

Forest and Range Evaluation Program

Monitoring Results and Continuous Improvement Opportunities

Key Opportunities for Continued Improvement of Forest and Range Practices

Based on the findings of FREP, the following actions either resulted in the best outcomes, or were seen as key opportunities for improvement

Timber - Ensure planting density and species mix account for impacts of forest health agents on long-term stand productivity.

Soils - Practise good pre-harvest planning by designating efficient skid trail locations and/or patterns. Limit machine traffic within wet areas to prevent drainage diversion, excessive rutting, and soil disturbance during harvest.

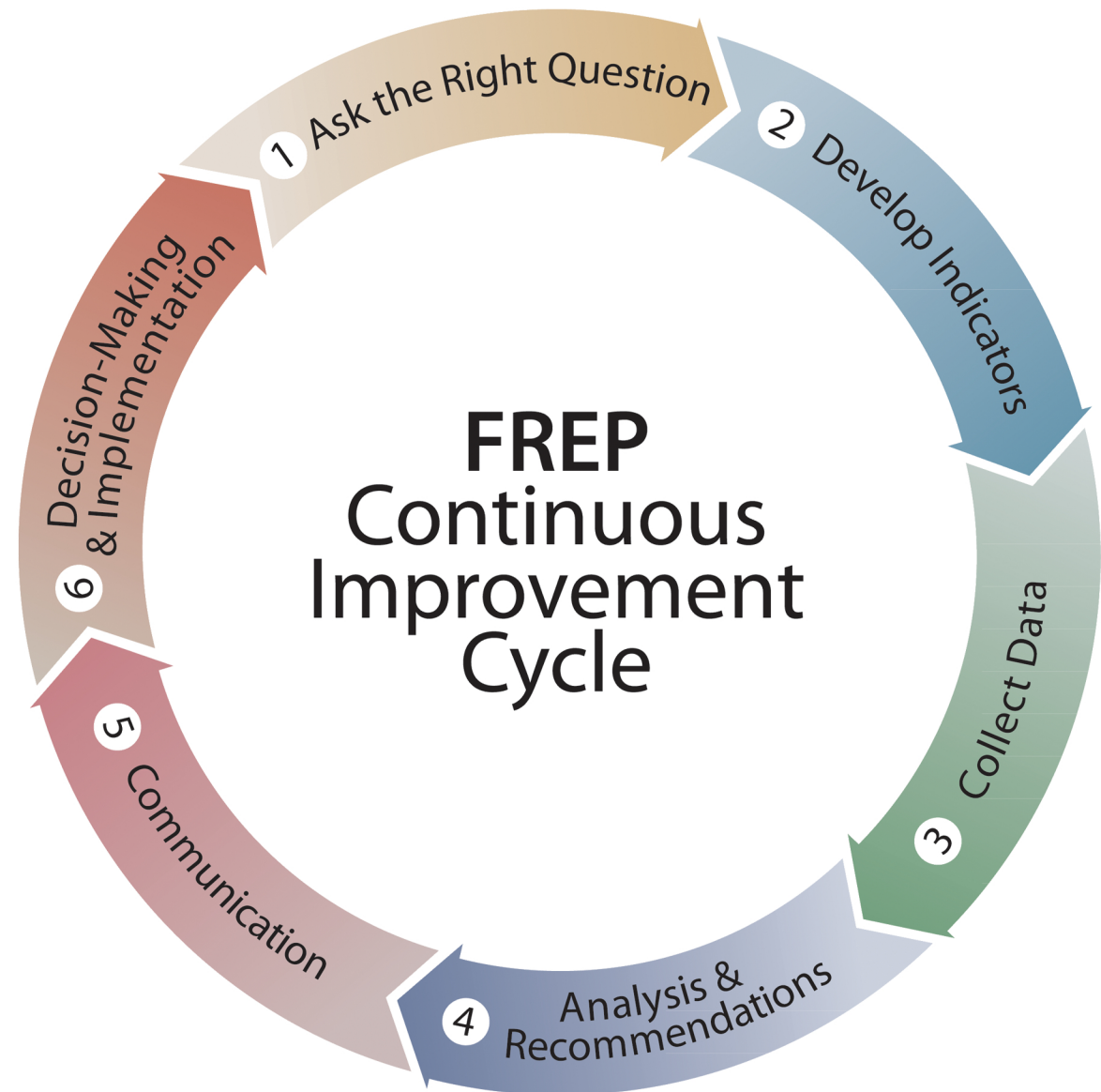
Fish/Riparian - Leave higher levels of Riparian Management Area retention (including both trees and understory riparian vegetation) for a minimum of 10 meters on either side of the stream, and decrease the levels of erodible ground near the streams.

Visual Quality - Use visual design techniques to more create more natural looking openings and better achieve VQOs. Increase use of partial cutting/retention harvesting as a way to retain more volume/stems within openings, and reduce overall size of openings in retention and partial retention VQO areas.

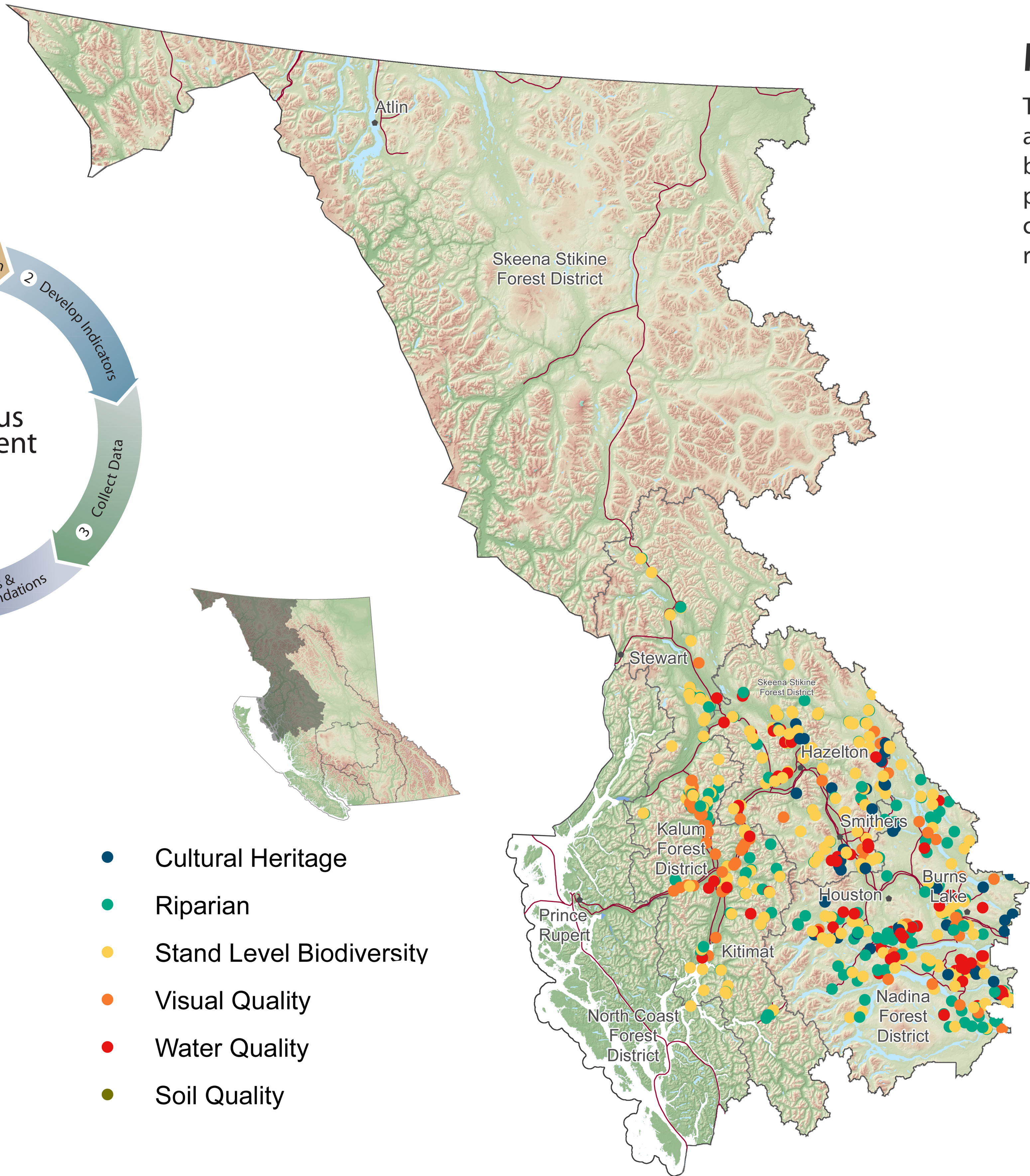
Cultural Heritage - Before harvesting begins understand existing CHR information, identify and describe CHR values on site, develop management strategies, and communicate with First Nations.

Stand-level Biodiversity - Stand-level biodiversity in the Skeena Region biodiversity would improve by increasing the percentage of cutblocks with retention. Look to retain some larger trees for the site on most blocks. Average retention is 18.4% for all the sampled blocks (254) in the Region.

Water Quality - Increase use of cross ditches and kickouts to get water off roads. Improve maintenance by using good quality road surface materials, removing berms, and avoiding road use when wet or thawing. Increase amount of armouring, seeding and protection of bare soil during road construction. Increase the number of strategically located culverts.



- Cultural Heritage
- Riparian
- Stand Level Biodiversity
- Visual Quality
- Water Quality
- Soil Quality



Mission

To be a world leader in resource stewardship monitoring and effectiveness evaluations; communicating science-based information to enhance the knowledge of resource professionals and inform balanced decision making and continuous improvement of British Columbia's forest and range practices, policies and legislation.



For more information, visit FREP's website: www.for.gov.bc.ca/hfp/frep

Also visit FREP's **YouTube** channel <http://www.youtube.com/user/frep101>



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Skeena Region: Skeena Stikine, Kalum and Nadina Districts



Timber

What is the forest health and productivity of 15-40 year-old regenerated stands?

- 23 SDM polygons sampled across four Timber Supply Areas (TSA): Lakes 7; Morice 6; Kispiox 1; Bulkley 9
- In the Nadina District (Lakes and Morice TSAs), all but one of the sampled stands remain at or above 700 well spaced stems/ha, the minimum stocking threshold at free growing
- Well-spaced density of stands in Nadina District has dropped an average of 230 stems/ha (21%) since the free-growing assessments (1997-2001), primarily due to hard pine rusts, snow-press and unacceptable forking
- Average total stand density in Nadina District decreased approximately 11%, from 2490 stems/ha to 2230 stems/ha, over the same time period



Cultural Heritage

Are cultural heritage resources being conserved for First Nations cultural and traditional activities?

- 56 cutblocks with 155 cultural resource features sampled
- Features assessed included archaeological features (e.g., pre-1846 culturally modified trees (CMTs) and cache pits), cultural trails and post-1846 CMTs
- At a block-level, 61% of samples were considered well to very well managed, 29% moderately and 9% poorly to very poorly managed
- For individual features, 59% showed no evidence of harvest-related damage while 41% showed evidence of damage. 9% of sites showed irreversible damage and (or) were rendered unsuitable for continued use. Primary causes of damage included removal of features and to a lesser degree windthrow



Fish/Riparian

Are riparian forestry and range practices effective in maintaining the proper functioning of riparian areas?

- 227 streams sampled
- 41% of streams are Properly Functioning, 35% are Properly Functioning with limited impact, 16% are Properly Functioning with impact and 7% are Not Properly Functioning
- Stream reaches in the best category of Properly Functioning Condition were those with the widest riparian buffers
- Stream reaches considered not properly functioning were predominantly (90%) 56 streams



Visual Quality

How are we managing views in scenic areas and achieving Visual Quality Objectives (VQOs)?

- 53 landforms harvested under the Forest Practices Code sampled with VQOs achieved on 55% of the landforms sampled
- 17% of openings sampled contained visually effective levels of tree retention (> 22% by volume or stem count) and 43% of landforms sampled had good Visual Quality Design (cutblock shaping)
- Silvicultural systems that retained stand structure within an opening had a greater likelihood of achieving a VQO -- VQOs were achieved on 78% of landscapes where a partial cutting/retention system was used, whereas VQOs achieved on 50% of landscapes where a clearcutting system was used



Water Quality

Are forest practices effective in protecting water quality?

- 393 water quality sites, originating from 85 cutblocks sampled
- Overall, site assessments scored predominantly in the very low and low range for potential sediment generation; however, Nadina Forest District scored most (51%) of their sites in the moderate and higher range
- Results by district summarized as fine sediment generation class in the table below

District	Total number of sample sites	Fine Sediment Generation Class (% of district total)				
		Very Low	Low	Mod/Low	High	Very High
DKM	100	95.0	46.0	15.0	0.0	0.0
END	162	100.0	29.0	48.0	0.0	0.0
OS	94	100.0	23.0	0.0	1.0	0.0
NS	36	100.0	40.0	20.0	0.0	0.0
Total	392	97.5	36.6	22.5	0.0	0.0



Forage/Range

What impact are range practices having on the desired plant succession and the water cycle/hydrologic function?

- For the range value, only five sites have been assessed in the Skeena Region. Results to date indicate:
- Five Upland samples in Slight Risk-Propertly Functioning Condition
- The level of use was appropriate and sustainable
- Additional data collection is required



Soils

Are forest practices preventing site disturbance that is detrimental to soil productivity and hydrologic function?

- 10 cutblocks sampled: five in DND and five in DKM
- Of the 10 samples, four were rated 'objectives achieved', three had 'moderate achievement', and three were considered 'objectives not achieved'
- Where objectives were not achieved, soil disturbance in the net area to be reforested and roadside work areas were the main causes, but concerns relating to erosion and drainage were also observed
- Several of the cutblocks had low amounts of coarse woody debris retention following harvest, and few mature leave trees to provide beneficial rhizosphere organisms to the new forest



Biodiversity

Is stand-level retention providing the habitat necessary for maintaining the species dependent on wildlife trees and CWD?

- 237 cutblocks sampled
- Results below are from four predominant biogeoclimatic (BEC) subzones sampled within one or more districts



Subzone	n	District	Ave % Retn	Cutblocks with Retn	Tree Species Diversity	Large diameter trees ¹	Big CWD
CWHvm1	28	NC, KM	23.9	68%	poor	poor	good
ICHmc1	21	KM, SS	10.2	67%	poor	poor	borderline
SBSdk	30	ND, SS	17.5	60%	borderline	poor	borderline
SBSmc2	64	ND, SS	15.4	89%	borderline	fair	poor

¹ Large trees are 40 cm or larger for the SBS and 70 cm or larger for the CWH and ICH
Note: There are four quality categories: poor, borderline, fair and good as per MRVA standards.