

## Soils and Watersheds

*(The following is from Norbeck Society comments to the BHNF Plan Assessment, 2022.)*

The Soils and Watershed Assessment is one of the most depressing and frightening of all the assessments. There are numerous categorizations of soils and watersheds in the assessment that report current condition as fair and poor to very poor. The assessment demonstrates that BKF has little respect and extremely low priority for responsible and accountable stewardship of surface and groundwater. Some specific condition items are discussed below. However, the big-picture **NEED FOR CHANGE that Norbeck Society sees is the need to focus firstly on valued natural resources such as soils and water that are the foundation of all ecosystems on BKF, and secondly on commodity production that flow from BKF ecosystems.** Fresh thinking must put water and soil/geology resources (along with plant, animal and all life) at the heart of high-quality existence of BKF into the future. Production of a commodity nature (e.g. timber harvest, livestock grazing, recreation, mining) must take second seat to protection and conservation of natural resources and ecosystems.

BKF notes in the Assessment that Watershed Condition Framework (WCF) ratings were developed in 2010. Indicators were based on 2010 data that have not been updated across all WCF parameters. Like many other assessments, Best Available Science may have been used but results are questionable and/or inadequate due to age (more than 10 years old) or change in scope.

Some examples of BKF condition ratings for Soils and Watersheds:

- 1) Roads and Trails - The Watershed Condition Framework (WCF) rates 72% of BKF watersheds as Class 3 (Poor) and 24% are rated Class 2 (Fair) for roads and trails. Roads and trails are an indicator for changes to hydrologic and sediment regimes.
- 2) Riparian/Wetland vegetation is rated Fair on almost all watersheds. Three subwatersheds are rated Poor and four are rated Good.
- 3) Soils – erosion and chemical contamination are rated Fair in almost every subwatershed (a few are Poor, none are Good)
- 4) Fire Regime/Wildfire – Fire regime is rated Poor almost everywhere because of high fuel load, vegetation changes and fire frequency, intensity, and severity.
- 5) Forest Health – Invasive species, insects, disease and air pollution contribute to Fair and Poor ratings of forest health throughout BKF.
- 6) Invasive species – Invasive species spread is a mix of Good and Fair (two are Poor) in all subwatersheds.

The Assessment portrays these results as acceptable or maybe even commendable. Norbeck Society doesn't believe that the public should settle for mediocre ratings as the best BKF can do for soils and watershed resources. Conditions are likely even worse than presented, given 10 additional years of high timber harvest, consistent fully-stocked livestock allotments, and exploding expansion of OHV

use since the last WCF evaluation. Norbeck Society finds it highly likely that riparian/wetland vegetation (as well as other indicators) are further degraded than this Assessment presents.

No monitoring means no knowledge of current condition – which leads to not knowing where BKF is currently or where it should be going.

Impaired Waters listed in Tables in the Assessment include:

Stockade Lake, Sylvan Lake, Spring Creek, Iron Creek Lake, Sheridan Lake, Elk Creek, Pactola Reservoir, Cheyenne River, Strawberry Creek, Victoria Creek, Whitewood Creek, Deerfield Lake.

**NEED FOR CHANGE** to improve these waters for use by humans and other Black Hills plants, animals, and aquatic species.

The Assessment provides some discussion of Needs for Change in the Conclusions. Unfortunately, the best recommendation for improvement is to follow Best Management Practices (BMPs). These BMPs are the same ones that have been in BKF management prescription during the life of the Forest Plan/Phase 2 Amendment - and not applied, as far as there is any monitoring evidence. Norbeck Society has low confidence that BMP application in the future will be any different than in the past. BKF should revisit Needs for Change and present ideas beyond applying existing BMPs.

**NEED FOR CHANGE** - One area of great concern to Norbeck Society is Wetland Restoration. The description in the Assessment is broad and fits with Norbeck Society estimate of the need for wetland restoration on BKF. There is basically no end to needs for wetland restoration on BKF. Disappointingly, Norbeck Society sees in the Aquatic Assessment that actual figures on Wetland Restoration from 2002 to 2013 were a mere 625 acres on the entire BKF, and there is no restoration information available for 2013 to present. Over that same time period, how many planned timber sales on BKF didn't happen? How many livestock were not turned out on BKF? How many thousands of OHV users turned away from motoring on BKF roads and trails? We believe the answer is none, to all.

BKF focus on planning driven by management activities has allowed great negligence to surface and groundwater resources. Norbeck Society sees no responsibility for water resources at any level on BKF. The 1997 Forest Plan/Phase 2 Amendment has Objectives, Standards and Guidelines - three pages worth that pertain to soils and watersheds are provided in the Assessment. If they and BMPs had been followed as consistently as management activities implemented (i.e., trees harvested, allotments/acreage grazed by livestock, etc.), Norbeck Society wonders what condition water resources on BKF would be like today. We suspect much better condition than currently exists.

Norbeck Society is not satisfied with the BKF philosophy that it is starting into the next Forest Plan from square one. However, this is the only path when one has limited or no monitoring and reporting. Actions happen or not, but no one can say if conditions have improved. Most seriously, no can say if conditions have declined. If decline is the case, there is no motivation to achieve better.

**NEED FOR CHANGE** - BKF needs a fresh focus on stewarding natural resource and intertwined ecosystem components and functions. Planning areas should develop goals for these and fit management/commodity activities in them in format and scope that lead to upward trends in soils and water condition. Monitoring, analysis, reporting and feedback into stewardship of resources and ecosystems, as well as continued management activities, must consistently occur.

On many steep north-facing hillsides, large populations of bryophytes provide hydro-buffering. They hold and slow water in heavy rain events, easing water into riparian areas and creeks, which has a stabilizing effect on vegetation farther down the slopes and creeks.

**Need for change:** Add acknowledgement and safeguards for retaining the hydro-buffering qualities of non-vascular plants, particularly native pleurocarpous bryophytes like *Hylocomium splendens*, *Rhytidium rugosum*, and *Pleurozium schreberi* for steep slopes and streambank stabilization.

-----

An estimated 15,000 acres of the Forest has been recently affected by recent practice of whole-tree yarding. Soils in these areas are extremely disturbed.

**Need for change:** Logging activities have caused significant and debilitating compaction of soils across the Forest. Directives in the Revised Forest Plan must include more strict objectives and guidelines to ensure that soils are given time to recover from management activities and not disturbed to such an excessive degree in the future. A reduction in roads across the system would help, but it will take a long time for soil health to improve.