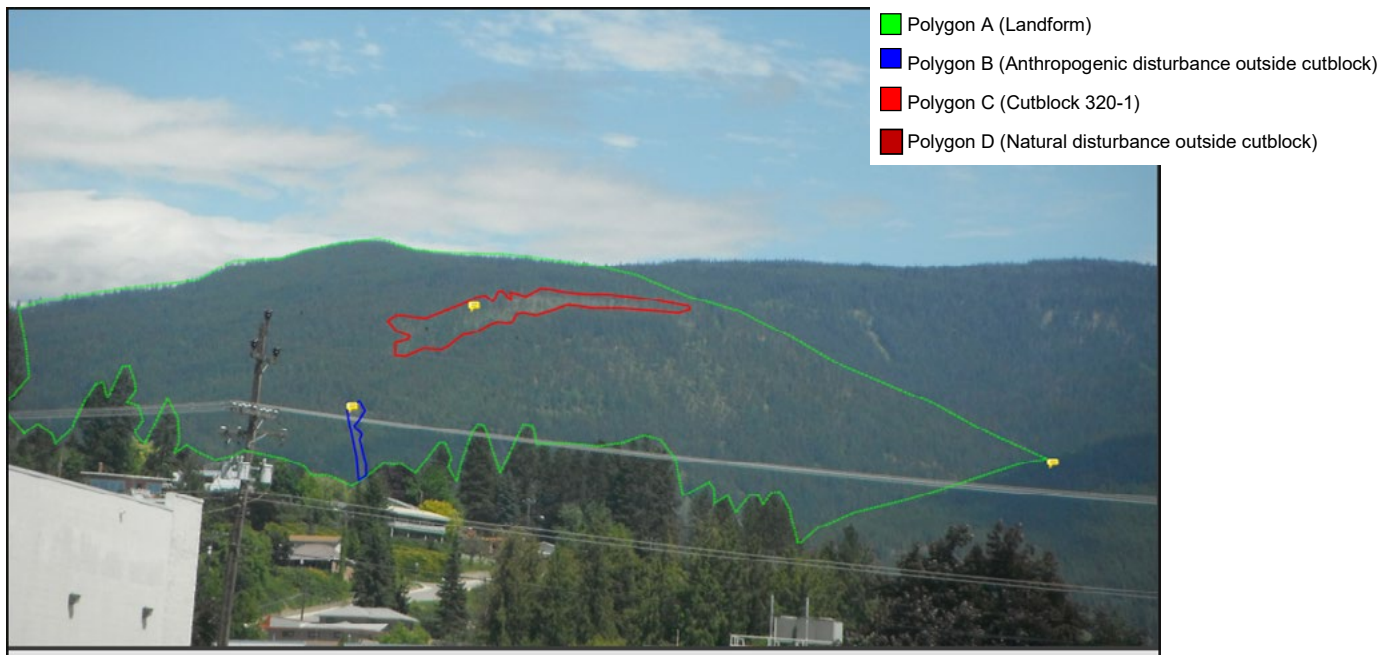


Figure 2.—Creston Community Forest Corporation cutblock K3D 004-2. Photo and enhancements by A. Smith, used with permission.

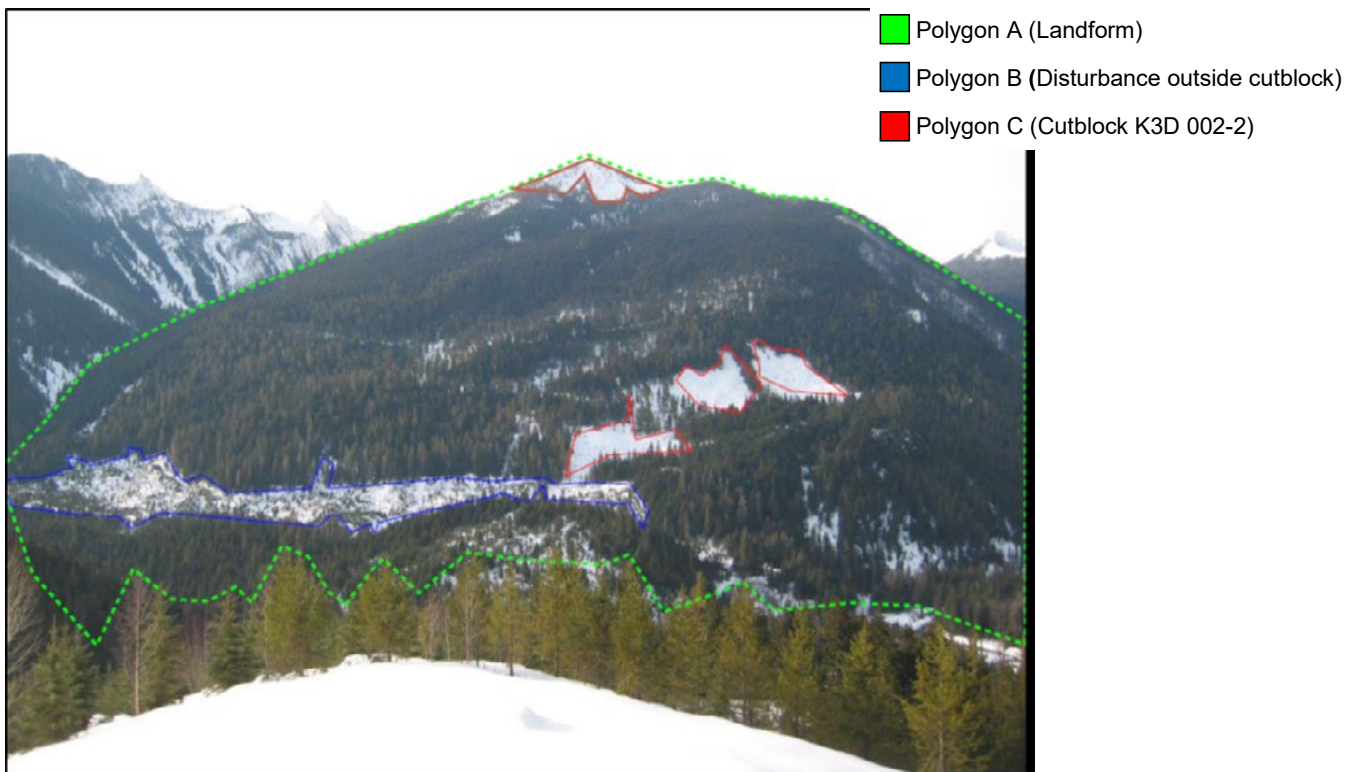


Figure 3.—Revelstoke Community Forest Corporation cutblock 320-1. Photo and enhancements by A. Smith, used with permission.

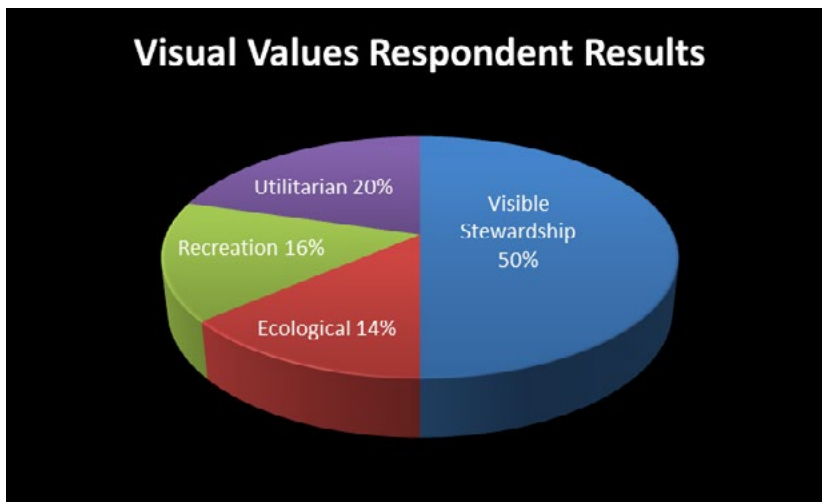


Figure 4.—Visual values of research participants by category.

## Qualitative Results

This section summarizes the response patterns and opinions of community members. We did not seek opinions on the specific blocks assessed in the quantitative analysis. Most respondents worked in forestry or were persons knowledgeable of the community forest. When discussing aesthetic landscape preferences and visual sensitivity to disturbance in rural forested areas, interview responses tended to be perceptually based. As Daniel (2001, p. 268) states, perceptual interpretations of landscape aesthetics “treat biophysical features of the landscape as stimuli that evoke aesthetically relevant psychological responses through relatively direct sensory-perceptual processes and/or through intervening cognitive constructs.”

The interview findings suggest that ecological, cultural, and personal factors influence the perceived landscape values relevant to community forest management within the sample communities. For example, preferences for different levels of tree removal (basal area) were often related to the participant’s use of the landscape and socioeconomic background. We coded aesthetic values expressed by participants and classified them into five unique categories:

- Noninstrumental (existence value)
- Visible stewardship
- Recreational
- Utilitarian
- Ecological

These categories reflected groupings of responses, not necessarily individuals. Some participants emphasized one particular category of responses while others expressed support for a variety of values. With the exception of noninstrumental aesthetic appreciation, all aesthetic values were related in varying degrees to visual informational triggers communicated by the landscape to the viewer. Overall, participants were satisfied with visual quality in the community forests, with most preferring to see elements of visible stewardship across the land base (Fig. 4). Among the expert participants, common ideas centered around stewardship of the visual resource and timber utilization, as in this example: “Most community members are not capable of reading the landscape. As experts in the forest industry, we are best able to strike a type of eco-aesthetic appreciation that both demonstrate productivity and ecologically responsible harvesting practices” (Interview R-2R).

Many interviewees expressed a desire to demonstrate their technical ability to log while maintaining aesthetic resources (Interviews R-20C, R-15C, R-16C). One respondent noted, “The fun and the challenge and the real education takes place in – in designing a landscape and landscape level objectives and then implementing them, you know... and it’s possible to do it for visuals, for sure” (Interview R-15C).

Revelstoke Community Forest Corporation staff noted that tourists and new residents were often sensitive to even small levels of disturbance on the landscape. They desired landscapes that were conducive to recreation, had little evidence of anthropogenic modification, and maximized wilderness values (Interview R-2R).

## DISCUSSION

### Visual Resource Management by Sample Community Forests

The first research question asked if community forest management is meeting or even exceeding standard visual quality objectives (in terms of visual impacts/contrasts on the ground) and achieving public acceptance.

The effectiveness evaluations suggested that all three sample forests were attempting to implement the basic principles of landscape design in their harvesting practices. Some of the common methods for managing visual resources included placing cutblocks lower on the landform, reducing the overall size of the cutblock and percent basal area removed, incorporating edge treatments, and removing slash piles. All of the evaluated cutblocks either complied with or partially complied with established VQOs under the Forest and Range Practices Act for visually sensitive blocks within the timber supply area. Instances of partial compliance were primarily the result of pine beetle uplifts and the presence of previously existing disturbances on the landform.

A comparison against visual quality effectiveness evaluation audits on provincial tenures indicated that community forests were meeting and, in some cases, exceeding the provincial management practices. Sample community forests achieved a “borderline met” rating 36 percent of the time, a “met” rating 18 percent of the time, and a “well met” rating 46 percent of the time. There were no ratings of “not met” within our sample compared to the provincial “not met” average of 20 percent (Ministry of Forests and Range 2009).

There is no obvious evidence of conflicts between the perceptions of community members’ aesthetic preferences and the Visual Quality Effectiveness Evaluation findings. Interview results suggest that the majority of community members were generally satisfied with visual quality in the community forests, though some stakeholders expressed a desire for less disturbed landscapes reflecting stronger ecological or productivity values. Correspondence with forest managers and a review of meeting minutes found overall community satisfaction with visual resource management in community forests and few public

complaints. Interviewees often mentioned that managing for visual quality was an important part of providing desirable tourism opportunities. This is supported by Revelstoke Community Forest Corporation’s proactive visual resource management practices around Adamant’s Lodge (see Fig. 3), and McBride’s management of viewing opportunities from McBride Peak. In all three sample forests, it was consistently clear that staff knowledge of visual resource management was important.

### Public Acceptance of Visual Resources

All of the community forests in this study were established, in part, to give residents greater control over local forest resources. The forests provide a number of monetary and nonmonetary benefits to communities including timber revenues, nontimber forest product revenues, water supply, aesthetic resources, recreation opportunities, wildlife habitat, and open spaces (Community Forest Collaborative 2007). The forests managers already incorporate principles of landscape design into their harvesting regimes in visually sensitive areas. Concern about the local communities and local values is also evident in participatory institutional structures, public engagement strategies, and implementation of alternative harvesting practices.

In all of the forests, community-based boards of directors allow local residents to express aesthetic landscape preferences directly to decisionmakers. As a result, community forest staff are aware of visually sensitive areas in the timber supply sections of the forests. Staff on each of the forests acknowledged the importance of allowing public input to guide forest management activities including visual resource management.

Forest staff reported relying primarily on Websites, newsletters, and regularly scheduled meetings to engage the general public. In addition, forest managers indicated that they felt social pressure from members of the community to maintain the integrity of visually sensitive areas. Despite the above engagement strategies, forest staff reported relatively low levels of direct public engagement in operational decisions. However, members of the public did typically help in setting high-level policy direction, which influenced operations management.



## Relevance of Results to Visible Stewardship Theory

The second research question addresses whether there is evidence that community forest practices are aligned with visible stewardship principles.

Many respondents at each of the community forests expressed a preference for landscapes with some obvious signs of care for the land, which is consistent with the theory of visible stewardship. For example, staff at McBride Community Forest Corporation stated, “We are highly visible; everyone is very much in tune with the forest around them and they demand a high level of stewardship” (Interview R-29M, R-9M). A respondent at Revelstoke expressed a similar view: “Aesthetic management should not and does not have to come at the expense of ecologically responsible forest practices” (Interview R-2R).

There was consensus among interviewees that anthropogenic modification should communicate attachment to the land base and evidence of deliberate and ongoing maintenance. During interviews, many respondents mentioned brush removal, variable retention, partial cutting, irregular cutblock design, stream and watershed maintenance, lack of soil disturbance, removal of coarse woody debris, pest management, and management of fire interface zones as visible indicators of sustainable forest management. There was also a general preference for landscapes with higher levels of canopy retention but not necessarily avoidance of visual contrasts. Some respondents spoke of the potential benefit of signage and opportunities to educate the public about forest management practices, specifically when controlling for pest infestations like mountain pine beetle. None of the interviewees expressed explicit knowledge of visible stewardship theory and interviewers did not raise the subject.

In combination, these preferences reflect a general desire to see demonstrable evidence of a healthy, well-cared-for landscape. Therefore, practice under the community forest regime generally seems consistent with visible stewardship theory. Interestingly, visible stewardship concepts appear to be reflected in both non-expert and expert-based landscape values. The combination of observed public acceptance and visibly modified landscapes supports the argument for visible or transparent stewardship, rather than a primarily natural forest appearance, as an appropriate goal.

Moderate, ecologically sound levels of disturbance in visually sensitive areas of the forests fulfill the visible stewardship principle of sustained visibility of forest operations and management (Sheppard 2001). In community forests at least, it may be better to see forestry practices in a working landscape than not to see them as in a wilderness area.

There are analogous findings in the literature with regard to historic, suburban, and rural landscapes that exhibit “cues for care” (Nassauer 1997). Benson (2008) identifies similar aesthetic values in farmers surveyed across the British countryside who regard “tidiness” as an indicator of good farming practices. Visible stewardship as an aesthetic value is a relatively recent trend in appreciation and management of wildland or naturalistic forest landscapes. This preference appears to demonstrate that aspects of the cultural paradigm, personal paradigm, and biological paradigm are acting together (Bourassa 1990). It suggests that humans are influenced not only by innate preferences for nature and aesthetic principles of landscape design and architecture (such as form, line, color and contrast), but also by socio-cultural influences such as individual upbringing, social norms, professional background, and the ethics of good management.

Our findings suggest the need for further research to test these theories in other contexts. Key questions to be addressed include tradeoffs for community forest managers and their stakeholder committees between addressing “soft” social values including aesthetics, and dealing with “hard” economic pressures such as finding funding for skilled staff and creating economies of scale for large industrial forestry tenures.

## Challenges and Recommendations

There is a variety of expectations for community forests and forest managers who are supposed to engage in commercially viable, ecologically sustainable, and aesthetically pleasing forestry activities. Some of the challenges noted by community forest managers include the following:

- Operational: terrain, ecological health, size of timber supply area, equipment used
- Communication: ensuring operations staff are knowledgeable of design objectives

- Regulatory: insufficient monitoring, compliance, and enforcement mechanisms under the Forest and Range Practices Act
- Financial: increased costs associated with selective harvesting models and reduced yield

The operational challenges posed by landscape terrain are not easily remedied. In some cases, it may be possible and advisable to increase the size of community forest tenures in order to take advantage of forest lands with inoperable areas and harvesting constraints (as identified in management plans). In “borderline met” areas, more detailed site planning of visually sensitive landscape units could help meet VQOs. In areas that intersect visually sensitive landscape units, submitting site plans and predictive visualizations *before* harvesting could help forest managers and regulators better determine visual impacts associated with a proposed cutblock, as well as any cumulative impacts from existing disturbances and any mitigation measures that may be required.

Some harvesting methods identified in interviews and in the literature may be appropriate for wider use within visually sensitive areas of community forests, including partial cutting and ensuring that boundary treatments are used. In addition, Sheppard et al. (2004) note that the use of radial-strip cutting can reduce the visual impacts of harvesting in steep front-country areas. This method uses feathered edges, buffer strips, and uphill or downhill cable-yarding along multiple narrow strips from each landing with the goal of minimizing visibly disturbed ground from any given viewpoint.

Community forest staff indicated that effective communication between operations staff and contract loggers is critical to achieving VQOs on the landscape. In some cases, this may involve marking specific leave trees in order to maintain sufficient basal area and retain specific trees or clusters of trees. In addition to improving direct communications, foresters should understand both provincial principles of landscape design (theory) and the details of site plans for proposed cutblocks (practical application). We recommend requiring that foresters and logging crews complete training in conducting visual landscape inventories and know the guidelines in the “Visual Landscape Design Training Manual” (Ministry of Forests 1994) and the Web-based “Interactive Visual

Landscape Design Training Package” (<https://www.for.gov.bc.ca/hfp/training/00018/index-old.htm.htm>).

Our literature review and numerous responses during interviews suggest that mandatory submission of visual simulation packages (previously required under the Forest and Range Practices Code) should be reinstated under the Forest and Range Practices Act. This would require regulatory changes at the province level. As Sheppard (2001, 2006) notes, visual simulations can be powerful illustrations of the visual impacts of proposed disturbances. However, creation and use of landscape visualizations should follow visual impact assessment procedures identified in the “Visual Impact Assessment Guidebook” (Ministry of Forests 2001). Visualizations may also help engage and inform boards of directors and the general public on important design and siting issues for harvesting activities.

Interview responses from Creston Valley Community Forest Corporation indicated that financial challenges associated with alternative logging practices may be minimized by reducing layout costs. This may be accomplished by conducting desktop analyses of existing conditions and layout options prior to initiating fieldwork, thereby reducing the amount of time in the field.

Finally, we recommend establishing a self-administered monitoring program for visually sensitive areas within timber supply areas. The use of FREP Effectiveness Evaluation Forms (Appendix 1) would provide a means to evaluate and document the visual impacts of forest harvesting activities more objectively and would help forest managers plan future cutblocks on the same landform or within the same viewshed. These evaluations would assess the existing visual condition of cutblocks within 3 years of harvesting and determine if existing conditions comply with provincial VQOs.

## CONCLUSIONS

In summarizing the main conclusions and implications of this study for visual management of community forests, we must acknowledge several study limitations. These include the small number of sample sites in each community forest, the lack of specific controlled comparisons with noncommunity forests, variation in the mix of research participants in the three community forests, and the lack of a wider public

perception survey to confirm the representativeness of participants' perceptions. It is possible, for instance, that the community forest managers interviewed were positively biased toward the outcomes of their efforts, although the independent quantitative assessment of visual quality achievement tends to support their assertions. There is also the possibility of bias among the research team in differentially looking for evidence in the qualitative analysis to support the theory of visible stewardship, although the number of respondent references to these principles (without any formal knowledge of the theory itself) supports their validity as key variables in community forest management. Independent replication of such findings by other researchers is strongly encouraged.

Despite operational and nonoperational challenges within the community forests and some differences in aesthetic preferences among community members, community forests appear to be successfully managing visually sensitive areas of timber supply zones. Most cutblocks achieved and in some cases exceeded applicable VQOs, and there were few public complaints related to visual quality. These findings represent a significant achievement for relatively small forest tenures with many competing objectives and suggest that community forest managers are responsive to both provincial level visual resource management requirements and local aesthetic concerns. The British Columbia system of effectiveness evaluation provides a useful method for monitoring visual management performance.

The study also found evidence of a general desire among community members to see—and among community forest managers to provide—visible indicators of a healthy, well-cared-for landscape. This suggests that the practice of visible stewardship can contribute to effectively meeting public expectations in a visibly active and dynamic working landscape. The community forest model may be more widely applied by communities seeking to manage the visual impacts of harvesting, among other resource objectives, with methods that could be adopted for larger scale forest operations.

## ACKNOWLEDGMENTS

This research was supported by grant #639682 to Evelyn Pinkerton by the Social Sciences and Humanities Research Council of Canada.

## LITERATURE CITED

- Benson, J. 2008. **Aesthetic and other values on the landscape**. *Environmental Values*. 17(2): 221-238. <https://doi.org/10.3197/096327108X303864>.
- Bourassa, S. 1990. **A paradigm for landscape aesthetics**. *Environment and Behavior*. 22(6): 787-812. <https://doi.org/10.1177/0013916590226004>.
- British Columbia Community Forest Association. 2013. **British Columbia Community Forest Association: McBride Community Forest Corporation**. <http://bccfa.ca/mc-bride-community-forest-corporation/>.
- Charnley, S.; Poe, M. 2007. **Community forestry in theory and practice: Where are we now?** *Annual Review of Anthropology*. 36: 301-336. <https://doi.org/10.1146/annurev.anthro.35.081705.123143>.
- Community Forest Collaborative. 2007. **Community forests: a forest investment strategy**. Concord, NH: Community Forest Collaborative, Northern Forest Center. 75 p. [https://northernforest.org/images/resources/community-forests/Community\\_Forests\\_Report\\_1.7MB.pdf](https://northernforest.org/images/resources/community-forests/Community_Forests_Report_1.7MB.pdf).
- Corbin J.; Strauss, A. 1998. **Basis of qualitative research: techniques and procedures for developing grounded theory**. 3<sup>rd</sup> ed. Thousand Oaks, CA: Sage. <http://dx.doi.org/10.4135/9781452230153>.
- Daniel, T.C. 2001. **Whither scenic beauty? Visual landscape quality assessment in the 21st century**. *Landscape and Urban Planning*. 54(1-4): 267-281. [https://doi.org/10.1016/S0169-2046\(01\)00141-4](https://doi.org/10.1016/S0169-2046(01)00141-4).
- Gobster, P.H. 1999. **An ecological aesthetic for forest landscape management**. *Landscape Journal*. 18(1): 55-64. <https://doi.org/10.3368/lj.18.1.54>.
- Kaplan, R.; Kaplan, S.; Ryan, R.L. 1998. **With people in mind: design and management of everyday nature**. Washington, DC: Island Press. 225 p.
- Kimmins, J.P. 2001. **Visible and non-visible indicators of forest sustainability: beauty, beholders and belief systems**. In: Sheppard, S.J.R.; Harshaw, H.W., eds. *Forests and landscapes: linking ecology, sustainability, and aesthetics*. IUFRO Research

- Series No. 6. Wallingford, UK: CABI Publishing: 43-56. <http://dx.doi.org/10.1079/9780851995007.0043>.
- Litton, R.B., Jr. 1968. **Forest landscape description and inventories: a basis for land planning and design**. Res. Pap. PSW-49. Berkeley, CA: U.S. Department of Agriculture, Forest Service, Pacific Southwest Forest and Range Experiment Station. 64 p.
- Marc, J. 2008. **Protocol for visual quality effectiveness evaluations: procedures and standards**. Victoria, BC: Ministry of Forests and Range and Ministry of Environment, Forest and Range Evaluation Program. 25 p. <https://www.for.gov.bc.ca/ftp/hfp/external!/publish/frep/indicators/Indicators-VisualQuality-Protocol-Nov2008.pdf>.
- Ministry of Forests. 1994. **Visual landscape design training manual**. Victoria, BC: Ministry of Forests, Recreation Branch. <https://www.for.gov.bc.ca/hfd/pubs/docs/mr/Rec023.htm>.
- Ministry of Forests. 2001. **Visual impact assessment guidebook**. 2<sup>nd</sup> ed. Victoria, BC: Ministry of Forests, Forest Practices Branch. <http://faculty.forestry.ubc.ca/bendickson/FOPRLibrary/Library/M%20o%20F%20Guidebooks%20&%20Publications/Visual%20Impact/Visual%20Impact%20Guide%201.pdf>.
- Ministry of Forests. 2004. **FRPA (Forest and Range Practices Act) resource evaluation program terminology**. FRPA Evaluator Technical Note 2. Victoria, BC: Ministry of Forests. [https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/forestry/frep/frep-docs/frep\\_technical\\_note\\_02.pdf?fileName=frep\\_technical\\_note\\_02.pdf](https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/forestry/frep/frep-docs/frep_technical_note_02.pdf?fileName=frep_technical_note_02.pdf).
- Ministry of Forests and Range. 2009. **Compliance and enforcement program annual report**. Victoria, BC: Ministry of Forests and Range. [https://www.for.gov.bc.ca/ftp/hen/external!/publish/web/reports/C\\_and\\_E\\_annual\\_report\\_08-09.pdf](https://www.for.gov.bc.ca/ftp/hen/external!/publish/web/reports/C_and_E_annual_report_08-09.pdf).
- Nassauer, J.I. 1995. **Culture and changing landscape structure**. *Landscape Ecology*. 10(4): 229-238. <https://doi.org/10.1007/BF00129257>.
- Nassauer, J.I., ed. 1997. **Placing nature: culture and landscape ecology**. Washington, DC: Island Press.
- Pearse, P. 1992. **Evolution of the forest tenure system in British Columbia**. Vancouver, BC: Ministry of Forestry. 58 p. <http://www.for.gov.bc.ca/hfd/library/documents/bib49592.pdf>.
- Province of British Columbia. 2005. **Monitoring and evaluation strategy, FRPA resource evaluation program**. Victoria, BC: Ministry of Forests and Range, Ministry of Environment, and Ministry of Agriculture and Lands. <https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/forestry/frep/frep-docs/monitoring-evaluation-strategy-bib96715.pdf>.
- Resources Inventory Committee. 1999. **Visual landscape inventory training manual**. 177 p. [https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/forestry/visual-resource-mgmt/training-frm/frm\\_visual\\_landscape\\_inventory\\_course\\_manual.pdf](https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/forestry/visual-resource-mgmt/training-frm/frm_visual_landscape_inventory_course_manual.pdf).
- Revelstoke Community Forest Corporation. 2010. **Revelstoke Community Forest Corporation tree farm license: forest stewardship plan 2010-2015**. 23 p. [http://rcfc.bc.ca/wordpress/wp-content/uploads/2012/07/RCFC\\_Forest\\_Stewardship\\_Plan\\_2010-2015.pdf](http://rcfc.bc.ca/wordpress/wp-content/uploads/2012/07/RCFC_Forest_Stewardship_Plan_2010-2015.pdf).
- SAI Global. 2012. **Forest certification update: Revelstoke community forest audit, Revelstoke**. 6 p. <http://rcfc.bc.ca/wordpress/wp-content/uploads/2012/06/014778-03-RCFC-SFI-Public-Report.pdf>.
- Sheppard, S.R.J. 2001. **Beyond visual resource management: emerging theories of an ecological aesthetic and visible stewardship**. In: Sheppard, S.R.J.; Harshaw, H.W., eds. *Forests and landscapes: linking ecology, sustainability, and aesthetics*. IUFRO Research Series, No. 6. Wallingford, UK: CABI Publishing: 149-172.
- Sheppard, S.R.J. 2006. **Bridging the sustainability gap with landscape visualisation in community visioning hubs**. *Integrated Assessment Journal*. 6(4): 79-108.
- Sheppard, S.R.J.; Picard, P.; D'Eon, R.G. 2004. **Meeting visual quality objectives with operational radial-strip cutting in coastal British Columbia: a post-harvest assessment**. *The Forestry Chronicle*. 80(2): 215-223. <https://doi.org/10.5558/tfc80215-2>.



Smith, A.V. 2015. **Aesthetic values and visual resource management in British Columbia's community forests**. Burnaby, BC: Simon Fraser University. M.S. thesis.

Statutes of British Columbia. 1996. **Forest act, chapter 157**. [http://www.bclaws.ca/Recon/document/ID/freeside/96157\\_03#division\\_d2e7917](http://www.bclaws.ca/Recon/document/ID/freeside/96157_03#division_d2e7917).

Teitelbaum, S.; Beckley, T.; Nadeau, S. 2006. **A national portrait of community forestry on public land in Canada**. *Forestry Chronicle*. 82(3): 416-28. <https://doi.org/10.5558/tfc82416-3>.

Teitelbaum, S.; Beckley, T.; Nadeau; Southcott, C. 2003. **Milltown revisited: strategies for assessing and enhancing forest-dependent community**

**sustainability**. In: Burton, P.J.; Messier, C.; Smith, D.W.; Adamowicz, W.L., eds. *Towards sustainable management of the boreal forest*. Ottawa, CA: NRC Research Press: 155-180.

USDA Forest Service. 1995. *Landscape aesthetics: a handbook for scenery management*. Agric. Hndbk. No. 701. Washington, DC: U.S. Department of Agriculture, Forest Service. [http://blmwyomingvisual.anl.gov/docs/Landscape%20Aesthetics%20\(AH-701\).pdf](http://blmwyomingvisual.anl.gov/docs/Landscape%20Aesthetics%20(AH-701).pdf).

Zube, E. H.; Anderson, T.; Pitt, D. 1974. **Measuring the landscape: perceptual responses and physical dimensions**. *Landscape Research*. 1(6), 4-6. <https://doi.org/10.1080/01426397408705723>.

The content of this paper reflects the views of the author(s), who are responsible for the facts and accuracy of the information presented herein.

# APPENDIX 1

## Visual Quality Effectiveness Evaluation form used for the British Columbia Forest and Range Evaluation Program (Marc 2008)



BRITISH  
COLUMBIA

Forest and Range  
Evaluation Program

Visual Quality Effectiveness Evaluation  
Resource Stewardship Monitoring

Page 1

|                                                                                                                                                                                         |                                                                                                                                                        |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>2.1.2 Site Information (Office)</b>                                                                                                                                                  |                                                                                                                                                        |
| Forest District _____                                                                                                                                                                   | Sample Code _____                                                                                                                                      |
| Licensee _____                                                                                                                                                                          | Date of Field Evaluation <input type="text" value="MM/DD/YYYY"/>                                                                                       |
| Licence No. _____ CP No. _____                                                                                                                                                          | Block _____                                                                                                                                            |
| General Location _____                                                                                                                                                                  | Results Opening ID _____                                                                                                                               |
| <b>2.1.3 VLI Information (Office)</b>                                                                                                                                                   |                                                                                                                                                        |
| Date of Update <input type="text" value="MM/DD/YYYY"/>                                                                                                                                  | VAC _____ Established VQO _____                                                                                                                        |
| Polygon No. _____                                                                                                                                                                       | VSC _____ Date of Establishment <input type="text" value="MM/DD/YYYY"/>                                                                                |
| EVC _____                                                                                                                                                                               | Recommended VQC _____ Source Document _____                                                                                                            |
| <b>2.2.1 Viewpoint (Field)</b>                                                                                                                                                          |                                                                                                                                                        |
| Viewpoint No. _____                                                                                                                                                                     | GPS Latitude _____ Viewing Direction _____                                                                                                             |
| GPS Longitude _____                                                                                                                                                                     | Elevation (m) _____ Viewing Distance _____                                                                                                             |
| <b>2.2.2 Photography (Field)</b>                                                                                                                                                        |                                                                                                                                                        |
| Roll No. _____ ID Nos. _____                                                                                                                                                            | Viewpoint Importance (low) 1 2 3 4 5 (high) _____                                                                                                      |
| Digital Photo ID Nos _____                                                                                                                                                              | Viewpoint Description _____ Field of View Height(degrees) _____                                                                                        |
| <b>2.2.3 Assess Basic VQC (Field)</b>                                                                                                                                                   |                                                                                                                                                        |
| Alterations meet with Basic VQC definition? Circle where in the range for that VQC. Notes:                                                                                              |                                                                                                                                                        |
| Basic VQC <input type="checkbox"/> P <input type="checkbox"/> R <input type="checkbox"/> PR <input type="checkbox"/> M <input type="checkbox"/> MM <input type="checkbox"/> →           |                                                                                                                                                        |
| <b>2.2.4 Design Observations (Field)</b>                                                                                                                                                | <b>2.3.4 Partial Cut Alterations</b>                                                                                                                   |
| Design Elements G (-1) M (0) P (+1)                                                                                                                                                     | Partial cutting                                                                                                                                        |
| Response to visual force lines _____                                                                                                                                                    | % removed _____                                                                                                                                        |
| Borrows from natural character _____                                                                                                                                                    | Average tree height (m) _____                                                                                                                          |
| Edge treatments incorporated _____                                                                                                                                                      | Clearcut equivalent _____% alteration as read from Table 4.                                                                                            |
| Distance from the viewpoint _____                                                                                                                                                       | Record this value on line 2.3.2 a.                                                                                                                     |
| Position on the landform _____                                                                                                                                                          |                                                                                                                                                        |
| <b>Total Design</b> _____                                                                                                                                                               |                                                                                                                                                        |
| <b>2.3.2 Assess Initial VQC (Office)</b>                                                                                                                                                | <b>2.3.6 Determining EE Rating for the Landform by Comparing Basic VQC with Adjusted VQC (Office)</b>                                                  |
| a) % of landform altered by recent openings _____                                                                                                                                       | 1 <input type="checkbox"/> <b>Clearly not met</b> (Neither method indicates VQO achievement, both are far from class boundary)                         |
| b) % of landform with site disturbance outside openings _____                                                                                                                           | 2 <input type="checkbox"/> <b>Not met</b> (Neither method indicates VQO achievement, but both are close to class boundary)                             |
| c) % non veg contribution of old openings _____                                                                                                                                         | 3 <input type="checkbox"/> <b>Borderline</b> (One method indicates VQO achievement, one does not)                                                      |
| X = (a+b+c) = _____ % alteration <b>Initial VQC</b> _____                                                                                                                               | 4 <input type="checkbox"/> <b>Met</b> (Both methods indicate VQO achievement, but one or both are close to the high end "maximum % alteration limit.") |
| <b>2.3.3 Assess Adjusted VQC (Office)</b>                                                                                                                                               | 5 <input type="checkbox"/> <b>Well met</b> (Both methods indicate VQO achievement and are on the lower % alteration limit or mid-range for the class)  |
| d) Impact of roads, side cast, etc. (within openings) _____                                                                                                                             |                                                                                                                                                        |
| <input type="checkbox"/> None <input type="checkbox"/> Subordinate <input type="checkbox"/> Significant <input type="checkbox"/> Dominant Adj. Factor _____                             |                                                                                                                                                        |
| e) Tree retention                                                                                                                                                                       |                                                                                                                                                        |
| <input type="checkbox"/> Good <input type="checkbox"/> Moderate <input type="checkbox"/> Poor Adj. Factor _____                                                                         |                                                                                                                                                        |
| f) Design (enter total from 2.2.4 above) Adj. Factor _____                                                                                                                              |                                                                                                                                                        |
| <b>Total adjustment</b> Y = (d+e+f) Adj. Total _____                                                                                                                                    |                                                                                                                                                        |
| Calculate adjusted % alteration $X \times (1 + 0.14 \times Y) =$ _____                                                                                                                  |                                                                                                                                                        |
| <b>Adjusted VQC</b> <input type="checkbox"/> P <input type="checkbox"/> R <input type="checkbox"/> PR <input type="checkbox"/> M <input type="checkbox"/> MM <input type="checkbox"/> → |                                                                                                                                                        |
| Adjusted % alt _____                                                                                                                                                                    |                                                                                                                                                        |
| Evaluated by _____                                                                                                                                                                      |                                                                                                                                                        |
| Signature _____                                                                                                                                                                         |                                                                                                                                                        |

FS1252 2008/04



|                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                             |                                                   |                                                                      |      |      |      |      |      |      |                                                                                                                                                                                                          |      |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------|---------------------------------------------------|----------------------------------------------------------------------|------|------|------|------|------|------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|
| 2.2.2 Viewpoint Importance                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                             |                                                   |                                                                      |      |      |      |      |      |      |                                                                                                                                                                                                          |      |
| (1) glimpse view, less than 10 seconds<br>(2) sustained side view<br>(3) sustained focal view, travelling toward the alteration for more than one minute<br>(4) viewpoint is at a rest stop, campsite, or other static short-term view location<br>(5) viewpoint is the location of a community, commercial tourist-related enterprise, or other static long-term view location |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                             |                                                   |                                                                      |      |      |      |      |      |      |                                                                                                                                                                                                          |      |
| 2.2.3 Table 1 – Definitions of Visual Quality Classes                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                             |                                                   |                                                                      |      |      |      |      |      |      |                                                                                                                                                                                                          |      |
| Visual Quality<br>(Class Symbol)                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Basic Definition                            |                                                   |                                                                      |      |      |      |      |      |      |                                                                                                                                                                                                          |      |
| Preservation<br>(P)                                                                                                                                                                                                                                                                                                                                                             | "preservation" means an alteration of a forest landscape resulting from the presence of cutblocks or roads, such that when assessed from a viewpoint that is representative of significant public viewing opportunities, the alteration<br>(a) is very small in scale, and<br>(b) is designed to be indistinguishable from the pre-harvest landscape.                                                                                           |                                             |                                                   |                                                                      |      |      |      |      |      |      |                                                                                                                                                                                                          |      |
| Retention<br>(R)                                                                                                                                                                                                                                                                                                                                                                | "retention" means an alteration of a forest landscape resulting from the presence of cutblocks or roads, such that when assessed from a viewpoint that is representative of significant public viewing opportunities, the alteration<br>(a) is difficult to see,<br>(b) is small in scale, and<br>(c) has a design that mimics natural occurrences.                                                                                             |                                             |                                                   |                                                                      |      |      |      |      |      |      |                                                                                                                                                                                                          |      |
| Partial Retention<br>(PR)                                                                                                                                                                                                                                                                                                                                                       | "partial retention" means an alteration of a forest landscape resulting from the presence of cutblocks or roads, such that, when assessed from a viewpoint that is representative of significant public viewing opportunities, the alteration<br>(a) is easy to see,<br>(b) is small to moderate in scale, and<br>(c) has a design that appears natural and is not angular or geometric.                                                        |                                             |                                                   |                                                                      |      |      |      |      |      |      |                                                                                                                                                                                                          |      |
| Modification<br>(M)                                                                                                                                                                                                                                                                                                                                                             | "modification" means an alteration of a forest landscape resulting from the presence of cutblocks or roads, such that, when assessed from a viewpoint that is representative of significant public viewing opportunities, the alteration is very easy to see and is either<br>(a) large in scale with a design that is natural in its appearance, or<br>(b) small to moderate in scale but with a design that has some angular characteristics. |                                             |                                                   |                                                                      |      |      |      |      |      |      |                                                                                                                                                                                                          |      |
| Maximum Modification<br>(MM)                                                                                                                                                                                                                                                                                                                                                    | "maximum modification" means an alteration of a forest landscape resulting from the presence of cutblocks or roads, such that, when assessed from a viewpoint that is representative of significant public viewing opportunities, the alteration is extremely easy to see and one or both of the following apply<br>(a) the alteration is very large in scale, or<br>(b) the alteration is angular and geometric.                               |                                             |                                                   |                                                                      |      |      |      |      |      |      |                                                                                                                                                                                                          |      |
| 2.2.4 Table 2 – Design Observations (Field)                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                             |                                                   | 2.3.2 Table 3 – Percent Alteration Ranges for Visual Quality Classes |      |      |      |      |      |      |                                                                                                                                                                                                          |      |
| Design Elements                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Good (-1)                                   | Moderate (0)                                      | Poor (+1)                                                            |      |      |      |      |      |      |                                                                                                                                                                                                          |      |
| 1. Response to Major Lines of Force                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Strong                                      | Force Lines Not Apparent                          | Weak or No Response                                                  |      |      |      |      |      |      |                                                                                                                                                                                                          |      |
| 2. Borrowing from Natural Character                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Fully                                       | Partially                                         | Isolated or Not at All                                               |      |      |      |      |      |      |                                                                                                                                                                                                          |      |
| 3. Incorporating Edge Treatment                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Feathering and Irregular Boundaries Present | Either Feathering or Irregular Boundaries Present | Neither Aspect Present                                               |      |      |      |      |      |      |                                                                                                                                                                                                          |      |
| 4. Distance between Alteration and Viewpoint                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                 | > 8 km                                      | > 1 and < 8 km                                    | < 1 km                                                               |      |      |      |      |      |      |                                                                                                                                                                                                          |      |
| 5. Position of Opening on the Landform                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Lower Down & To One Side                    | Small Opening near Center                         | High on the Landscape or Large near Center                           |      |      |      |      |      |      |                                                                                                                                                                                                          |      |
|                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                             |                                                   |                                                                      |      |      |      |      |      |      |                                                                                                                                                                                                          |      |
| 2.3.4 Table 4 – Visual Equivalent to Clearcut Percent Alteration Factors for Partial Cut Alterations                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                             |                                                   | 2.3.3 Adjustment Factors                                             |      |      |      |      |      |      |                                                                                                                                                                                                          |      |
| Volume removed (%)                                                                                                                                                                                                                                                                                                                                                              | Mean height (m) of residual trees                                                                                                                                                                                                                                                                                                                                                                                                               |                                             |                                                   |                                                                      |      |      |      |      |      |      | c) Roads: 0 = None<br>1 = Subordinate<br>2 = Significant<br>3 = Dominant<br><br>d) Tree Retention: -2 = Good > 22%<br>-1 = Moderate 15 - 22%<br>0 = Poor < 15%<br><br>e) Design: Record Total from 2.2.4 |      |
|                                                                                                                                                                                                                                                                                                                                                                                 | 5                                                                                                                                                                                                                                                                                                                                                                                                                                               | 10                                          | 15                                                | 20                                                                   | 25   | 30   | 35   | 40   | 45   | 50   |                                                                                                                                                                                                          |      |
|                                                                                                                                                                                                                                                                                                                                                                                 | 10                                                                                                                                                                                                                                                                                                                                                                                                                                              | 0.1                                         | 0.2                                               | 0.4                                                                  | 0.6  | 0.7  | 0.8  | 1.0  | 1.2  | 1.8  |                                                                                                                                                                                                          | 2.2  |
|                                                                                                                                                                                                                                                                                                                                                                                 | 20                                                                                                                                                                                                                                                                                                                                                                                                                                              | 0.3                                         | 0.4                                               | 0.7                                                                  | 1.0  | 1.2  | 1.4  | 1.8  | 2.2  | 3.3  |                                                                                                                                                                                                          | 4.4  |
|                                                                                                                                                                                                                                                                                                                                                                                 | 30                                                                                                                                                                                                                                                                                                                                                                                                                                              | 0.7                                         | 0.9                                               | 1.2                                                                  | 1.4  | 2.0  | 2.4  | 3.3  | 4.2  | 5.0  |                                                                                                                                                                                                          | 6.5  |
|                                                                                                                                                                                                                                                                                                                                                                                 | 40                                                                                                                                                                                                                                                                                                                                                                                                                                              | 1.2                                         | 1.4                                               | 2.0                                                                  | 2.4  | 3.4  | 4.3  | 5.2  | 6.1  | 6.7  |                                                                                                                                                                                                          | 7.8  |
|                                                                                                                                                                                                                                                                                                                                                                                 | 50                                                                                                                                                                                                                                                                                                                                                                                                                                              | 1.8                                         | 2.3                                               | 3.4                                                                  | 4.3  | 5.2  | 6.2  | 6.8  | 7.7  | 8.4  |                                                                                                                                                                                                          | 9.0  |
|                                                                                                                                                                                                                                                                                                                                                                                 | 60                                                                                                                                                                                                                                                                                                                                                                                                                                              | 3.5                                         | 4.3                                               | 5.0                                                                  | 6.2  | 6.7  | 7.7  | 8.4  | 9.2  | 10.0 |                                                                                                                                                                                                          | 11.5 |
|                                                                                                                                                                                                                                                                                                                                                                                 | 70                                                                                                                                                                                                                                                                                                                                                                                                                                              | 4.9                                         | 5.5                                               | 6.5                                                                  | 7.7  | 8.4  | 9.2  | 10.0 | 11.4 | 12.7 |                                                                                                                                                                                                          | 14.0 |
|                                                                                                                                                                                                                                                                                                                                                                                 | 80                                                                                                                                                                                                                                                                                                                                                                                                                                              | 6.0                                         | 6.6                                               | 8.3                                                                  | 9.2  | 10.0 | 11.0 | 12.0 | 13.2 | 14.4 |                                                                                                                                                                                                          | 15.5 |
| 90                                                                                                                                                                                                                                                                                                                                                                              | 8.0                                                                                                                                                                                                                                                                                                                                                                                                                                             | 9.0                                         | 10.0                                              | 11.0                                                                 | 12.0 | 13.0 | 14.0 | 15.0 | 16.0 | 17.0 |                                                                                                                                                                                                          |      |
| Retention Partial Retention Modification                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                             |                                                   |                                                                      |      |      |      |      |      |      |                                                                                                                                                                                                          |      |

FS1252 2008/04