



Forest and Range Evaluation Program Multiple Resource Value Assessment Report

Thompson Rivers Natural Resource District
June 2020



Photo credit: Tim Qureshi, Stewardship Forester, Thompson Rivers Natural Resource District

CONTEXT FOR UNDERSTANDING THIS REPORT

All natural resource development will have some impact on ecosystem condition. The role of effectiveness evaluations is to assess the status and trends of British Columbia's natural resource values, whether policies or practices are meeting desired outcomes, and to identify related causal factors and opportunities for improvement. The site-level "impact ratings" presented here are based on assessments conducted within the working land base (e.g., areas where resource extraction takes place). The ecological contributions of parks, protected areas, and other conservancy areas (approximately 21% of the provincial land base and 23% in the Thompson Rivers Natural Resource District) are not covered in this report. Where possible, impact ratings reflect both resource development and the effects of natural impacts, such as those related to the mountain pine beetle infestation and fire or wind disturbances.

Effectiveness evaluations do not assess compliance with legal requirements. Instead, these evaluations assess the effects of development activities and natural influences on the condition of *Forest and Range Practices Act (FRPA)* values, often using comparisons with baseline data, regardless of whether practices are in compliance with legislation. These evaluations are meant to help resource managers:

- assess whether resource development is done sustainably;
- provide transparency and accountability for the management of public resources;
- balance decision making in consideration of environmental, social, and economic factors; and
- guide ongoing improvement of resource management practices, policies, and legislation.

Multiple Resource Value Assessment (MRVA) reports reflect the results of monitoring carried out under the Forest and Range Evaluation Program (FREP). This is generally stand/site-level monitoring which is conducted on forestry cutblocks or resource roads. As such, these evaluations provide a stewardship assessment of site-level resource development practices.

RESOURCE VALUE ASSESSMENT CLASSIFICATIONS AND MEANINGS

Monitoring results are summarized using four impact ratings.

1. very low
2. low
3. medium
4. high

"Very low" and "low" impact ratings are considered consistent with the government's goal of sustainable management of the resource values within *FRPA*. The "medium" impact rating is considered borderline and the "high" rating is generally considered unsustainable.

Site-level resource value trends are provided when there is sufficient data to compare sites impacted over time. Much of the information presented in this report is focused on the ecological state of the values and provides useful information to resource managers and professionals on the outcomes of plans and practices. For a description of the methodologies used in this report, see Appendix 1.

The presentation style is similar to that used in previous Multiple Resource Value Assessments.¹ The "Impact Ratings" diagram indicates the effect of resource development on the resource value, from "very low" to "high" impact. The "Summary" presents a descriptive outline of the monitoring results. The "Causal Factors"

¹ See <https://www2.gov.bc.ca/gov/content?id=3404A95D195C48A5BAE6DA51462014A0>. The methodology is described in FREP Technical Note No. 6 (https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/forestry/frep/frep-docs/frep_technical_note_06.pdf).

for the impact ratings are derived from the field-based data. The “Opportunities for Improvement” are based on practices that resulted in the best outcomes and (or) expert knowledge.

THOMPSON RIVERS – ENVIRONMENTAL AND STEWARDSHIP CONTEXT

This report covers the Thompson Rivers Natural Resource District encompassing the Kamloops TSA and Tree Farm Licences (TFL) 18 and 35 (Figure 1). It ranges from Logan Lake in the south to Wells Gray Park in the north-west, including the Blue River area, and is bounded by the Columbia Mountains to the east and the Cariboo are to the west. The TSA and associated TFLs cover approximately 2.88 million hectares. The public sector, forestry and tourism are the major employment sectors, with agriculture, construction and mining also contributing to the local economy. Well Gray Provincial Park encompasses a large section of the district, but several other provincial parks are also found within the district including Bonaparte Provincial Park, Tunkwa Provincial Park, Dunn Peak Protected Area and Lac Du Bois Grasslands Protected Area. Grizzly bear, black bear, mule deer, moose, bighorn sheep and many smaller furbearers, as well as many species of birds and amphibians, are common. The district includes portions of the range of three herds of mountain caribou. Ten First Nations reside in communities located within the district, including the Adams Lake Indian Band, Bonaparte Indian Band, Kamloops Indian Band, Simpcw First Nation, Neskonlith Indian Band, Skeetchestn Indian Band, Whispering Pines/Clinton Indian band, Little Shuswap Indian Band, Ashcroft Indian Band and Oregon Jack Indian Band. Nine First Nations communities have traditional interests within the Thompson Rivers district, but reside outside the TSA. These communities include: High Bar, Splat's'in (Spallumcheen), Lower Nicola, Upper Nicola, Xaxl'ip (Fountain), Ts'kw'aylaxw (Pavilion), Cook's Ferry, Lheidli T'enneh and Canim Lake.

Located in south central BC, the Thompson Rivers Natural Resource District is represented by a variety of ecosystems including grasslands, low elevation dry Douglas-fir forest types, wet interior cedar hemlock and high elevation cold and wet Engelmann spruce subalpine fir. The district offices are located in Kamloops (2016 population of 90,280), with 38 staff, and Clearwater (2018 population of 2,380), with 8 staff. Also included are the communities of Ashcroft, Barriere, Blue River, Cache Creek, Chase, Little Fort, Logan Lake, Savona, and Vavenby.

Thompson Rivers Natural Resource District Statistics (May 2020):

Land Base (ha):

Gross Area	2,769,417
Total Crown Range	1,057,000
Grazed Crown Range	1,004,160
Timber Harvesting Land Base (Kamloops TSA only)	949,474

Range:

Range Act tenures:	139
Animal Unit Months (1 cow/calf)	97,067
Livestock under tenure	23,204
Grazing lease tenures	108
Grazing lease hectares	67,967

Allowable Annual Cut (AAC) (m^3/yr): 2,300,000²

Conventional	2,100,000
Old Cedar/Hemlock Leading Partition	200,000
Total	2,300,000

Forest Tenures (m^3/yr):

TFL 18 (Interfor Corporation) ³	164,500
TFL 35 (West Fraser Mills Ltd.)	125,000
Non- Replaceable Forest Licences (10)	477,215
Renewable Forest Licences (19)	1,522,915
<i>(Canfor, Tolko, Gilbert Smith, Interfor, Stella-Jones, West Fraser)</i>	
BCTS	460,981
3 Community Forest Agreements	77,800
<i>(Logan Lake, North Thompson and Wells Gray)</i>	
50 Woodlots	96,900
2 Timber Licences (Gilbert Smith and Interfor)	21,537 ha

Mature pine is no longer a significant presence in the forests of the Thompson Rivers Natural Resource District and there is an operational shift occurring to harvest spruce/balsam and Douglas-fir forests.

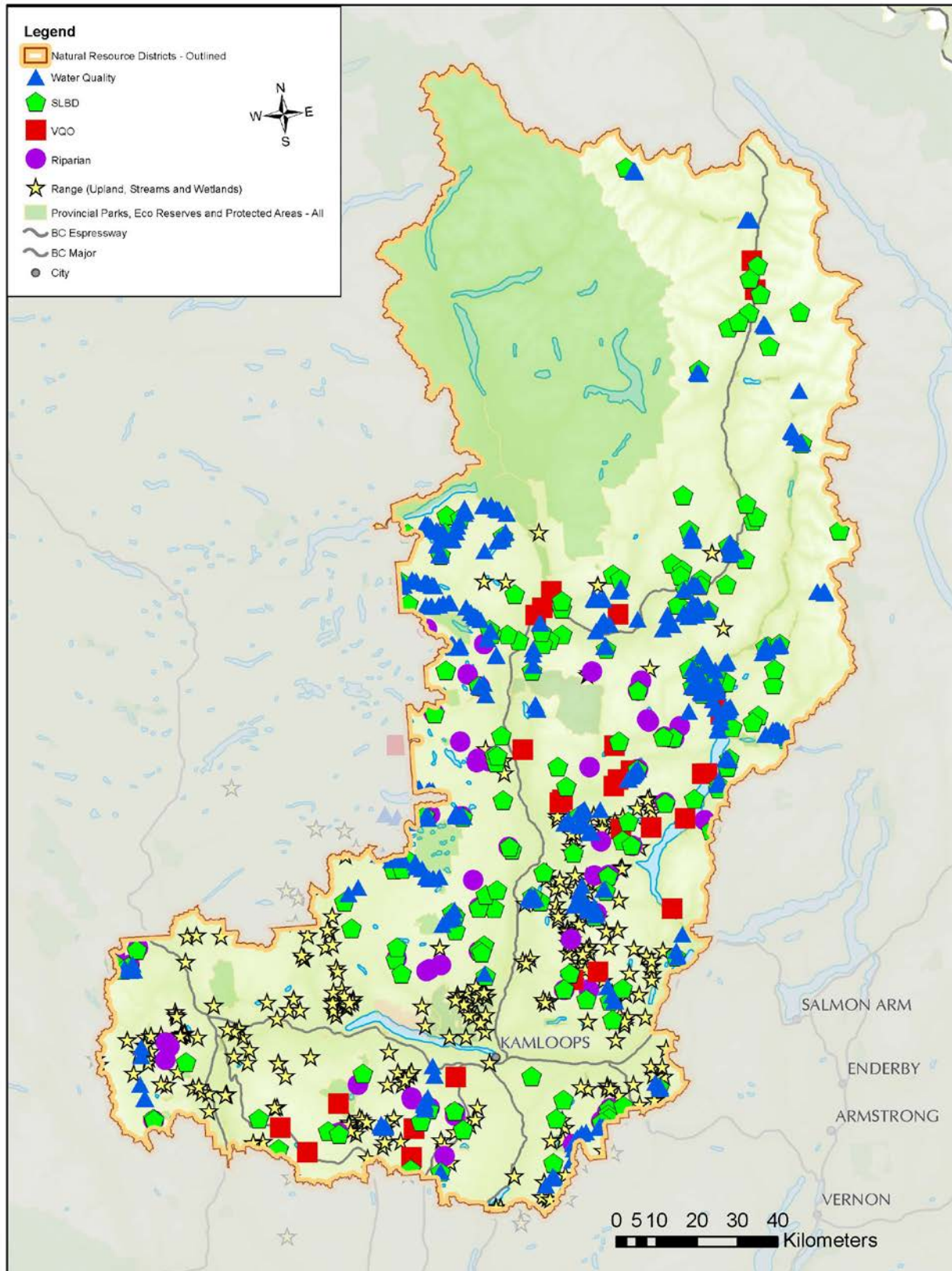
The diversity of ecosystems and a broad range of values over the landbase require complex management and monitoring strategies.

This report includes field data that was collected up to and including the 2016 field season for riparian, water quality, and visuals, and up to and including 2015 for the stand-level biodiversity value. The rangeland health data included in this report was collected in the 2012 to 2017 field seasons.

² The AAC will step down to 2,100,000 m^3/yr in May 2021.

³ TFL18 and Canfor's renewable forest licence have been transferred to Interfor Corporation

Figure 1: Thompson Rivers Natural Resource District, showing FREP sample locations (data samples up to and including 2017).



THOMPSON RIVERS NATURAL RESOURCE DISTRICT — MONITORING IN BRIEF

This report summarizes monitoring conducted in the Thompson Rivers Natural Resource District. MRVA reports allow decision makers to communicate expectations for sustainable resource management of public resources and identify opportunities to improve stewardship. This report concludes with a district manager commentary on the key strengths and opportunities for improvement of natural resource management in the area.

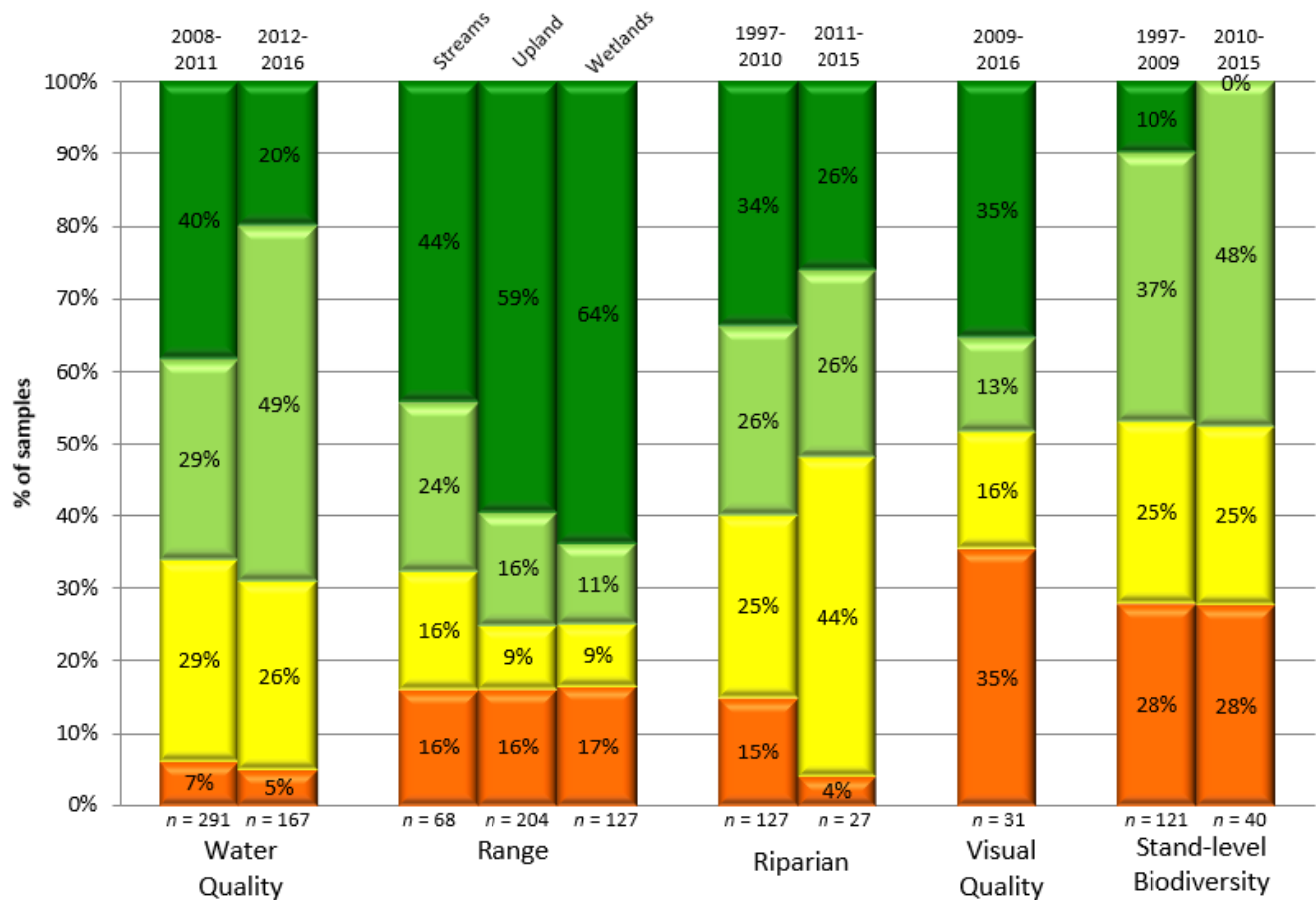
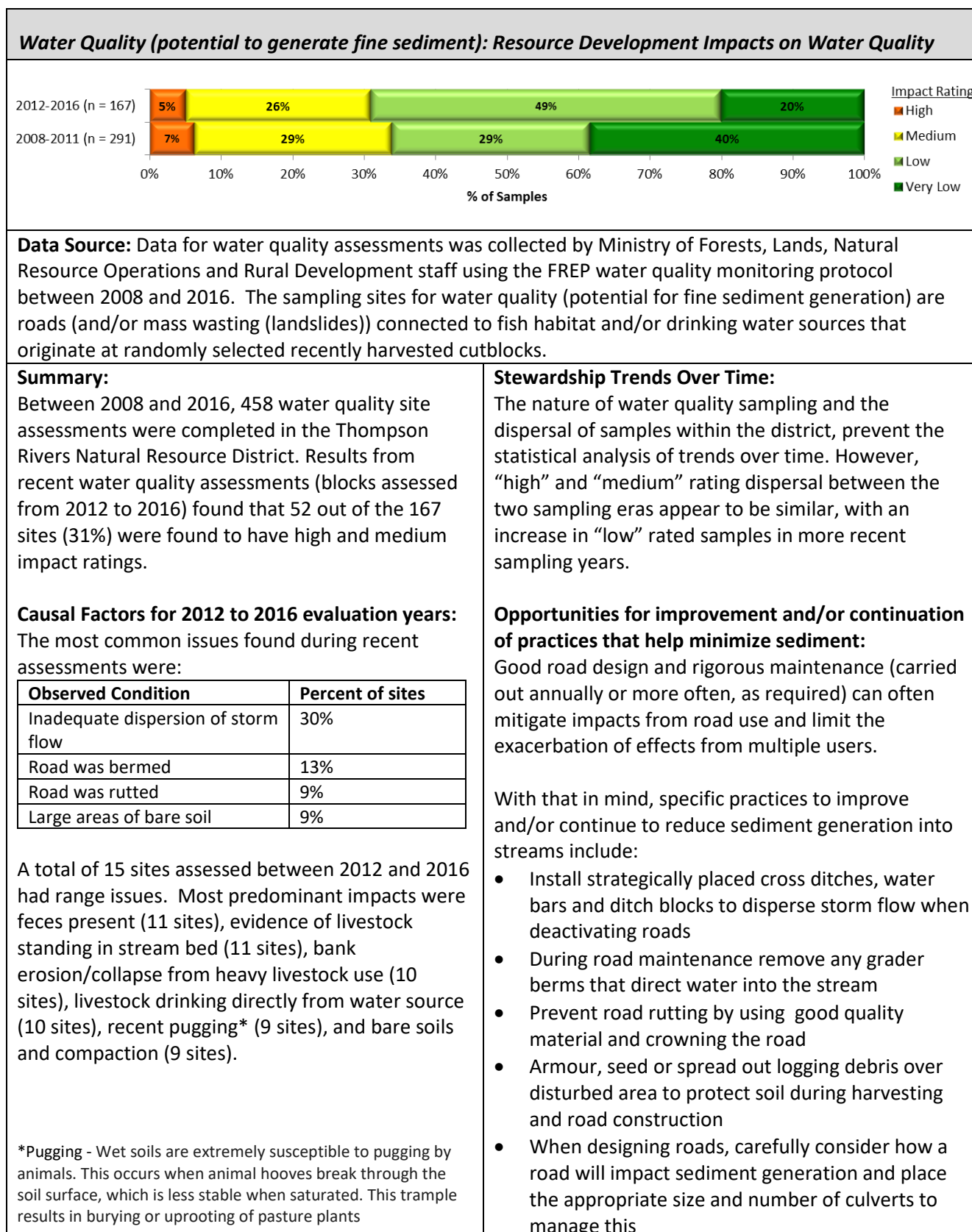


Figure 2: Thompson Rivers stewardship impact ratings by resource value with trends

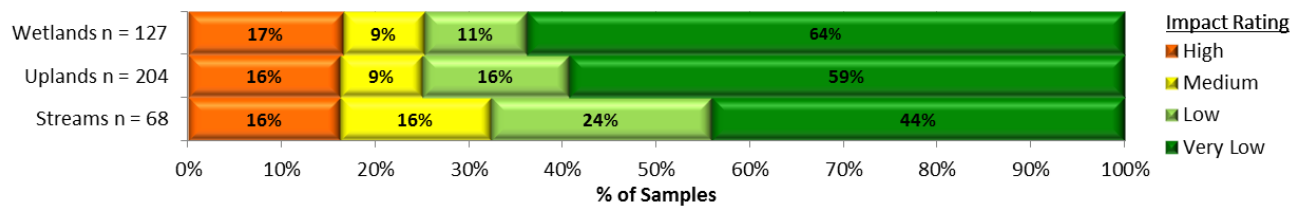
Impact Ratings

- Very Low
- Low
- Medium
- High

KEY RESULTS BY RESOURCE VALUE AND OPPORTUNITIES FOR CONTINUED IMPROVEMENT



Range: Rangeland Health



Data Source: FLNRORD Range program staff monitor and report on the health of rangelands using the [Rangeland Health Field Guide \(2007\)](#). Monitoring is done on land under Crown grazing tenures that is considered of primary use for grazing, to determine the impact of livestock grazing on uplands, wetlands and streams. Site selection is based on livestock use, tenure and operational plan renewals, complaints and problem areas where land based investments can be targeted to improve range condition. This targeted sampling strategy, however, may contribute to a greater proportion of sites with poor condition ratings. Data reported was collected between 2012 and 2017.

Summary: From 2012 to 2017, field inspection reports were completed for a total of 399 sites (127 wetlands, 204 upland sites and 68 streams). Of these, 58% were rated “Very Low” impacts, 16% “Low”, 10% “Medium” and 16% “High”. Sites with very low and low impact ratings are considered to be in good condition. Moderately at risk sites are considered to be in fair condition and should be re-assessed within a few years as this rating often indicates that the site is moving in either a positive or negative direction. Highly at risk and non-functional sites are considered to be in poor condition and should be assessed for management changes or improvements to reduce livestock impacts and allow the area to recover. Streams and wetlands are particularly susceptible to livestock impacts because these areas provide water, desirable forage and shade.

Causal Factors:

Most livestock grazing is within an acceptable level of use. However, livestock grazing does affect ecosystem function where inadequate distribution allows animals to overgraze an area or when a tenure is licensed to graze more animals than it has the capacity to sustain. In-growth of trees or initial overestimation of carrying capacity contributes to this overstocking in some areas. Lack of management or lack of fencing also contributes to poor distribution.

Stewardship Trend Over Time:

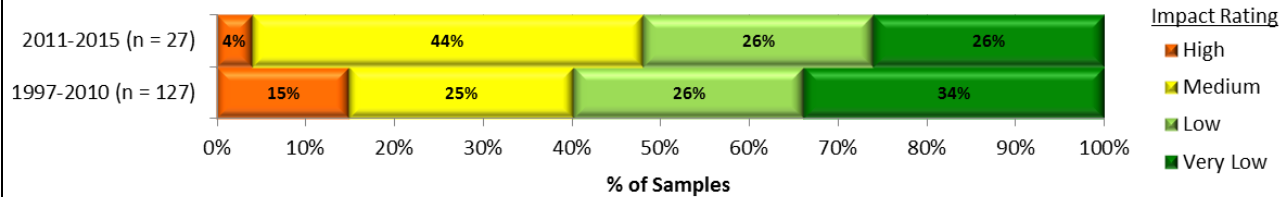
As livestock do not graze evenly across the land base, monitoring sites are not randomly selected and trending is not possible at this time. The three bar charts above each show three years of monitoring in the three different range areas of wetlands, streams and upland.

Opportunities for Improvement and/or continuation of practices that effectively manage forage resources:

Timber and range are two major uses of the land base that can have an impact on one another. Often small streams, lakes and wetlands are left unprotected following timber harvest which can lead to impacts from livestock. Managing for cumulative effects and protecting sensitive riparian areas while maintaining healthy uplands is important in maintaining healthy ecosystems.

- Preserve natural range barriers (e.g., vegetation and downed woody debris) to limit livestock access to streams, wetlands, and lakes.
- Coordinate timber harvesting, road building, and range use to ensure that natural range barriers in riparian areas remain effective.
- Maintain retention on streams, lakes and wetlands (full retention or partial retention). Combining partial retention with woody debris barriers is better than no retention at all.
- Cattle barriers on streams and riparian zones (barriers may not necessarily be on the edges of streams, they may crisscross over the center of the channel while some are linear on the edge).

Riparian: Resource Development Impacts on Stream Function



Data: The data for riparian stream assessments was collected by FLNRORD staff using the FREP riparian monitoring protocol. The sample population for stream assessment consists of randomly selected cutblocks with streams in or adjacent to cutblock boundaries. The data was collected from 2006 to 2016, from blocks harvested from 1997 to 2015.

Summary: Results from recent riparian stream assessments (blocks harvested from 2011 to 2015) found that 13 out of the 27 stream reaches (48%) were not properly functioning, or functioning but at high risk (high and medium impact ratings).

Samples by Stream Class and Impact Rating 2011-2015:

Class	High	Medium	Low	Very Low	Total
S2			1		1
S3			2	2	4
S5				1	1
S6	1	12	4	4	21
Total	1	12	7	7	27

Causal Factors for 2011 to 2015 harvest era:

Factor	% impacts
Logging	56
Natural events	16
Roads	16
Upstream factors	9
Other manmade	2
Livestock	1

Specific Impacts for 2011 to 2015 harvest era:

Factor	Specific Impact	Percentage of sites with Specific Impact (n = 27)
Logging	Low Retention	63
	Windthrow	63
	Machine disturbance	26
	Torrenting	15
	Falling and yarding	11
Natural events	High natural background sediment levels	30
	Torrents	11
	Organic stream bed	7
	Slides/sloughs	4
	Wind	4
Roads	Beetle kills	4
	Running surface eroding into stream	48
	Fill or cut slopes eroding into stream	37
	Ditches eroding into stream	26
	Crossing opening too small	15
	Ditch blocks inadequate	7
	Cross ditching inadequate	7
	Culvert damage	4

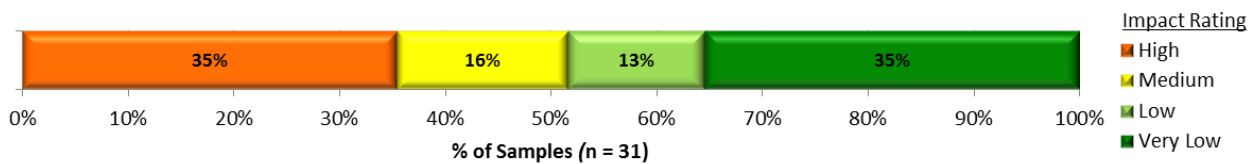
Stewardship Trend Over Time:

There is a statistical difference between sampling eras (χ^2 , $p=0.00$), with better results in earlier harvest years.

Opportunities for improvement (and/or continuation) based on streams with the best outcomes:

- Increase retention width and complexity around small streams, especially those that make significant contributions of water, sediment, debris, and nutrients to downstream fish habitats.
- Reduce windthrow by increasing buffer widths, employing windfirming techniques, or choosing more selective harvest practices for windthrow-prone timber.
- Provide training to equipment operators about the importance of streams. Monitor harvesting to ensure operators are utilizing methods that will minimize disturbance.
- Fall and yard away from the stream whenever possible. Establish yarding corridors where this is not possible to limit the introduction of broken stems and branches to the stream.
- Recognize risk of erosion in areas that are naturally high in fine sediments. Apply strategies related to timing of harvest and methods to minimize compaction and exposure of bare ground in the riparian area. Plan, maintain, and deactivate roads to minimize the transport of sediments to stream channels.

Visual Quality: Resource Development Impacts on Achievement of Visual Quality Objectives (VQO)



Data Source: Data for visual quality assessments was collected by FLNRORD field staff from 2009-2016 using the Forest and Range Evaluation Program visual quality monitoring protocol. The sampling population for visual quality consists of landforms with established visual quality objectives, randomly selected based on recently harvested cutblocks.

Summary: Of the 31 samples, VQOs were met or well met on 15 of the landforms ("low" and "very low" impact ratings). 16 of the landforms assessed did not meet VQOs or were borderline ("medium" and "high" impact ratings).

Of these 16 blocks that did not meet VQOs in the High and Medium impact rating, 11 were salvage harvest (ie., bark beetle, fire, blowdown). Of these, 7 blocks were harvested under FSPs containing wording that allowed for results that did not meet VQOs when salvage harvesting. Of special note is the fact that only one of the 11 salvage blocks had used visual design techniques to reduce visual impact.

Number of Samples by VQO and Impact Rating:

VQO ¹	High	Medium	Low	Very Low	Total
M			4	2	6
PR	9	4	7	2	22
R	2	1			3
Total	11	5	11	4	31

¹ M = modification, PR = partial retention, R = retention

Causal Factors:

For the 16 landforms where VQOs were borderline, not met or clearly not met:

- All but one had neutral or poor design;
- All but one had poor retention within openings; &
- Many had high alteration of the landform relative to their established VQOs.

Fifteen landforms had VQOs that were fully achieved. For these blocks with well met or met VQOs:

- 7 had "good" design, 4 were neutral, and 4 had no visual design or poor design;
- 3 had good or moderate levels of retention within openings;
- All but 2 had % landform alteration consistent with their VQO; and
- Good design helped these landforms meet their VQOs.

Stewardship Trend Over Time:

Currently, there is insufficient data to report on changes in outcomes over time.

Opportunities for Improvement:

- Design openings to ensure that alterations will be within the percent alteration range for the established VQO.
- When salvage harvesting, it is still essential to apply visual design techniques to create openings that have natural shapes, even though they may be larger in scale.
- Use visual landscape design techniques to create openings that appear natural.
- Increase in-block tree retention to reduce the amount of visible bare ground.

Stand Level Biodiversity

Figure 1: Quantity and type of retention by harvest era

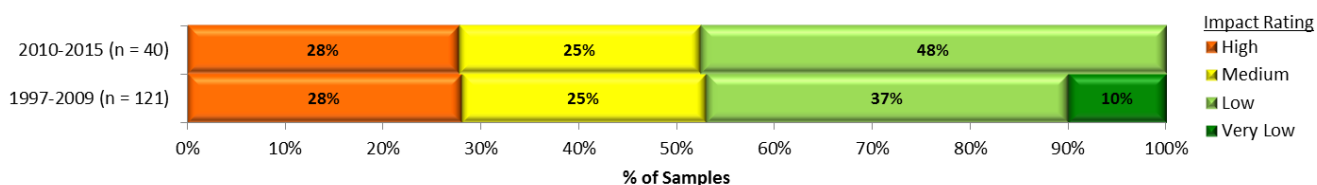


Figure 2: Factors underpinning the SLBD score.

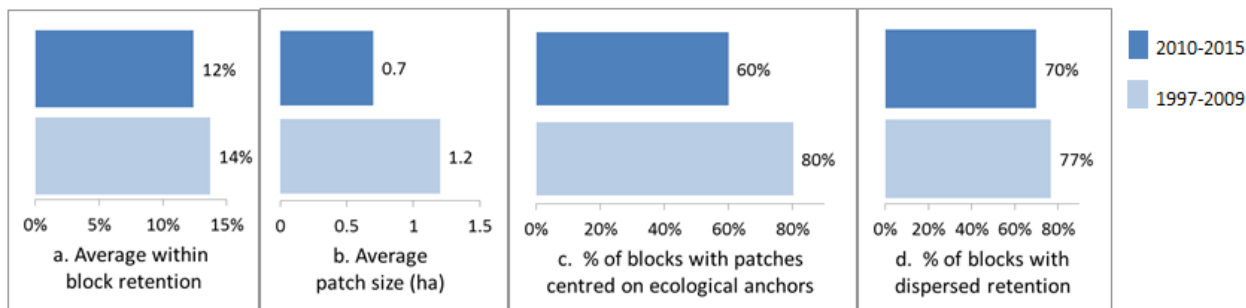


Table 1: Quality of tree retention compared to pre-harvest benchmark by harvest era.

	Large Live Tree Density	Large Snag Density	Tree Species Diversity
2010-2015 (n = 40)	Less	Less	Comparable
Quality Trend	No Change	No Change	Improving
1997-2009 (n = 121)	Less	Less	Less

Table 2: Quality of course woody debris (CWD) retention compared to pre-harvest benchmark by harvest era

	Large CWD volume	Large & Long CWD Density
2010-2015 (n = 40)	Comparable	Comparable
Quality Trend	Improving	Improving
1997-2009 (n = 121)	Not Comparable	Not Comparable

Data Source:

The data for the stand-level biodiversity (SLBD) assessments was collected by trained FLNRORD staff using the FREP SLBD protocol. The sample population for SLBD assessment consists of randomly selected cut blocks. The data was collected from 2006 to 2016 from blocks harvested from 1997 to 2015. Two eras of harvesting were analyzed—1997 to 2009 (old era, 121 blocks) and 2010 to 2015 (new era, 40 blocks).

Summary:**Quantity and type of retention:**

The impact rating for each cutblock with respect to quantity and type of retention was determined by assessing percent of within-block retention, average patch size, presence of within-patch ecological anchors, and presence of dispersed retention. If a cutblock scored greater than 80 of out 100 points, then it was rated as very low impact. If a cutblock scored between 45 and 80 points, then it was rated as low impact. If a cutblock scored less than 45 points, then it was rated as moderate impact. If a cutblock had less than 3.5% retention (regardless of total score), then it was rated as high impact.

Forty eight percent of recently-harvested cutblocks were in the low and very low impact categories compared to 47% of the sites harvested before 2011 (Figure 1). Further, average annual scores have not changed significantly over time. Despite any visual differences apparent in Figure 2, average percent of within-block retention, average patch size, use of ecological anchors, and use of dispersed retention did not differ significantly between harvest eras.

Quality of Tree retention:

Assessment of the quality of the trees was conducted for the entire sample in aggregate because the pre-harvest condition of individual blocks was unknown for the vast majority of the 161 blocks assessed. Timber cruise data was used as a surrogate for pre-harvest condition and a benchmark was adopted for each harvest era to reflect that the characteristics of the harvested stands differ between the two eras. Density of large live trees and snags (>40, >50 or >70 cm dbh, dependent on biogeoclimatic subzone) and diversity tree species retained for each harvest era were compared to cruise data from approximately the same harvest era and for the same biogeoclimatic subzone (Table 1).

Large live tree density and large snag were less than pre-harvest condition for both harvest eras. Tree species diversity was comparable to pre-harvest condition on cutblocks harvested since 2010.

Quality of CWD retention:

Assessment of CWD retention quality was also conducted in aggregate and assessed against a pre-harvest benchmark for each harvest era. Volume of large pieces (>20 cm diameter) and density of large and long pieces (>20 cm diameter, >10 m long) in harvested areas were compared to retention patches (Table 2).

Both large piece volume and large and long piece density changed to reflect pre-harvest condition on recently harvested cut blocks.

Best management practices that should be continued

- Continue to include ecological anchors within patches when available.
- Continue to leave dispersed retention throughout the harvested areas.
- Continue to retain large CWD in volumes comparable to pre-harvest condition.
- Continue to retain CWD retention quality by leaving large and long pieces of CWD in densities representative of pre-harvest condition.

Opportunities for Improvement

- Improve tree retention quality by leaving density of large live trees, density of large snags, and diversity of tree species representative of pre-harvest condition.

RESOURCE VALUE STEWARDSHIP RESULTS COMPARISON

Table 3 provides ratings of stewardship effectiveness at varying scales. Effectiveness is determined by the percentage of samples with a “very low” or “low” resource development impact rating.

Table 3: Stewardship effectiveness within the Thompson Okanagan Natural Resource Region as determined by resource development impact rating (ID = Insufficient Data; sample sizes in brackets).

Resource Value	Effectiveness of Practices in Achieving Resource Stewardship Objectives: % Very low + Low Resource Development Impact Rating			
	Thompson Okanagan Region district comparison			Thompson Okanagan
	Thompson Rivers	Cascades	Okanagan Shuswap	
Water quality – all data 2012-2016 samples 2008-2011 samples	66% (458) 69% (167) 64% (291)	49% (164) 61% (82) 38% (82)	64% (348) 58% (146) 69% (202)	63% (970) 63% (395) 62% (575)
Riparian – all data 2011-2015 harvest years 1997-2010 harvest years	58% (154) 52% (27) 60% (127)	65% (78) 75% (16) 63% (62)	81% (92) 83% (24) 80% (68)	66% (324) 69% (67) 66% (257)
Visual Quality 2009-2016 samples	48% (31)	50% (30)	81% (47)	63% (108)
Stand-level biodiversity –all data 2010-2015 harvest years 1997-2009 harvest years	48% (161) 48% (40) 47% (121)	Not currently compiled	Not currently compiled	61% (357) 59% (90) 61% (267)

DISTRICT MANAGER COMMENTARY⁴

This report is the result of stand and landscape-level monitoring in the Thompson Rivers Natural Resource District on five of the resource values identified under the *Forest and Range Practices Act* (FRPA) (Visual Quality, Water, Fish/Riparian, Biodiversity, and Forage and Associated Plant Communities). The information in this report is available for government managers, decision makers and natural resource professionals to use to make informed decisions, maintain current knowledge and enhance management of the resources they are managing on behalf of the public. As per the *Thompson Rivers Forest District, District Manager Letter of Expectation Regarding FSPs* (May 6, 2016), it is expected that forest professionals continue to improve their management of FRPA values and consider trends and identified areas of improvement from the FREP program and MRVA report.

⁴ Commentary supplied by Rachael Pollard, P.Ag., District Manager of the Thompson Rivers Natural Resource District

In summary, as per table 3, of the values reported on (Visuals, Water Quality, Riparian, Stand-level Biodiversity), only water quality has had a slight improvement in the number of samples in the “low” to “very low” impact ratings (5%). The impact ratings for riparian, visual quality, and stand-level biodiversity still have a proportion of “low” to “very low” impacts rating (48%, 58%, and 48% respectively), however there are still a high proportion of the samples in the “high” and “medium” impact ratings.

Opportunities to improve and minimize the amount of “high” and “medium” impact ratings are outlined in each of the value sections of this report. Licence holders and resource professionals are expected to utilize these opportunities for continued improvement in managing the resource values in the Thompson Rivers Natural Resource District.

A number of FREP reports, extension notes and other resources are available to assist resource managers and natural resource professionals with managing and improving practices (FREP Reports and Extension notes: <https://www2.gov.bc.ca/gov/content/industry/forestry/managing-our-forest-resources/integrated-resource-monitoring/forest-range-evaluation-program/frep-reports-extension-notes>). The expectation is that the best management practices outlined in these reports and extension notes will be incorporated into Licensees Forest Stewardship Plans and any plans that are at the stand level.

Other best practices to consider when managing resource values in the Thompson Rivers Natural Resource District:

- Moose and Watershed Stewardship Pilot
- Guidance for Maintaining Riparian Function in Fisheries Sensitive Watersheds
- District Manager Letter of Expectation Regarding FSPs

I acknowledge that the environmental, social and economic conditions in the Thompson Rivers Natural Resource District (TRNRD) provide many challenges for forest management. During the mountain pine beetle (MPB) epidemic timber harvesting focused on the extraction of dead and dying lodgepole pine while it retained its value. As salvage harvesting of beetle-infested pine is now over in the District, a more balanced perspective of the competing values is the expected norm. I acknowledge that there has been some progress in this regard in recent years. Improving our practices will require continuous learning for forest practitioners, contractors and machine operators as operations in the past were primarily in back-country areas and pine plateaus which are, in general, less complex than front-country areas where the mid-term timber supply will be found.

My team and I look forward to working with all license holders on continuing to improve resource management practices in the Thompson Rivers Natural Resource District.

APPENDIX 1. SUMMARY DESCRIPTION OF RESOURCE DEVELOPMENT IMPACT RATING CRITERIA

Table A1.1 shows the criteria used to determine the resource development impact ratings for each resource value. Detailed rating criteria, methodology, and definition of terms used are described in the companion document *FREP Technical Note #6: Methodologies for Converting FREP Monitoring Results to Multiple Resource Value Assessment (MRVA) Resource Development Impact Ratings* (https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/forestry/frep/frep-docs/frep_technical_note_06.pdf). The ratings of “very low,” “low,” “medium,” and “high” are “technical ratings” based on best available science.

Table A1.1: Criteria for determining resource development impact rating outcomes for each resource value.

Resource Value	Evaluation Question	Indicators	Resource Development Impact Rating Criteria	Very low	Low	Medium	High
Riparian	Are riparian forestry and range practices effective in maintaining the proper functioning of riparian areas?	Fifteen key questions (e.g., intact channel banks, fine sediments, riparian vegetation)	Number of “no” answers on assessment questions of channel and riparian conditions	0–2	3–4	5–6	> 6
Rangeland Health	Are range management practices maintaining upland, riparian and wetland areas in properly functioning condition?	Thirteen (wetlands), eighteen (riparian) and fourteen (uplands) key questions regarding hydrologic and soil conditions, biotic/vegetation conditions, erosion/deposition conditions, nutrient inputs and water quality, channel structure, function and diversity, and flow regime.	% of “yes” answers on assessment questions	≥80% (Properly Functioning Condition)	61–79% (Slightly at risk)	41–60% (Moderately at risk)	≤40% (Highly at risk or non-functional)
Water Quality (sediment)	Are forest practices effective in protecting water quality?	Fine sediment potential	Fine sediment (m ³) due to expected surface erosion or past mass wasting	< 0.1	< 0.2	1–5	> 5
Visual Quality	How are we managing views in scenic areas and achieving visual quality objectives?	Visual evaluation of block, design of block, percent of landform altered, impact of roads, tree retention and view point importance	Basic visual quality class (determined using the VQC definitions) is compared with the Adjusted VQC (derived using percent alteration measurements and adjustment factors) to determine if VQO is achieved.	VQO achieved, and % alteration low or mid-range	VQO achieved, but % alteration for one or both close to alteration limit	Only one method indicates VQO achieved	Both methods indicate VQO not achieved
Stand-level Biodiversity	Is stand-level retention providing the range of habitat and attributes understood as necessary for maintaining species dependent on wildlife trees and coarse woody debris?	Quantity and type of retention ⁵ (percent of within-block retention, average patch size, presence of within-patch ecological anchors, and presence of dispersed retention)	Total cutblock score (100 points max)	>80 points	45–80 points	<45 points	<3.5% retention (regardless of total score)

⁵ Indicators of tree retention quality and coarse woody debris retention quality are reported separately and are not included in the development impact rating score.